The Lake Lothing (Lowestoft) Third Crossing Order 201[*]

Document SCC/LLTC/EX/32: Environmental Statement Volume 3 - Appendix 12B

Interpretative Environmental Ground Investigation Report – Clean

Revision 1

Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

PINS Reference Number: TR010023
Author: Suffolk County Council

Document Reference: SCC/LLTC/EX/32

Date: January 2019

This page is intentionally left blank

Suffolk County Council

LAKE LOTHING THIRD CROSSING

Interpretative Environmental Ground Investigation Report



1069948-WSP-EGT-LL-RP-LE-0002.P02
DECEMBER 2018

PUBLIC

Suffolk **County Council**

LAKE LOTHING THIRD CROSSING

Interpretative Environmental Ground Investigation Report

SECOND ISSUE – PUBLIC

PROJECT NO. 62240712

OUR REF. NO. 1069948-WSP-EGT-LL-RP-LE-0002.P02

DATE: DECEMBER 2018

Suffolk **County Council**

LAKE LOTHING THIRD CROSSING

Interpretative Environmental Ground Investigation Report

WSP

1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

Phone: +44 151 331 8100

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision
Remarks		
Date	June 2018	December 2018
Prepared by	N Balderstone	V Curtis
Signature		[redacted] Curtis, Verity 2018.12.18 10:08:30 Z
Checked by	D Watts	D Watts
Signature		[redacted] Digitally signed by Watts, Dave Reason: I have reviewed this document Date: 2018.12.18 09:51:05
Authorised by	T Brown	T Brown
Signature		[redacted] Digitally signed by Brown, Tony Reason: I am approving this document Date: 2018.12.19 10:11:08
Project number	62240712	62240712
Report number	1069948-WSP-EGT-LL-RP-LE-0002.P.01	1069948-WSP-EGT-LL-RP-LE-0002.P.02
PINS Reference		SCC/LLTC/EX/XX
File reference		11241

CONTENTS

1. INTRODUCTION 1

1.1. TERMS OF REFERENCE 1
1.2. SCHEME DESCRIPTION 1
1.3. PROJECT SCOPE 2
1.4. LEGISLATIVE CONTEXT AND GUIDANCE 3
1.5. SOURCES OF INFORMATION 3

2. SITE SETTING 5

2.1. SITE DESCRIPTION AND CURRENT USE 5
2.2. SITE HISTORY 7
2.3. SURROUNDING LAND USES 7
2.4. POTENTIAL SOURCES OF CONTAMINATION 8

3. GROUND INVESTIGATION 10

3.1. PRELIMINARY CONCEPTUAL SITE MODEL 10
3.2. RATIONALE AND SCOPE 10

4. GROUND CONDITIONS ASSESSMENT 12

4.1. GROUND CONDITIONS ENCOUNTERED ON-SITE 12
4.2. MARINE SEDIMENT 15

5. HYDROLOGICAL & HYDROGEOLOGICAL CONDITIONS 16

5.1. LOCAL HYDROLOGY 16
5.2. HYDROGEOLOGY 16

6. QUANTITATIVE RISK ASSESSMENT 19

6.1. INTRODUCTION 19

6.2. HUMAN HEALTH RISK ASSESSMENT 19
6.3. CONTROLLED WATERS RISK ASSESSMENT 21
6.4. GROUND GAS ASSESSMENT 27
6.5. MARINE SEDIMENT SAMPLING 29
6.6. PILING RISK ASSESSMENT 30
7. WASTE ASSESSMENT 31
8. REFINED CONCEPTUAL SITE MODEL 32
8.1. INTRODUCTION 32
8.2. PLAUSIBLE CONTAMINANT LINKAGES 32
9. CONCLUSIONS AND RECOMMENDATIONS 34
9.1. GROUND CONDITIONS 34
9.2. ENVIRONMENTAL / CONTAMINATION ASSESSMENT 34
9.3. OUTLINE REMEDIAL MEASURES 35
9.4. CONSTRUCTION CONSIDERATIONS 36

TABLES

Table 1-1 - Sources of Information 4
Table 2-1 - Summary of Site Details 5
Table 2-2 - Areas of Potential Contamination 8
Table 3-1 - Summary of Ground Investigation Intrusive Works 11
Table 4-1 - Summary of VOC Exceedances >10ppm 13
Table 4-2 - Summary of Visual and Olfactory Evidence of Contamination 14
Table 5-1 - Summary of Groundwater Strikes During the Ground Investigation 16
Table 5-2 - Summary of Groundwater Level Monitoring in the North of the Study Area 18
Table 5-3 - Summary of Groundwater Level Monitoring in the South of the Study Area 18
Table 6-1 - Groundwater Exceedances – Risk to Aquifer 23

Table 6-2 - Groundwater Exceedances – Risk to Lake Lothing Surface Water 25
Table 6-3 - Summary of Ground Gas Monitoring Results 28
Table 8-1 - Summary of Plausible Contaminant Linkages 32

FIGURES

Figure 1 - Location of the Scheme in Lowestoft 2

ANNEXES

ANNEX A DRAWINGS
ANNEX B SCOPE OF WORKS
ANNEX C LAND BASED GROUND INVESTIGATION FACTUAL INFORMATION
ANNEX D MARINE SAMPLING FACTUAL INFORMATION
ANNEX E HUMAN HEALTH RISK ASSESSMENT BACKGROUND INFORMATION
ANNEX F CHEMICAL SCREENING

1. INTRODUCTION

1.1. TERMS OF REFERENCE

1.1.1. An assessment of contaminated land including associated risks, constraints and liabilities has been undertaken to support a DCO application and design of the Scheme.

1.1.2. This interpretative report has been prepared with the ground investigation information as well as the subsequent monitoring period and wholly supersedes the Interim Report dated June 2018.

1.2. SCHEME DESCRIPTION

1.2.1. The scheme involves the construction, operation and maintenance of a new bascule bridge highway crossing linking the areas north and south of Lake Lothing in Lowestoft, hereafter referred to as the Lake Lothing Third Crossing ("the Scheme").

1.2.2. The Scheme would provide a new single-carriageway road crossing of Lake Lothing, consisting of a multi-span bridge with associated approach roads, and would comprise:

- An opening bascule bridge over the Port of Lowestoft, in Lake Lothing;
- On the north side of Lake Lothing, a bridge over Network Rail's East Suffolk Line, and a reinforced earth embankment joining that bridge, via a new roundabout junction, to the C970 Peto Way, between Rotterdam Road and Barnards Way; and
- On the south side of Lake Lothing, a bridge over the northern end of Riverside Road including the existing access to commercial property (Nexen Lift Trucks) and a reinforced earth embankment (following the alignment of Riverside Road) joining this bridge to a new roundabout junction with the B1531 Waveney Drive.

1.2.3. The Scheme would be approximately 1 kilometre long and would be able to accommodate all types of vehicular traffic as well as non-motorised users, such as cyclists and pedestrians.

1.2.4. The opening bascule bridge design would allow large vessels to continue to use the Port of Lowestoft.

1.2.5. A new control tower building would be located immediately to the south of Lake Lothing, on the west side of the new highway crossing, to facilitate the operation of the opening section of the new bascule bridge.

1.2.6. The Scheme would also entail:-

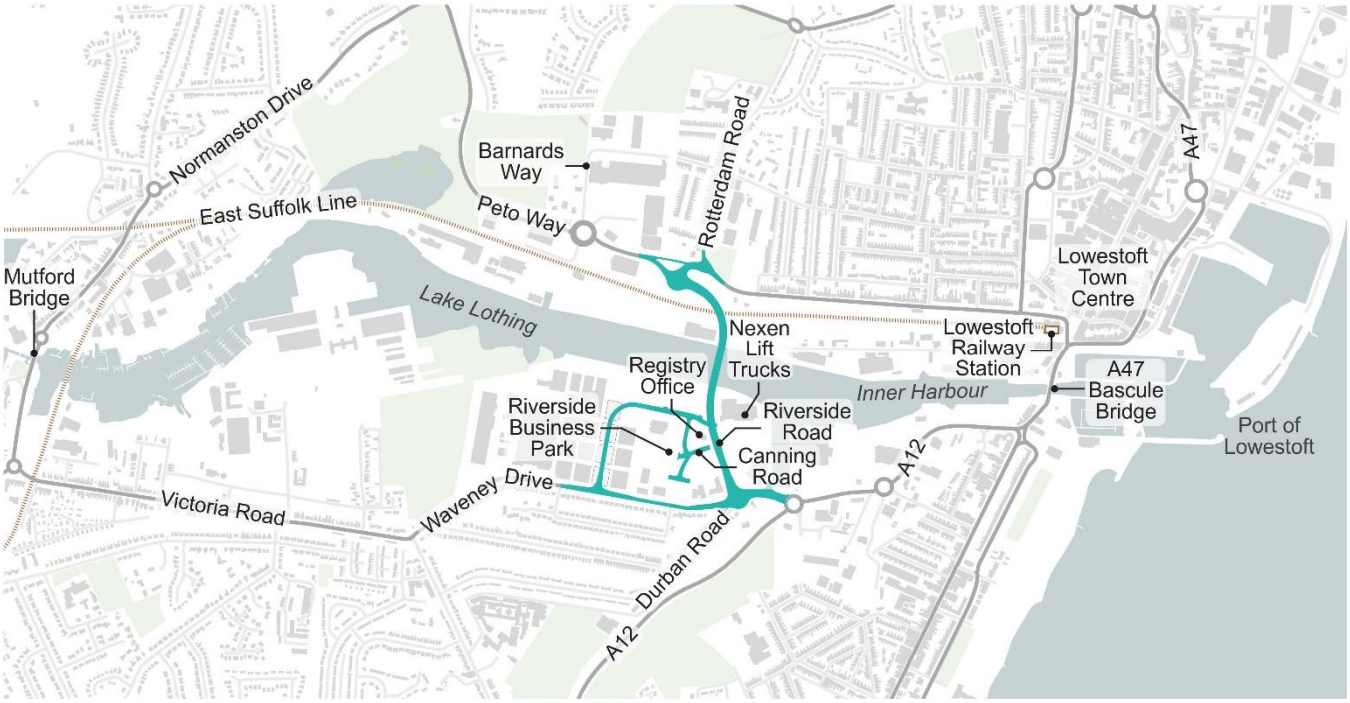
- The following changes to the existing highway network:
  - The closure of Durban Road to vehicular traffic at its junction with Waveney Drive;
  - The closure of Canning Road at its junction with Riverside Road, and the construction of a replacement road between Riverside Road and Canning Road to the west of the Registry Office; and
  - A new access road from Waveney Drive west of Riverside Road, to provide access to property at Riverside Business Park;
  - Improvements to Kimberley Road at its junction with Kirkley Run; and
  - Part-signalisation of the junction of the B1531 Victoria Road / B1531 Waveney Drive with Kirkley Run.

- The provision of a pontoon for use by recreational vessels, located to the east of the new highway crossing, within the Inner Harbour of Lake Lothing; and
- Works to facilitate the construction, operation and maintenance of the Scheme, including the installation of road drainage systems; landscaping and lighting; accommodation works for accesses to premises; the diversion and installation of utility services; and temporary construction sites and access routes.

1.2.7. The works required for the delivery of the Scheme are set out in Schedule 1 to the draft DCO (application document reference 3.1), where they are referred to as "the authorised development", with their key component parts being allocated reference numbers, which correspond to the layout of the numbered works as shown on the Works Plans (application document reference 2.4). The General Arrangement Plans (application document reference 2.2) illustrate the key features of the Scheme.

1.2.8. The figure below provides a diagrammatic representation of the Scheme:

Figure 1 - Location of the Scheme in Lowestoft



1.3. PROJECT SCOPE

1.3.1. To assist in meeting the terms of reference at stated in Section 1.1, the scope of the study reported on in this report comprised:

- Land based site investigation carried out between July 2017 and April 2018.
- Post site works gas and groundwater monitoring and water sampling.
- Laboratory chemical analysis of recovered soil samples and groundwater samples.
- Marine sampling of lake bed sediments and surface water samples from within Lake Lothing.
- Generic quantitative risk assessment (GQRA) of potentially sensitive receptors with respect to ground and groundwater contamination.

- Refinement of the preliminary conceptual site model (CSM) that was developed in the WSP Ltd (formerly Mouchel Ltd) Environmental Desk Study Report (presented as Appendix 12A to the Environmental Statement).
- Piling Works Risk Assessment (presented as Appendix 12C to the Environmental Statement)
- Provision of recommendations with respect to the management and mitigation of potential ground contamination constraints or liabilities which are identified.

1.3.2. A geotechnical assessment has also been undertaken for outline pile foundation and highway design purposes which will be reported separately.

1.4. LEGISLATIVE CONTEXT AND GUIDANCE

1.4.1. The project was undertaken in the legislative and policy context of:

- The Planning Act 2008
- National Policy Statement for National Networks
- National Policy Statement for Ports
- The National Planning Policy Framework (2012)

1.4.2. The following good practice and statutory guidance was considered and the contaminated land assessment was undertaken in general accordance with:

- Environment Agency 'Model Procedures for the Management of Land Contamination', CLR11 (2004)
- British Standard 'Investigation of Potentially Contaminated Sites – Code of Practice', BS EN 10175:2011
- British Standard 'Code of Practice for Ground Investigations', BS 5930:2015
- CIRIA 'Contaminated Land Risk Assessment. A guide to good practice', C552 (2001)
- Defra 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance', PB13735 (2012)
- CIRIA 'Assessing Risks Posed by Hazardous Ground Gases to Buildings', C665 (2007)

1.5. SOURCES OF INFORMATION

1.5.1. The following relevant sources of information were used in the production of this report. Information from these sources relating to the underlying ground conditions has also been included in Sections 2, 3, 4 and 5 of this report, where appropriate:

Table 1-1 - Sources of Information

Source	Report
Reports	Environmental Desk Study Report dated June 2018 (presented as Appendix 12A to the Environmental Statement)
Public Information	British Geological Survey BGS 'Geology of Britain' online viewer. Environment Agency website
Notes:	The report contains British Geological Survey materials ©NERC 2017 and Environment Agency information ©Environment Agency and database right.

2. SITE SETTING

2.1. SITE DESCRIPTION AND CURRENT USE

2.1.1. For the purposes of this report, the site is defined as the order limits as defined in the Application.

2.1.2. The site is currently occupied by highways, vacant land and commercial / industrial businesses. Further details are provided in the Environmental Desk Study Report (presented as Appendix 12A of the Environmental Statement).

2.1.3. Table 2-1 below summarises the site details presented in the Environmental Desk Study Report.

Table 2-1 - Summary of Site Details

Detail	Comment
Site Location	The irregular shaped site is located in the centre of Lowestoft to the north and south of Lake Lothing. The site is bounded to the south by Waveney Drive and to the north by Denmark Road. In the south east, the boundary is marked by the roundabout junction between the A12 and Waveney Drive and also the adjacent dock area. In the south west, the boundary is within a former industrial site immediately to the west of the Waveney District Council offices. In the north east, the boundary is at the end of Commercial Road and in the north west, the boundary is at the roundabout junction between Denmark Road and Peto Way.
National Grid reference	653884, 292755 (centre of the site)
Site Description and Current Use	The southern area of the site comprises highways (including Waveney Drive, Riverside Road and Canning Road); a commercial property, residential properties, hard standing including car parking and areas of derelict land including a dock wall. The northern area of the site comprises highway (including Denmark Road), part of a Wickes DIY store, railway land including track and sidings; hard standing including quayside and areas of derelict land. The centre of the site comprises the Lake Lothing watercourse and docks.
Area	Approximately 21 hectares
Site Setting and Surrounding Area	North; residential properties, small commercial / industrial park and a small play park East; Commercial Park, industrial area associated with the port / quayside, the East Suffolk Rail Lines and residential properties. South; residential properties and a small commercial park. West; derelict land, port / quayside industrial land and commercial properties.
Topography and Ground Cover	The site is generally flat with a slight increase in height at the northern boundary. The ground cover is largely hard standing.
Drainage & Flooding	The Lake Lothing watercourse is recorded as a Primary River and there is a culverted watercourse beneath the south east part of the site.

Detail	Comment
	Much of the site is within the Zone 3 and Zone 2 floodplains. The risk of flooding from the river and the sea varies from high in the centre of the site to medium and low towards the edges of the site.
Embankments & Slopes	None of any significance.
Trees & Vegetation (including invasive species)	The only vegetation recorded during the walkover were landscaping hedges and bushes / scrub on the vacant sites. No invasive species were confirmed during the walkover, although due to access restrictions at some locations, not all of the site was accessible. Ecological surveys have been undertaken and are reported in Chapter 11 of the Environmental Statement.
Foundations, Retaining Walls & Basements Evident on site	There is the significant possibility of foundations, retaining walls and basements being present on site due to former buildings, particularly adjacent to the Lake Lothing.
Visual Observations of Contamination or Ground Subsidence	No visual signs of contamination were noted during the site walkover although the Environmental Desk Study report highlights the adjacent Council offices site was remediated for asbestos prior to construction and the Northumbrian Water offices site had hydrocarbon remediation undertaken, both to the satisfactory of the Regulators.
Geology	The regional BGS 1:50,000 geological map and information available on the BGS on-line Geology of Britain Viewer (www.bgs.ac.uk) indicates the area of the Order Limits occupied by Lake Lothing is underlain by Tidal River or Creek Deposits of clay and silt. Immediately adjacent to the Lake are alluvium deposits comprising clay, silt, sand and gravel. Beyond this towards Denmark Road in the north and Waveney Drive in the south the site is underlain by sand of the Happisburgh Glacigenic Formation. The BGS 1:50,000 geological map indicates that the Crag Group (sand) comprises the underlying geology across the site.
Hydrogeology and Hydrology	Lake Lothing splits the Order Limits in two and is recorded as a Primary River. At this point it is estuarine and is not separated from the sea by any locks. No other surface water features are present. No surface water or potable water abstractions are present within 2km of the Order Limits. The superficial deposits underlying the Order Limits are classified as a Secondary (A) Aquifer with permeable layers. These are defined by the Environment Agency as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The underlying bedrock is classified as a Principal Aquifer. These are defined by the Environment Agency as layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

Detail	Comment
	The nearest active groundwater abstraction is approximately 1,300m to the north west of the Order Limits.

2.2. SITE HISTORY

2.2.1. The following site history summary has been taken from the Environmental Desk Study Report which includes a more detailed site history.

NORTHERN SITE AREA

2.2.2. The earliest map provided by GroundSure dated 1883 indicates the site to be predominantly agricultural land with some small buildings and a railway line adjacent to the waterfront area.

2.2.3. Some industrial development occurred in the early 1900's including a railway and associated land through the centre of the site and timber yard at the western end. However, no significant changes occurred until the 1970's when most of the railways had been dismantled and by 1992, a new road (Peto Way) had been constructed through the site.

SOUTHERN SITE AREA

2.2.4. The earliest map provided by GroundSure dated 1883 indicates the site to be predominantly agricultural land with marsh and mudflats. By the early 1900's, many of the mudflats are no longer marked and formal waterfront wharfs appear to be present in the waterside area. Some industry is present including unlabelled works. By 1926 industrial development including a railway spur line had occurred across a large part of the site. The site remained largely industrial, including canning and processing works, ice works and boatbuilding until circa 2002 when the access roads for Riverside Business Park were constructed.

2.3. SURROUNDING LAND USES

2.3.1. Surrounding the northern site area are;

- The North Quay Retail Park,
- An industrial estate, containing numerous depots and factories,
- Unspecified tanks and depot facilities are recorded on the north shore of Lake Lothing,
- Hopper silos
- Residential housing

2.3.2. Surrounding the southern site area are;

- Unspecified factories or works
- Dock and wharf facilities
- Hopper silos
- Pumping station
- Petrol stations
- Residential housing

2.4. POTENTIAL SOURCES OF CONTAMINATION

ON-SITE CONTAMINATION SOURCES

2.4.1. The following potential historical on-site sources of contamination have been identified with anticipated contaminants derived in accordance with site-specific interpretation of Department of Environment Industry Profiles:

Table 2-2 - Areas of Potential Contamination

APC No.	APC Type	Anticipated Contaminants in Soil & / or Groundwater
APC1	Former railway lines, sidings and depots	Metals and metalloids, cyanides, ammonia, nitrates, sulphates and sulphides involved in a range of chemical processes formerly taking place on site. It is likely these contaminants are present within the soil although some compounds are soluble and therefore may also be present with the groundwater and soil leachate samples. Petroleum hydrocarbons (TPH), PCBs, benzene, toluene, ethylbenzene, xylene (BTEX), polyaromatic hydrocarbons (PAH), Volatile Organic Compounds (VOC) and semi-VOC (SVOC), phenolic compounds, resins arising from fuel spillages and former onsite chemical processes. It is likely these compounds if present will be found within groundwater and leachate samples. Some of the volatile compounds such as solvents may be present as mobile gases. Made ground associated with the development of the site for its former industrial uses resulting in potential ground gas contaminants (methane and carbon dioxide). Ground gases are considered likely in the former landfill areas. Made ground also has the potential to contain asbestos. The presence of buried former structures and foundations may also be a source of contaminants.
APC2	Former timber yard	
APC3	Former ship yards and dock works including above ground storage tanks	
APC4	Former coal yard and depot	
APC5	Former Raglan preservatives and ice works	
APC6	Former allotments	
APC7	Former landfill/refuse tip and spoil areas	
APC8	Former depots	
APC9	Potentially contaminated silts	

OFF-SITE CONTAMINATION SOURCES

2.4.2. Within the surrounding area, the following potential sources of contamination are identified in the GroundSure report (Annex B of the Environmental Desk Study Report) that could migrate onto the site are:

- Former and current shipbuilding and dock works surrounding Lake Lothing
- Former oil mill to the east of the site
- Former electric light works to the north of the site

- Former tram depot to the north of the site
- Former coal yard to the west of the site
- Former creosoting factory to the west of the site
- Former iron works east of the site
- Contaminated silts within Lake Lothing
- Former bus building factory to the north of the site
- Former gasworks to the south east.

3. GROUND INVESTIGATION

3.1. PRELIMINARY CONCEPTUAL SITE MODEL

3.1.1. The preliminary conceptual site model (CSM) from the Environmental Desk Study Report identified a number of potential contaminant sources which are summarised in Section 2.4. The preliminary CSM also identified a number of plausible contaminant linkages (PCLs) that, without necessary protection and/or remediation, could put the following identified receptors at risk of significant exposure:-

- Site users - Future site users, visitors and maintenance workers.
- Adjacent site users - Residents and users of nearby properties
- Controlled waters - Principal and Secondary (A) aquifers and surface watercourses
- On site infrastructure - Buildings, foundations and buried services.
- Marine Ecology - Vertebrates and invertebrates within Lake Lothing

3.2. RATIONALE AND SCOPE

3.2.1. The rationale for the site investigation scope was to provide geotechnical and geo-environmental information for design and to inform the DCO process. The scope was developed to also provide information to refine the preliminary Conceptual Site Model outlined in the Environmental Desk Study Report presented as Appendix 12A to the Environmental Statement.

3.2.2. The main ground investigation works were land based but some water and sediment sampling works were also carried out in Lake Lothing itself and for distinction are referred to as marine investigation works.

3.2.3. Further details on the scope of works are presented in Annex B.

LAND BASED GROUND INVESTIGATION

3.2.4. The land based ground investigation was undertaken by the Applicants appointed contractor, Geosphere Ltd between 24th July 2017 and 25th April 2018. The geo-environmental aspects of the investigation are reported here for the purposes of the design and the DCO process and comprised the following:-

- Cable percussion boreholes
- Machine excavated trial pits
- Window Samples
- Hand dug trial pits / inspection pits
- Installation of gas and groundwater monitoring wells in selected boreholes
- Soil sampling from the boreholes, trial pits and window samples for the purpose of chemical testing
- Gas and groundwater monitoring and groundwater sampling and chemical testing following completion of the intrusive works

3.2.5. In addition to the above, cone penetration testing and CBR (California Bearing Ratio) testing was also undertaken for the purposes of geotechnical assessment and will be reported separately by the WSP Ltd Geotechnical team.

3.2.6. The as-built exploratory hole locations are presented on Drawing 1069948-WSP-ENG-LL-SK-LE-0020 – Sampling Locations Regulations 5(2)(a) Figure 12.2. The table below presents the scope of geo-environmental intrusive works undertaken.

Table 3-1 - Summary of Ground Investigation Intrusive Works

Exploratory Hole Type	Reference	Depth	Purpose
29 Cable Percussion Borehole	BHC	2.9m – 50m	General site conditions and also targeting deeper ground conditions.
17 Machine excavated Trial Pits	TPC	1.5m – 3.2m	General site conditions where deep ground condition information is not required.
14 Window Samples	WSC	0.75m – 5.0m	Window samples were added during the works at locations where boreholes were to be drilled at a later date for the purpose of gaining information from the shallow ground conditions earlier in the programme.
5 Hand Dug Trial Pits	IPC	1.2m - 1.5m	Inspection pit extended from 1.2m depth with hand auger equipment to avoid the use of percussive equipment in areas where buried services were suspected.

3.2.7. The scope of the field works and chemical testing suites are discussed in further detail in Annex B. The findings of the ground investigation are discussed in Sections 4 to 7 and inform the refined conceptual site model which is presented in Section 8.

MARINE BASED SAMPLING

3.2.8. The marine based sampling was carried out by CMS-Geotech Ltd between 9th April 2018 and 23rd April 2018 as a separate contract to the land based ground investigation. This work was primarily to inform the sediment modelling assessment undertaken by WSP Ltd and is reported separately (Appendix 17C to the Environmental Statement), but the following aspects were included to support this Interpretative Environmental Ground Investigation Report for the purposes of assessing whether the lake bed sediments are contaminated and to assess potential offshore or onshore disposal routes for any excavated sediments. The marine sampling comprised the following:-

- Surface water sampling at four locations from Lake Lothing waterbody,
- Sampling of sediments from below the lake bed level at nominal 1m intervals to 4m depth from 12 vibrocore locations,
- 48 grab samples from the top layer of lake bed sediments.

The scope of the marine based sampling works and chemical testing suites are discussed in further detail in Annex B. Factual information provided by CMS-Geotech Ltd comprising chemical test results and vibrocore logs is presented in Annex D. The assessment of the chemical test results is discussed in Section 6 and is used to inform the refined conceptual site model which is presented in Section 7.

4. GROUND CONDITIONS ASSESSMENT

4.1. GROUND CONDITIONS ENCOUNTERED ON-SITE

4.1.1. The exploratory hole locations are presented on Drawing 1069948-WSP-ENG-LL-SK-LE-0020 – Sampling Locations Regulations 5(2)(a) Figure 12.2 presented in Annex A and the exploratory logs are provided in Annex C.

4.1.2. The findings summarised below generally confirm the anticipated strata identified in the Environmental Desk Study Report (presented as Appendix 12A to the Environmental Statement).

MADE GROUND NORTHERN SITE AREA

4.1.3. Made ground was recorded at all exploratory hole locations and varied in thickness from 0.6m to 3.6m, although the base of the made ground in BHC06A was not found at 2.9m depth and may therefore be deeper. The made ground was generally granular and heterogeous in nature and was composed of detritus including concrete, charcoal, clinker, brick, tile, metal (including reinforcing bar), ash, asphalt, glass, wood, soot, pottery and cast iron.

4.1.4. The thickness of made ground varied across the site with no particular areas recording thicker made ground than others. It was expected that the thickest made ground would be encountered closest to the Lake Lothing quay walls where ground levels were expected to have been raised to create the quayside but this was not indicated on the Engineers logs.

MADE GROUND SOUTHERN SITE AREA

4.1.5. Made ground was recorded at all exploratory hole locations and varied in thickness from 0.75m to at least 3.7m, although this same location (BHC13 located close to the southern side of Lake Lothing) recorded possible made ground to in excess of 6.0m depth). The made ground was generally granular and heterogeous in nature and was composed of detritus including concrete, charcoal, clinker, brick, tile, metal (including reinforcing bar), ash, asphalt, glass, wood, soot, pottery and cast iron. Fragments of potential asbestos containing materials were recorded at TPC23 close to the Council offices.

4.1.6. The thickness of made ground varied across the southern site area although made ground was generally thickest closer to the Lake Lothing quay walls where ground levels are expected to have been raised historically to create the quayside.

CONCRETE & UNDERGROUND STRUCTURES

4.1.7. Solid concrete up to at least 0.6m thick (maximum thickness recorded in BHC27 located close to the southern side of Lake Lothing) and asphalt / flexible surfacing up to 0.2m thick was recorded at a number of locations both at and below the surface. BHC101 located close to the southern side of Lake Lothing recorded concrete 2.0m thick where it varied from crumbling degraded concrete to solid layers. Three disused six inch pipes were located in the inspection pit for this borehole at a depth of 0.7m.

4.1.8. A small diameter clay pipe (possibly a redundant land drain) was encountered at WS101 and was infilled with clay with a hydrocarbon odour.

4.1.9. Another redundant pipe was recorded in TPC06 but no details of any infilling were provided.

NATURAL STRATA

Alluvium Deposits

4.1.10. Alluvial deposits have been encountered predominantly to the north of the Lake encountered as both granular and cohesive material.

4.1.11. The Granular Alluvium was generally recorded as dark grey, brown and yellow silty, clayey, gravely fine to medium Sand with a strong natural organic odour. The gravels are described as angular to rounded flints.

4.1.12. The Cohesive Alluvium was generally recorded as dark grey and black sandy and silty Clay with some shell fragments. The material was described to have a strong natural organic odour.

Happisburgh Glacigenic Formation

4.1.13. The Happisburgh Glacigenic Formation was encountered across the entire site, generally as medium dense to dense Sands, flint Gravels and gravelly Sand. At the top of the strata the material is described as being light and pale orange and brown but becomes darker and grey at depth.

4.1.14. Clay banding was encountered within the Sand matrix at varying depth but usually towards the base of the strata. It is generally light to dark grey laminated silty sometimes sandy Clay, with some incidences of flint gravels.

Crag Group

4.1.15. The Crag Group was encountered underlying the Happisburgh Glacigenic Formation across the entire site and generally comprise dense to very dense dark grey medium grained sand with frequent white fine shell fragments, with some fine gravel and occasional clay layers.

VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

4.1.16. The presence of volatile organic compounds was assessed by Geosphere Ltd at each exploratory hole using a Photo-Ionisation Detector (PID). The results are presented on the Engineers logs in Annex C. Most results were zero and the maximum concentration of 486ppm was recorded in WSC05.

All results above 10 ppm are presented in the Table below.

Table 4-1 - Summary of VOC Exceedances >10ppm

Exploratory Hole reference	Approximate Depth (m)	Strata Type	VOC Reading(s) (ppm)
BHC06	0.5	Made ground	122
BHC13	2.0	Made ground	34
	3.0	Made ground	19
BHC17	0.2	Topsoil	12
	0.4	Made ground	23
	2.5	Clay	163

BHC19	2.0	Sand	35	
	3.0	Sand	33	
BHC22	0.3	Made ground	53	
	0.5	Made ground	98	
BHC102	0.3	Concrete	62	
	2.5	Gravel	40	6
	10.5	Sand	33	75
BHC103	4.5	Sand	25	7
	7.0	Sand	13	6
WSC05	2.5	Clay	486	
	3.5	Sand	72	

4.1.17. Other than the man-made detritus recorded within the made ground, visual and olfactory evidence of contamination was recorded by the Geosphere Ltd at the following locations. Further detail is provided on the Engineers logs presented in Annex C.

Table 4-2 - Summary of Visual and Olfactory Evidence of Contamination

Exploratory Hole reference	Comment	Strata Type	Impacted Strata Depth (m bgl)
BHC04	Sulphurous and hydrocarbon odours and black staining.	Made ground	0.6m – 1.3m
BHC06	Hydrocarbon odour and black staining	Possible made ground	0.3m – 1.25m
	Sheen on ground water	Possible made ground	1.0m
BHC13	Hydrocarbon odour and black staining	Made ground and possible made ground	1.2m – 6.0m
BHC101	Hydrocarbon odour	Concrete, made ground and natural sand.	0.2m – 4.0m
	Sheen on groundwater	Made ground	2.1m

Exploratory Hole reference	Comment	Strata Type	Impacted Strata Depth (m bgl)
BHC102	Hydrocarbon odour	Made ground and natural gravel and sand	0.17m - 12.2m
BHC103	Hydrocarbon odour, sheen and staining	Natural sand	1.5m – 3.5m
WSC101	Hydrocarbon odour	Redundant pipe within made ground	0.6m
WSC103	Hydrocarbon odour	Natural sand	2.4m – 4.0m
TPC103	Sulphurous and hydrocarbon odours	Made ground and natural sand	1.2m – 2.2m

4.1.18. From the information presented in the table above, it would appear that the locations exhibiting hydrocarbon odours are located in two distinct areas of the site. One is in the southern part of the site and is located immediately between Riverside Road and Lake Lothing and is the location of the former East Anglia Ice Works, a tyre depot, a cold store and a boat building yard which was located to the east and may have encroached partly onto this area. The other area is in the north of the site, located between the railway line and Denmark Road and is a former coal depot.

4.2. MARINE SEDIMENT

The CMS-Geotech vibrocore logs presented in Annex D indicate that the shallow sediments within Lake Lothing comprise silt between 0.4m and 1.6m thickness overlying sand. Clay, silt and gravel layers were also recorded within the sand.

5. HYDROLOGICAL & HYDROGEOLOGICAL CONDITIONS

5.1. LOCAL HYDROLOGY

SURFACE WATER FEATURES

5.1.1. Lake Lothing splits the site in two and is recorded as a Primary River. The Water Framework Directive Assessment for Lake Lothing presented as Appendix 17A of the Environmental Statement states the following:- '*This estuarine water body is evaluated as having a current overall status of 'Moderate' due to ecological results, based on the 2016 dataset. It has a status of 'poor' for the angiosperm element of the biological results (the cause of this status is unknown) and a status of 'moderate' for dissolved inorganic nitrogen. It has a status of 'Good' for chemical results. It should be noted that this water body catchment is large and encompasses river sub-catchments with differing characteristics, including estuarine and freshwater broads.'*

5.1.2. No other surface water features are present.

SURFACE WATER ABSTRACTIONS & DISCHARGES

5.1.3. No surface water or potable water abstractions are present within 2km of the site.

5.2. HYDROGEOLOGY

GEOLOGY AND AQUIFER STATUS

5.2.1. The superficial deposits underlying the site comprising sand and clay alluvium, and sand and clay of the Happisburgh Formation are classified as a Secondary (A) Aquifer with permeable layers. These are defined by the Environment Agency as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

5.2.2. The underlying sand (with occasional gravel and clay layers) of the Crag Group bedrock is classified as a Principal Aquifer. These are defined by the Environment Agency as layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

GROUNDWATER ABSTRACTIONS

5.2.3. The nearest active groundwater abstraction point is approximately 1,300m to the north west.

GROUNDWATER ENCOUNTERED DURING INVESTIGATION

5.2.4. Ground water was recorded at a number of locations during the ground investigation. The details are summarised in the table below.

Table 5-1 - Summary of Groundwater Strikes During the Ground Investigation

Exploratory Hole Location	Ground Water Level at Strike (mOD)	Strata Type	Observations
BHC03	1.51	Possible Made Ground	-

Exploratory Hole Location	Ground Water Level at Strike (mOD)	Strata Type	Observations
BHC04	0.048	Sand	-
BHC04	-7.152	Sand	Rose to -2.152 after 60 minutes
BHC06	1.416	Possible Made Ground	Sheen on ground water.
BHC06A	1.282	Made Ground	No change after 20 minutes
BHC06B	1.465	Made Ground	No change after 20 minutes
BHC07	1.62	Sand	-
BHC13	1.88	Made Ground	-
BHC17	0.284	Clay	Rose to 1.114m after 20 minutes
BHC101	0.995	Made Ground	Sheen on groundwater.
WSC05	1.213	Sand	-
WSC17	-0.267	Clay	Rose to 0.533m after 10 minutes
WSC19a	0.594	Sand	-
WSC19A(1)	0.298	Sand	-
WSC21	0.725	Sand	-
WSC22	-0.964	Sand	-
WSC23	0.791	Clay	Rose to -0.912m after 15 minutes.
WSC28	-0.902	Possible made ground and sand	-
WSC103	0.375	Sand	-
TPC101	0.912	Made Ground	-
TPC102	1.477	Sand	-
TPC103	1.109	Made Ground	-
TPC02A	1.028	Sand	-
TPC03	1.602	Sand	-
TPC05	1.318 and 0.618	Clay	-
TPC06	0.512	Clay	-

Exploratory Hole Location	Ground Water Level at Strike (mOD)	Strata Type	Observations
TPC07	1.39	Made Ground	-
TPC08	1.065	Made Ground	-
TPC09	1.12	Clay	-
TPC21	1.31 and 0.31	Clay	-

MONITORED GROUNDWATER LEVELS

5.2.5. Monitoring of groundwater levels in relation to Ordnance Datum was undertaken on six occasions following the completion of the intrusive ground investigation works. The details are provided in Annex C and are summarised in Tables 8 and 9 below.

Table 5-2 - Summary of Groundwater Level Monitoring in the North of the Study Area

Stratum	Minimum (mOD)	Maximum (mOD)	Observations
Made Ground	1.002(BHC02)	1.302 (BHC02)	-
Natural Ground	0.58 (BHC07)	1.839 (BHC01)	-

Table 5-3 - Summary of Groundwater Level Monitoring in the South of the Study Area

Stratum	Minimum (mOD)	Maximum (mOD)	Observations
Made Ground	0.628 (BHC14)	1.644 (BHC24 PP)	-
Natural Ground	-1.09 (BHC102)	1.754 (BHC24 GG)	-

HYDRAULIC GRADIENT

5.2.6. The monitoring data appears to indicate the hydraulic gradient is towards Lake Lothing from both the southern study area and the northern study area as would be expected. However, it should be noted that the groundwater monitoring data may be subject to tidal fluctuations which could affect the recorded levels.

6. QUANTITATIVE RISK ASSESSMENT

6.1. INTRODUCTION

6.1.1. In the United Kingdom, the presence of contamination within soil or groundwater at a site is generally only of concern if an actual or potentially unacceptable risk to a sensitive receptor exists.

6.1.2. The risk assessment process begins with screening chemical concentrations in soil or groundwater against conservative screening values, a process called Generic Quantitative Risk Assessment (GQRA). GQRA's are performed to assess the potential risks to human health and controlled waters and to identify the presence of contaminants of concern (CoC), which may require further more detailed assessment.

6.1.3. Annex C presents the chemical test data and Annex F presents the screening spreadsheets.

6.2. HUMAN HEALTH RISK ASSESSMENT

6.2.1. Following the tiered approach which is described in Model Procedures for the Management of Land Contamination (CLR11) published by DEFRA and the Environment Agency, this Section provides a Generic Quantitative Risk Assessment (GQRA) of those contaminant linkages that were determined to be plausible in the refined CSM.

6.2.2. Defra and the EA have published a limited number of Soil Guideline Values (SGVs) for a series of generic land use scenarios which follow the Contaminated Land Exposure Assessment (CLEA) methodology. Where SGVs are not available, WSP has derived a set of Generic Assessment Criteria (GAC) for the CLEA generic land use scenarios using the CLEA Workbook v1.071 Excel modelling tool. The CLEA workbook does not currently have the capacity to derive criteria to assess risks from the inhalation of vapours derived from contaminants dissolved in groundwater. Therefore, a set of groundwater GACs has also been derived using the Johnson & Ettinger (J&E) approach.

6.2.3. The chemical test results have been assessed against screening values for both commercial / industrial and public open space land use scenarios. Further details in the methodologies adopted by WSP Ltd are provided in Annex E. These land use scenarios are also defined in the Environment Agency document 'Updated Technical Background to the CLEA Model' Report SC050021/SR3, January 2009.

6.2.4. These two scenarios are most appropriate for the proposed highway and landscaping end uses, although both are considered to be reasonably conservative as it is unlikely anyone will be on-site for the duration that either scenario assumes.

6.2.5. The soil chemical data has been compared against end use GAC's for a conservative 1% soil organic matter (SOM) content. The average SOM concentration is 1.48% and therefore the nearest appropriate concentration is 1%. Samples that exceed the screen are identified as contaminants of concern (CoC) and are carried forward for further discussion.

6.2.6. For an initial assessment, the data has been split into made ground and natural ground averaging areas and then split again into northern site area and southern site area.

6.2.7. For some CoC, direct contact will be the dominant pathway for exposure. Due to the unknown nature of soil excavation and reuse at this stage of the design, it is possible that materials from any depth could be excavated and placed at or near the surface in the final design. In order to support

with development options, human exposure to all unsaturated soils, irrespective of depth, was assumed possible for the purpose of this assessment. This will maximise the information available to the design team on the suitability of all unsaturated material and can support with their materials management options.

6.2.8. Potential risks to human health from soil gases are assessed in Section 6.4.

ASSESSMENT OF RESULTS – PUBLIC OPEN SPACE LAND USE SCENARIO

6.2.9. Hydrocarbon odours and / or sheens were identified at a number of locations during the ground investigation as detailed in Section 4.2.10, Table 5 above. All except two of these locations were targeted for chemical testing and none of the results exceed the hydrocarbon GAC's.

Natural Ground (Southern Site Area)

6.2.10. The following contaminants of concern (CoC) have been identified from the screening of natural ground in the southern site area:-

- Alkaline pH at one location – BHC20 - 10.4 compared to a screening value of 9.5,
- Acid pH at one location – BHC26 - 4.8 compared to a screening value of 5.5.

Natural Ground (Northern Site Area)

6.2.11. No CoC were identified in natural ground within the northern site area.

Made Ground (Southern Site Area)

6.2.12. The following contaminants of concern (CoC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample (and potential asbestos is recorded on the Engineers logs in TPC23):-
  - BH102 at 0.3m depth as fibres and clumps of chrysotile.
- Benzo-a-pyrene at two locations – WSC23 (26mg/kg) and BHC31 (12mg/kg) exceeded the GAC of 11mg/kg.
- Alkaline pH at five locations – TPC21 (9.6), BHC102 (11.2), BHC101 (10.3) and WSC16 (10.5) exceeded the GAC of 9.5,
- Lead at one location – BHC31 – 1500mg/kg compared to a screening value of 808mg/kg.

Made Ground (Northern Site Area)

6.2.13. The following contaminants of concern (COC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample:-
  - TPC02 at 0.3m depth as cement bound chrysotile,
- Benzo-a-pyrene at one location – IPC01 (12mg/kg compared to a GAC of 11mg/kg,
- Alkaline pH at six locations – TPC101 (9.9), TPC04 (9.8), BHC02 (11), TPC02 (11.8), BHC08 (10.10) and BHC10 (10) values exceeded the GAC of 9.5.

6.2.14. Hydrocarbon odours and / or sheens were identified at a number of locations during the ground investigation as detailed in Section 4.1.17, Table 6 above. All except two of these locations were targeted for chemical testing and none of the results exceed the hydrocarbon GAC's.

Natural Ground (Southern Site Area)

6.2.15. The following contaminants of concern (CoC) have been identified from the screening of natural ground in the southern site area:-

- Alkaline pH at one location – BHC20 - 10.4 compared to a screening value of 9.5,
- Acid pH at one location – BHC26 - 4.8 compared to a screening value of 5.5.

Natural Ground (Northern Site Area)

6.2.16. No CoC were identified in natural ground within the northern site area.

Made Ground (Southern Site Area)

6.2.17. The following contaminants of concern (CoC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample (and potential asbestos is recorded on the Engineers logs in TPC23):-
  - BH102 at 0.3m depth as fibres and clumps of chrysotile.
- Alkaline pH at five locations – TPC21 (9.6), BHC102 (11.2), BHC101 (10.3) and WSC16 (10.5) exceeded the GAC of 9.5,
- Lead at one location – BHC31 – 1,500mg/kg compared to a screening value of 1,390mg/kg.

Made Ground (Northern Site Area)

6.2.18. The following contaminants of concern (COC) have been identified from the screening of made ground in the southern site area:-

- Asbestos was recorded by the chemical testing laboratory in one sample:-
  - TPC02 at 0.3m depth as cement bound chrysotile,
- Alkaline pH at six locations – TPC101 (9.9), TPC04 (9.8), BHC02 (11), TPC02 (11.8), BHC08 (10.10) and BHC10 (10) values exceeded the GAC of 9.5.

6.3. CONTROLLED WATERS RISK ASSESSMENT

6.3.1. The generic controlled waters risk assessment was conducted in accordance with the principles of the Environment Agency publication 'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination' 2006 (EA 2006) and the 'prevent and limit' approach of the Water Framework Directive (2000/60.EC). Generic controlled waters risk assessments compare directly measured concentrations with standard assessment criteria. In this case the following assessments were undertaken:

- Level 1 - evaluates the concentrations of chemicals within the pore water in the unsaturated zone of source area soil, in this case soil leachate analysis/using theoretical calculations.

- Level 2 - evaluates the concentrations of chemicals within the saturated zone immediately underlying a source area i.e. taking dilution and attenuation into account, in this case groundwater analysis.

6.3.2. Appropriate Water Quality Standards (WQS) are selected based on both a hierarchy of relevance to England and Wales and the receptor. In this case, the controlled water receptors identified in the CSM are:-

- Lake Lothing surface watercourse;
- The underlying Secondary A Aquifer within the superficial deposits;
- The underlying Principal Aquifer within the bedrock.

6.3.3. The following hierarchies of WQS were therefore considered to be appropriate:

Aquifers

- UK Drinking Water Quality Standards (DWS) from The Water Supply (Water Quality) Regulations 2000 (amended 2004)
- World Health Organisation Guidelines for Drinking Water Quality, Fourth Edition, Volume 1, (2011)
- World Health Organisation Petroleum Products in Drinking Water (2008)

Surface Waters

- Environmental Quality Standards (EQS) from The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

6.3.4. Screening spreadsheets are presented in Annex F.

RISKS TO AQUIFER

Soil Leachability Testing

6.3.5. Screening of soil leachate test results from the ground investigation identified the following minor WQS exceedances:-

- Alkaline pH – two locations - BHC02 (pH11) and BH102 (pH10.4) compared to a WQS of 10,
- Arsenic – one location – BHC05 (25µg/l) compared to a WQS of 10µg/l,
- Chromium – one location – BHC08 (52µg/l) compared to a WQS of 50µg/l,
- Nickel – one location – BHC08 (65µg/l) compared to a WQS of 20µg/l,
- Lead – three locations, BHC08 (19µg/l), IPC01 (25µg/l) and BH102 (14µg/l) compared to a WQS of 10µg/l,
- Aliphatic hydrocarbons C12-C16 – BHC19 (310µg/l) compared to a WQS of 300µg/l,
- Aromatic hydrocarbons C12-C16 – BHC13 (110µg/l) compared to a WQS of 90µg/l.

6.3.6. It should be noted that the limits of detection for benzo(a)pyrene and total PAH are in excess of the screening values.

Groundwater Testing

6.3.7. Samples of groundwater were collected from across the monitoring installations on six occasions post-siteworks. Two monitoring installations were also sampled and tested during the site investigation in January 2018. The table below provides a summary of the WQS exceedances relating to the risk to the aquifer.

Table 6-1 - Groundwater Exceedances – Risk to Aquifer

Determinand	WQS (µg/l unless stated otherwise)	January 2018 (during site works)	Visit 1 – 9th – 14th May 2018	Visit 2 – 24th – 30th May 2018	Visit 3 – 11th – 12th June 2018	Visit 4 – 25th – 26th June 2018	Visit 5 – 10th- 11th July 2018	Visit 6 – 22nd – 24th July 2018
Alkaline pH	>10	-	BHC01 (13.2) BHC09 (11.7) BHC14 (12.8) BHC24p (12.4) BHC24GG (12.3)	BHC01 (12.6) BHC24p (11.8) BHC24GG (11.4)	BHC01 (12.2) BHC24p (11.2)	BHC01 (12.5) BHC27 (10.4)	BHC01 (11.2)	BHC01 (10.7)
Sulphate	250	-	BHC01 (350)	-	-	-	-	-
Arsenic	10	-	BHC27 (17)	-	-	-	BHC102 (11)	-
Chromium	50	-	BHC01 (160)	-	-	-	-	-
Nickel	20	-	BHC01 (43) BHC24p (77)	BHC01 (30) BHC24p (41)	BHC01 (38) BHC24p (41)	BHC01 (43)	BHC01 (58) BHC09 (26)	BHC02 (40)
Lead	10	-	-	-	BHC102 (13)	-	-	-
TPH aromatic C10-C12	90	-	-	-	-	BHC08 (140)	-	-
Cyanide (Free / Total)	0.05mg/l	-	-	-	-	-	-	0.07mg/l

The concentration of each exceedance is included in brackets after the location of the exceedance.

6.3.8. It should be noted that the limits of detection for total PAH and benzo(a)pyrene are in excess of the screening values.

RISKS TO LAKE LOTHING SURFACE WATER

Soil Leachability Testing

6.3.9. Screening of soil leachate test results from the ground investigation identified the following WQS exceedances:-

- Cadmium – one location. 0.21µg/l compared to a WQS of 0.2µg/l,
- Copper – twelve locations. 4.2 µg/l to 32 µg/l compared to a WQS of 3.76 µg/l,
- Mercury – two locations. 0.52 µg/l to 0.53µg/l compared to a WQS of 0.07µg/l,
- Nickel – One location. 65µg/l compared to a WQS of 8.6µg/l,
- Lead – 16 locations. 1.3µg/l to 25µg/l compared to a WQS of 1.3µg/l,
- Zinc – four locations. 7.8µg/l to 190µg/l compared to a WQS of 6.8µg/l,
- Anthracene – two locations. 0.15µg/l and 2.8µg/l compared to a WQS of 0.1µg/l,
- Fluoranthene – two locations. 2.2µg/l and 7.6µg/l compared to a WQS of 0.0063µg/l,

6.3.10. It should be noted that the limits of detection for cyanide, mercury, hexavalent chromium, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and benzo(ghi)perylene are in excess of the screening values.

Surface Water Sampling

6.3.11. The surface water sampling undertaken by CMS-Geotech at four locations within Lake Lothing on 19th April 2018 (shown on Drawing 1069948-WSP-EGN-LL-C19-SK-LE-000X presented in Annex D) identified the following contaminants in excess of the relevant WQS:-

- Zinc – exceedances in all four samples with concentrations varying from 8.88µg/l to 26.8µg/l compared to a WQS of 6.8µg/l.

6.3.12. Lake Lothing is an operating port and it is probable that these results can be attributed to the presence of sacrificial zinc anodes on the hulls of ships using the port.

6.3.13. It should be noted that the limits of detection for both cadmium and chromium are in excess of the screening values.

Groundwater Testing

6.3.14. Samples of groundwater were collected from across the monitoring installations on six occasions post-siteworks. Two monitoring installations were also sampled and tested during the site investigation in January 2018. The table below provides a summary of the WQS exceedances relating to the risk to surface water.

Table 6-2 - Groundwater Exceedances – Risk to Lake Lothing Surface Water

Determinand	WQS (µg/l unless stated otherwise)	January 2018 (during site works)	Visit 1 – 9th – 14th May 2018	Visit 2 – 24th – 30th May 2018	Visit 3 – 11th – 12th June 2018	Visit 4 – 25th – 26th June 2018	Visit 5 – 10th- 11th July 2018	Visit 6 – 22nd – 24th July 2018
Copper	3.76	BHC102 (8.6)	BHC01 (61) BHC09 (4.8) BHC14 (23) BHC24p (37)	BHC01 (36) BHC24p (19)	BHC01 (38) BHC07 (4.3) BHC24p (5)	BHC01 (53) BHC02 (11) BHC08 (5.2) BHC27 (7.9)	BHC01 (50) BHC02 (3.9) BHC09 (5.4)	BHC01 (36) BH02 (4.3) BHC24GG (5.9)
Nickel	8.6	BHC102 (9.9)	BHC01 (43) BHC08 (16) BHC09 (11) BHC14 (19) BHC24p (77)	BHC01 (30) BHC08 (19) BHC09 (8.7) BHC24p (41)	BHC01 (38) BHC08 (9.4) BHC24p (41)	BHC01 (43) BHC08 (11) BHC09 (13)	BHC01 (58) BHC08 (11) BHC09 (26)	BHC01 (40) BHC09 (9)
Zinc	6.8	BHC02 (12) BHC102 (24)	BHC01 (17) BHC07 (7) BHC09 (7.6) BHC27 (9)	BHC02 (11)	BHC01 (11) BHC07 (18) BHC27 (22)	BHC01 (19) BHC02 (23) BHC08 (10) BHC27 (13)	BHC01 (8.6) BHC02 (18) BHC08 (13) BHC27 (13)	BHC02 (16)
Lead	1.3	-	BHC01 (5.2) BHC14 (1.8)	BHC01 (3.8)	BHC01 (5.5) BHC02 (1.6) BHC07 (8.4) BHC09 (1.8)	BHC01 (4.6)	BHC01 (3.5)	BHC01 (2.5) BHC02 (2.5)

Determinand	WQS (µg/l unless stated otherwise)	January 2018 (during site works)	Visit 1 – 9th – 14th May 2018	Visit 2 – 24th – 30th May 2018	Visit 3 – 11th – 12th June 2018	Visit 4 – 25th – 26th June 2018	Visit 5 – 10th- 11th July 2018	Visit 6 – 22nd – 24th July 2018
					BHC102 (13)			
Hexavalent chromium	0.6	-	BHC01 (160)	BHC01 (40)	-	-	-	-
Mercury	0.07	-	-	BHC24p (0.68)	-	-	-	BHC02 (0.64)
Cyanide (Free / Total)	0.001mg/l	-	-	-	-	-	-	BHC02 (0.07mg/l)

6.3.15. It should be noted that the limits of detection for cyanide, mercury, hexavalent chromium, fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene, total phenol, 2,4-dichlorophenol and pentachlorophenol are in excess of the screening values.

DISCUSSION

6.3.16. There is some olfactory/ visual evidence of the presence of hydrocarbons in the vicinity of the exploratory holes CPTC13, BHC13, BHC101, BHC102, BHC103 and WSC103 near the southern bank of Lake Lothing (and in a number of other isolated locations). In addition, there are some associated VOC readings (identified using a PID meter during ground investigation) and minor theoretical hydrocarbon exceedances in soil leachate screening values.

6.3.17. Sampling of groundwater from monitoring well installations (adopting best practice of purging) within adjacent boreholes (BHC102, BHC14 and BHC27) do not show any exceedances of groundwater screening values for hydrocarbons. It is therefore concluded that although there is some evidence of hydrocarbon presence in a number of locations on site, particularly near the southern bank of Lake Lothing, the analysis of soil, soil leachate and groundwater samples identify that the concentrations are not significant. It is possible that minor spillages have occurred in the past or that any more significant spillages have dispersed with time due to the generally permeable nature of the sub-strata on site.

6.3.18. There is some evidence of chromium contamination impacting shallow ground water within made ground in BHC01 on two consecutive monitoring visits (9th May and 24th May 2018). In isolation, these exceedances could be considered potentially significant. However, the subsequent four monitoring visits at this location recorded hexavalent chromium less than the limit of detection and total chromium reducing from 14µg/l to 4.1µg/l (all less than the screening values).

BHC01 is located in the north west corner of the site and deep excavations / piled foundations are unlikely to occur in this area. No other locations including those closest to BHC01 recorded exceedences for either chromium or hexavalent chromium indicating an ongoing unacceptable risk to controlled waters is considered unlikely. No obvious sources for the hexavalent chromium have been identified in the soil testing. Made ground is 1m thick in this area and the exceedences are in the shallow ground water within the shallow sand strata. Based on the current layout, the made ground is likely to be excavated to facilitate construction of the highway which is likely to remove the source if one is present in the made ground. Presence of the highway hard standing is likely to reduce rainfall percolation if the source is leachable.

6.4. GROUND GAS ASSESSMENT

RESULTS

6.4.1. A total of six rounds of ground gas monitoring have been undertaken by Geosphere Ltd on the following dates:-

- 9th to 14th May 2018,
- 23rd to 24th May 2018,
- 11th to 12th June 2018,
- 25th to 26th June 2018,
- 10th to 11th July 2018,
- 23rd to 25th July 2018

6.4.2. A control building will be constructed as part of the bridge and therefore this gas assessment will inform the design of that building.

6.4.3. Atmospheric pressure over the six monitoring visits varied between 1006mb and 1030mb. The reading for BHC01 of 1002mb is believed to be a typographical error as all except one location has atmospheric pressure recorded between 1021mb and 1025mb during the same monitoring visit (visit 2). Atmospheric pressure trends were rising, falling and steady on two monitoring occasions each. The results of the gas monitoring are presented in Annex C.

6.4.4. Table 9 presents Gas Screening Values (GSV) which have been calculated in accordance with C665 for each gas monitoring well.

Table 6-3 - Summary of Ground Gas Monitoring Results

Exploratory Hole	Max Flow Rate (lhr-1)	Max Methane (% v/v)	Max Carbon Dioxide (% v/v)	Methane GSV	Carbion Dioxide GSV
BHC01	0.9	<0.1	0.5	0.0009	0.0045
BHC02	Monitoring data from this installation has been excluded from the assessment due to the installation response zone being screened across both the Made Ground and underlying natural Sand.				
BHC07	*7.4 (recorded at start)*	0.1	0.7	*0.0074*	*0.0518*
	Maximum steady flow of 0.1			0.0001	0.0007
BHC08	*5.9 (recorded at start)*	<0.1	0.1	*0.0059*	*0.0059*
	Maximum steady flow of 2			0.002	0.002
BHC09	*1.5 (recorded at start)*	0.1	0.4	*0.0015*	*0.006*
	Maximum steady flow of 1.1			0.0011	0.0044
BHC14	0.5	<0.1	<0.1	0.0005	0.0005
BHC24(P)	Monitoring data from this installation has been excluded from the assessment due to the installation response zone being screened across both the Made Ground and underlying natural Sand.				
BHC24(GG)	0.8	<0.1	4.6	0.0008	0.0368
BHC27	*3.8 (recorded at the start)*	<0.1	<0.1	*0.0038*	*0.0038*

Exploratory Hole	Max Flow Rate (lhr-1)	Max Methane (% v/v)	Max Carbon Dioxide (% v/v)	Methane GSV	Carbion Dioxide GSV
	Maximum steady flow of 1.2			0.0012	0.0012
BHC102	*-5.6 (recorded at start)*	0.8	0.8	*0.0448*	*0.0448*
	Maximum steady flow of -2.4			0.0192	0.0192

6.4.5. Based on the maximum steady flows, the GSV ranged between 0.0001 and 0.0368. All monitoring wells are therefore classified as Characteristic Situation 1 indicating very low risk from ground gases. It is therefore unlikely that an specialist gas protection measure will be required in the control building over and above standard floor slab construction.

6.4.6. It should be noted that where the maximum flow was recorded at the start of the monitoring (italics in the table above), the GSV ranged from 0.0015 to 0.0518, which does not change the Characteristic Situation.

6.5. MARINE SEDIMENT SAMPLING

6.5.1. The chemical test results from the sediment grab samples and the vibrocore sediment samples have been assessed against the CEFAS (Centre for Environment, Fisheries and Aquaculture Science) criteria for offshore disposal. In addition, the vibrocore samples were also subjected to waste acceptance criteria (WAC) testing to assess potential onshore disposal routes.

CEFAS ASSESSMENT

6.5.2. The tables in Annex F presents a comparison of the sample results against the current CEFAS Action Levels, (detailed on the table) and was undertaken to establish the overall concentrations of contamination present.

6.5.3. The action levels stated are not ‘pass/fail’ criteria but, in general, contaminant levels below action level 1 are considered unlikely to influence a decision by the MMO on dredge disposal, pursuant to the Deemed Marine Licence (DML). Dredged material with contaminant levels above action level 2 is generally considered unsuitable for sea disposal. Dredged material with contaminant levels between action levels 1 and 2 may require further testing pursuant to the operation of the DML.

6.5.4. Of the 12 grab samples, 11 showed levels of trace metal contaminants for at least one determinant above the CEFAS Action Level 1 values, the most common contaminant being nickel. No samples had levels above the CEFAS Action Level 2 for any determinant.

6.5.5. Of the 32 vibrocore samples, 10 showed levels of trace metal contaminants for nickel, cadmium and arsenic above the CEFAS Action Level 1 values, the most common contaminant being nickel. No samples had levels above the CEFAS Action Level 2 for any determinant.

6.5.6. It is therefore considered that the sediments are likely to be suitable for offshore disposal subject to approval by the MMO pursuant to the DML. The sediments are also considered unlikely to have an unacceptable impact from a contamination perspective if they are mobilised during and / or after construction.

WASTE ACCEPTANCE CRITERIA ASSESSMENT

6.5.7. Waste Acceptance Criteria (WAC) testing of the vibrocore samples indicates that most samples pass the inert waste criteria but a few fail the inert, non-hazardous and hazardous criteria.

6.5.8. If onshore disposal of excavated sediment is considered at the construction stage, further assessment will be required once the sediments have been excavated and additional pre-treatment is likely to be required to reduce the moisture content prior to acceptance for disposal at a suitably licenced landfill.

6.6. PILING RISK ASSESSMENT

6.6.1. A Piling Works Risk Assessment, reference 1069948-WSP-EGT-LL-RP-LE-0003 has been undertaken by WSP in accordance with the following Environmental Agency guidance and is presented as Appendix 12C to the Environmental Statement;-

- Piling in layered ground: risks to groundwater and archaeology. Environment Agency (October 2006), Science Report SC020074/SR;
- Piling into contaminated sites. Environment Agency National Groundwater and Contaminated Land Centres (February 2002); and
- Piling and penetrative ground improvement methods on land affected by contamination: guidance on pollution prevention. Environment Agency (May 2001).

7. WASTE ASSESSMENT

7.1.1. A waste classification hazardous properties assessment has been carried out in accordance with the WM3 Technical Guidance, to determine if the site soils contain any hazardous properties and may therefore require disposal as hazardous waste.

7.1.2. The soil chemical test results have been assessed and identified hazardous properties in 7 samples;-

- TPC02 at 0.3m,
- BHC04 at 0.9m,
- WSC23 at 0.5m,
- BHC27 at 0.6m,
- BHC101 at 2.1m,
- BHC101 at 3.0m,
- BHC31 at 0.4m.

7.1.3. All of the above are in made ground except BHC101 which is in natural ground and exhibits hazardous properties due to elevated petroleum hydrocarbons.

7.1.4. This material may require offsite disposal as hazardous waste under the European Waste Catalogue (EWC) as '17 05 03' Soil and stones containing dangerous substances.

7.1.5. No other material was classified as containing hazardous properties. Therefore, the remaining material would be classified under the EWC as '17 05 04 Soil and stones other than those mentioned in 17 05 03'.

7.1.6. Waste acceptance criteria (WAC) analysis has been carried out on a number of samples in order to assess the acceptability to landfill should offsite disposal be required. Two samples recording hazardous properties were also subjected to WAC testing and the results indicate these materials are suitable for hazardous waste disposal. The other WAC test results indicate that most samples meet the criteria for inert waste disposal but 4 samples fail the inert criteria and will require disposal as non-hazardous waste;-

- BHC05 at 0.6m – fails the inert criteria for chloride, sulphate and total dissolved solids,
- WSC14 at 1.7m – fails the inert criteria for PAH and antimony,
- BHC32 at 0.6m – fails the inert criteria for total organic carbon,
- BHC08 at 2.6m – fails the inert criteria for chromium and selenium.

7.1.7. The construction Contractor will need to make their own assessment of the waste classifications.

8. REFINED CONCEPTUAL SITE MODEL

8.1. INTRODUCTION

8.1.1. This Section provides a refinement of the preliminary CSM from the Environmental Desk Study Report (presented as Appendix 12A to the Environmental Statement). From the information identified during the ground investigation and the risk assessments detailed in Section 6 above, plausible source-pathway-receptor contaminant linkages have been refined in line with industry good practice (principally CLR11).

8.1.2. The refined CSM provides an updated understanding of the site based on the findings of the site investigation and analytical results and draws on the ground, hydrogeological and contamination models which are presented in Sections 4, 5 and 6. It has been used to inform the quantitative risk assessments undertaken in Section 6 in the context of a future land use comprising a new highway layout, bridge and associated landscaping and hard standing.

8.2. PLAUSIBLE CONTAMINANT LINKAGES

8.2.1. Table 10 provides a revised evaluation of the potential contaminant linkages that were considered to be plausible for the future use of the Site. It uses the current site investigation findings to refine the Phase 1 assessment.

Table 8-1 - Summary of Plausible Contaminant Linkages

Potential Contaminants	Potential Pathways	Potential Receptors	Comments
Free asbestos fibres in made ground soil	Inhalation of asbestos fibres.	Future site users Future maintenance workers	Extensive hard standing will restrict exposure following construction but exposure during construction and during maintenance works cannot be discounted. The presence of asbestos elsewhere within the made ground cannot be discounted therefore if made ground materials are placed in landscaping areas, a capping layer will also need to be considered to minimise the risk to site users and adjacent site users from inhalation of fibres.
Contaminants in soil	Dermal contact, ingestions and inhalation of contaminated made ground, soil particles and fugitive dust.	Future site users Future maintenance workers	Extensive hard standing will restrict exposure at most locations except where landscaping is proposed. Detected potential contaminants limited to benzo-a-pyrene, pH and lead.
Leachable contaminants and contaminants in groundwater	Vertical leaching from impacted soil and lateral migration of impacted groundwater	Superficial geology Secondary (A) aquifer and bedrock Principal aquifer.	Shallow groundwater samples appear to have been impacted slightly by metals but this does not appear to have been replicated in the deeper groundwater samples although some minor impact has been identified.

Potential Contaminants	Potential Pathways	Potential Receptors	Comments
	derived from on-site sources.	Lake Lothing surface water	There is a theoretical risk to surface waters from leachable contaminants in soil including minor hydrocarbon exceedances. Extensive hard standing will limit rainfall percolation and leachate potential and the identified exceedances of the WQS criteria are generally not significantly elevated. Whilst a contaminant linkage is considered likely to exist, an unacceptable risk to controlled waters is considered unlikely

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. GROUND CONDITIONS

9.1.1. The ground investigation confirmed the anticipated geology of made ground overlying alluvial deposits (sand and clay), sand with clay banding of the Happisburgh Formation and sand (with clay layers) of the Crag Group.

9.1.2. Made ground was recorded at all exploratory hole locations and varied in thickness from 0.75m to at least 3.7m, although possible made ground was recorded to in excess of 6.0m depth at one location. The made ground was generally sand and gravel and heterogeneous in nature.

9.1.3. The thickness of made ground varied across the site. In the southern site area, with no particular areas recording thicker made ground than others.

9.1.4. Solid concrete at the surface up to at least 0.6m thick was recorded at a few locations, although a 2m thick layer of crumbling degraded concrete was also encountered at one location. This is not across a large area and is not considered to be a significant constraint to construction.

9.1.5. Two small diameter redundant pipes were recorded, one infilled with clay which recorded a hydrocarbon odour.

9.1.6. Other than the man-made detritus recorded within the made ground, visual and olfactory evidence of contamination was recorded at a number of locations as hydrocarbon odour, sulphurous odour or hydrocarbon sheen.

9.1.7. Fragments of potential asbestos containing materials were recorded at one location close to the Council offices.

9.1.8. The ground investigation confirmed the presence of shallow groundwater which is likely to be in continuity with the Lake Lothing surface water body.

9.2. ENVIRONMENTAL / CONTAMINATION ASSESSMENT

9.2.1. The following contamination issues have been identified;-

- In addition to potential asbestos recorded on the Engineers logs at one location, it was also recorded in two made ground soil samples. The potential for more asbestos containing materials to be present within made ground materials cannot be discounted and the construction Contractor should take necessary precautions to protect their staff, site users and adjacent site users as set out in the interim CoCP.
- Natural ground within the southern site area recorded exceedances of the human health GAC values for both public open space and commercial / industrial end use screening values for alkaline pH at one location and acid pH at two locations.
- Natural ground within the northern site area did not record any exceedances of the human health GAC values for either a public open space or commercial / industrial end use.
- Made ground within the southern site area recorded exceedances of the human health GAC values for both public open space for benzo-a-pyrene (two locations) and for both a public open space and commercial / industrial end use for alkaline pH (five locations) and lead (one location).
- Made ground within the northern site area recorded exceedances of the human health GAC values for a public open space end use for benzo-a-pyrene (one location) and for both a public

open space and commercial / industrial end use for alkaline pH (six locations) and lead (one location).

- The human health exceedances recorded are not considered likely to constrain a major development scheme of this type and can be managed through placement of an inert subsoil and topsoil cap within any landscaping areas. The identified exceedances are of a low magnitude and it is considered that they can be managed by a competent Contractor using good construction techniques and standard hygiene practices during the construction works.
- Surface water samples from Lake Lothing have identified minor exceedances of the EQS screening value for zinc.
- Groundwater samples have identified generally low exceedances of both the EQS and DWS screening values for a number of determinants. Elevated exceedances of the EQS and DWS for hexavalent chromium and chromium respectively in the first two full monitoring visits post site works were not replicated in the subsequent four visits.
- Risks to controlled waters are therefore considered to be relatively low although there is some evidence of impact to groundwater. Whilst a contaminant linkage is considered likely to exist, an unacceptable risk to controlled waters is considered unlikely over the long term.
- The gas monitoring data has not recorded concentrations that require specific gas protection measures over and above standard construction techniques for the proposed control building.
- Marine sediment sampling undertaken within Lake Lothing did not identify any sediments with contaminant concentrations above the CEFAS Level 2 action level. It is therefore considered that marine sediments within Lake Lothing are unlikely to pose an unacceptable risk to the marine environment if disturbed and transported to other areas of the Lake during construction. It is also considered that excavated sediments are suitable for offshore disposal in accordance with a suitable licence.

9.3. OUTLINE REMEDIAL MEASURES

9.3.1. Potential risks to future site users from asbestos within made ground has been identified and the possibility of made ground at the site containing further asbestos cannot be ruled out. Depending upon the final design and working methods, further sampling and assessment at these locations may need to be undertaken by the construction Contractor and if necessary, consideration should be given to excavating and removing this material from site.

9.3.2. Other potential human health risks were identified for a commercial / industrial end use, but these are mitigated to acceptable levels where construction of the road will break the pathway. However, in areas where landscaping is proposed, if made ground is reused, it is considered that placement of an inert subsoil and topsoil capping underlain by a geotextile (to delineate the made ground capping interface and to minimise mixing of the soils) will be sufficient to minimise the risks to site users and adjacent site users. Discussion with the Regulators at detailed design stage will be required to agree the exact scope of any capping.

9.3.3. There is some olfactory/ visual evidence of the presence of hydrocarbons near the southern bank of Lake Lothing (and in a number of other isolated locations). However, sampling of groundwater from monitoring well installations within adjacent boreholes does not show any exceedances of groundwater screening values for hydrocarbons. It is therefore concluded that although there is some evidence of hydrocarbon presence in a number of locations on site, particularly near the southern bank of Lake Lothing, the analysis of soil, soil leachate and groundwater samples suggest that the concentrations are not significant.

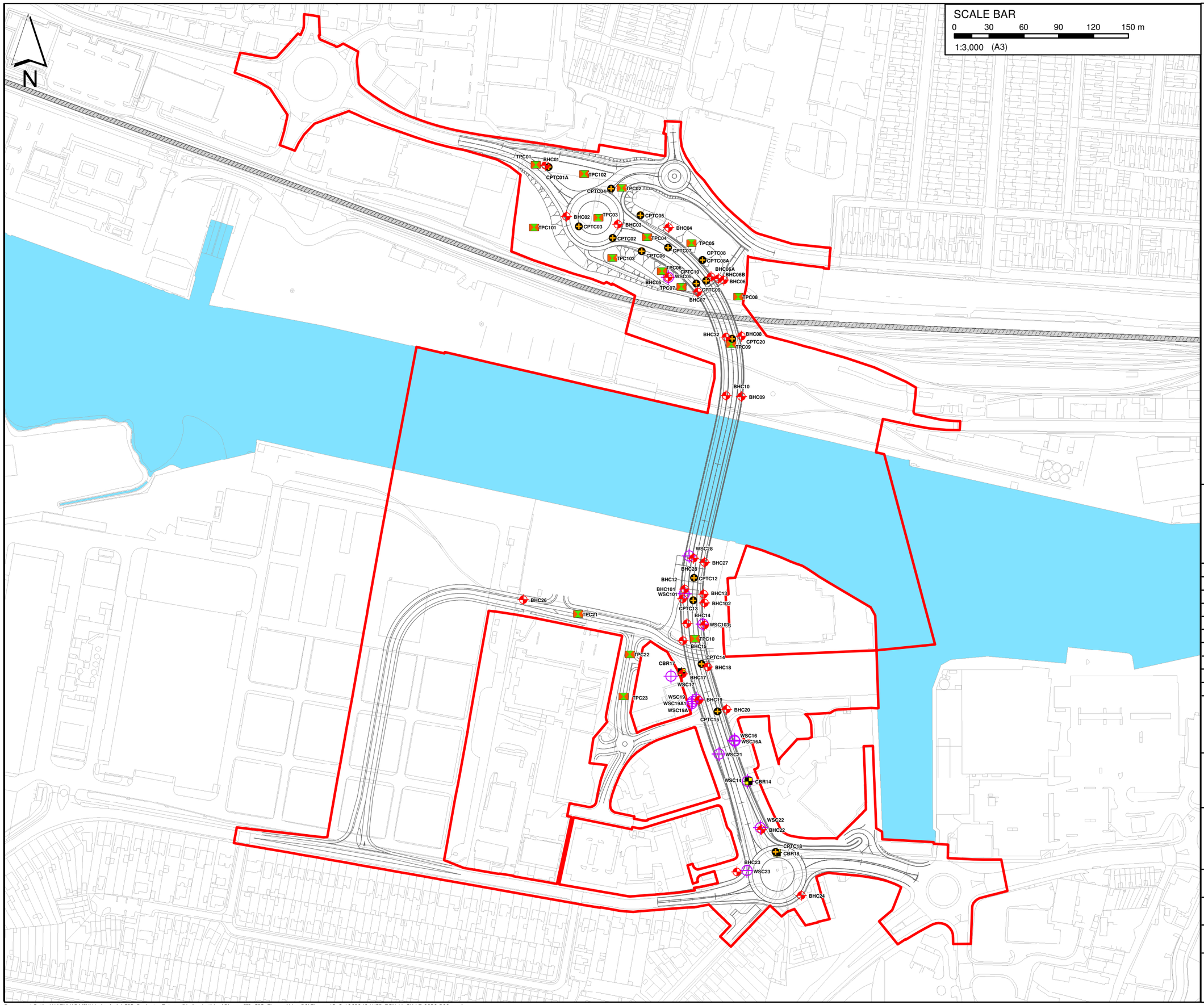
9.4. CONSTRUCTION CONSIDERATIONS

9.4.1. Protection of construction workers, site users and adjacent site users from airborne dust generated from made ground during construction will be required and measures are set out in the interim CoCP and will form part of the full CoCP.

9.4.2. The construction Contractor will need to keep a watching brief for unforeseen contamination including hydrocarbons and asbestos. Hydrocarbon odours and sheen were identified during the ground investigation, but chemical testing did not record any elevated concentrations.

Annex A

DRAWINGS



KEY

- The Scheme (illustrative)
- Existing Rail Track
- Order Limits

GI Sampling Locations

- Borehole
- Cone Penetration Test
- California Bearing Ratio
- Trial Pit
- Window Sample

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO.
© Crown copyright and database rights 2017. All rights reserved.
Ordnance Survey licence number 100023395
Contains OS data © Crown copyright and database rights 2017.

P00	IW	HR	MD	18/06/2018

FOR DCO SUBMISSION

REVISION	DRAWN	CHECKED	APPROVED	DATE
DESCRIPTION				

Suffolk County Council

PROJECT TITLE

Lake Lothing THIRD CROSSING

DRAWING TITLE

Sampling Locations
Regulation 5(2)(a)
Figure 12.2

DRAWING STATUS

FOR DCO SUBMISSION

DRAWN	CHECKED	APPROVED	AUTHORISED	SUITABILITY
IW	HR	HR	JB	S4

SCALE @ A3 SIZE	DATE	REVISION
1:3,000	18/06/2018	P00

DRAWING NUMBER

Project | Originator | Volume
1069948-WSP-EGN-LL-SK-LE-0020
Location | Type | Role | Number

Document Path: W:\ENVADMIN\Hydradmin\GIS_Projects_External\Lake_Lothing\Phase_III_GIS_Figures\Ver_P0\Figure 12_2 1069948-WSP-EGN-LL-SK-LE-0020 P00.mxd

Annex B

SCOPE OF WORKS

LAND BASED FIELD WORKS

GENERAL WORKS

The ground investigation was undertaken between 24th July 2017 and 25th April 2018 by Geosphere Ltd who acted as Principal Contractor and were contracted to The Applicant. Chemtest Ltd were sub-contracted by Geosphere to undertake the chemical testing.

The ground investigation was undertaken in general accordance with techniques outlined in BS5930:2015 and BS1377:2016, as appropriate, at the positions shown on Drawing 1069948-WSP-ENG-LL-SK-LE-0020 – Sampling Locations Regulations 5(2)(a) Figure 12.2. The exploratory hole logs are presented in Annex C

The investigation was monitored part time by an Engineer from WSP Ltd.

GAS AND GROUNDWATER MONITORING WELL INSTALLATION

Gas and groundwater monitoring wells were installed in selected boreholes summarised below and were constructed from 50mm perforated plastic pipe with a pea gravel surround and fitted with air tight gas valves. As a minimum requirement, each monitoring well comprised plain pipe from ground level to 1m with a bentonite pellet surround. Exact details of each installation are shown on the Engineers logs in Annex C.

Table 2 - Summary of Monitoring Wells

Exploratory Hole Location	Response Zone	Installed Strata
BHC01	1m - 3m	Potential Made Ground** / Sand
BHC02	1m – 10.5m	Possible made ground** / Silt / Sand
BHC07	6m – 12m	Sand / Clay / Sand
BHC08	7m – 12m	Sand
BHC09	8m – 12m	Sand
BHC14	1m – 2.5m	Made Ground
BHC24	5m – 11.5m	Sand
	1m – 2.5m	Made ground / Sand
BHC27	4m – 12m	Gravel and Sand
BHC102	5m – 11m	Sand

** Strata description changed from natural to potential / possible made ground by the Contractor after the monitoring well instruction was given.

HEADSPACE SCREENING

Disturbed soil samples were taken by Geosphere Ltd at regular intervals during the advancement of investigation locations for headspace screening. Samples were stored in headspace bags and screened for volatile organic compounds following a period for equilibration using a Photo Ionisation Detector. The results of the PID testing are presented on the exploratory hole records (Annex C).

GROUNDWATER AND GAS MONITORING

All boreholes were monitored by Geosphere Ltd for ground gas concentrations on six occasions to-date. Concentrations of methane (CH4), carbon dioxide (CO2), oxygen (O2) and trace gases (including carbon monoxide, hydrogen sulphide) and volatile organic compounds were recorded together with gas flow rates. Atmospheric pressures during the monitoring were also noted to enable a quantitative gas risk assessment to be carried out if necessary in accordance with current best practice.

The results of the gas and groundwater monitoring are presented in Annex C.

GROUNDWATER SAMPLING

Geosphere Ltd have undertaken groundwater sampling on six occasions to-date (9th to 14th May,23rd and 24th May, 11th and 12th June, 25th and 26th June, 10th and 11th July and 23rd and 24th July) at fortnightly intervals after completion of the site works. Prior to each round of groundwater sampling, three well volumes were purged.

Groundwater samples were retained by Geosphere Ltd in containers provided to Geosphere Ltd by Chemtest Ltd and transported to the testing laboratory in accordance with Chemtest Ltd sample handling protocols.

In addition to the above six groundwater sampling visits undertaken after completion of the site works, two locations (BHC02 and BHC102) were also monitored on one occasion at the start of January 2018 during the site works.

MARINE SAMPLING WORKS

GENERAL WORKS

The marine sampling works were undertaken between 9th April 2018 and 23rd April 2018 by CMS-Geotech Ltd who were contracted to WSP Ltd. The chemical testing was scheduled by WSP Ltd and undertaken by ALS Ltd were sub-contracted by WSP Ltd.

Samples were stored in appropriate bottles and transported in cooler boxes to the testing laboratory under a chain of custody protocol within 24hours of being taken.

The factual records comprising sampling locations and test results are presented in Annex D.

SEDIMENT GRAB SAMPLING

Sediment surface grab samples were taken from 48 locations within the lake bed predominantly for the purposes of informing the potential for offshore disposal and sediment transport post construction.

VIBROCORE SAMPLING

Vibrocore sampling from 12 locations at nominal metre intervals to a nominal 4m depth was undertaken within the bed of Lake Lothing predominantly for the purposes of informing the potential for offshore disposal and sediment transport post construction.

SURFACE WATER SAMPLING

Surface water samples were recovered from the 4 locations within Lake Lothing.

TESTING

CHEMICAL TESTING – SOILS & LEACHATE

Selected soil samples were scheduled for chemical analysis by WSP Ltd which was undertaken Chemtest Ltd under contract to Geosphere Ltd. The results of the contamination testing are presented in Annex C. The following testing was scheduled:

Table 3 - Summary of Chemical Testing for Soils

Strata	Soil Sample Laboratory Analysis (no.)											
	Metals	General	TPHCWG	VOC	SVOC	PAH	PCB EC7	PCB WHO 12	WAC	Asbestos	SOM	% Samples in Upper 1m
Made Ground	57	57	57	57	57	57	29	27	20	56	7	70
Natural Ground (Clay)	9	9	9	9	9	9	2	5	1	4	5	11.1
Natural Ground (Silt)	1	1	1	1	1	1	1	0	1	0	1	0
Natural Ground (Sand)	24	23-24	31	31	27	31	7	4	1	0	21	3.2
Natural Ground (Gravel)	0	0	2	2	0	2	0	0	0	0	0	0

Key	
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc
General	pH, water soluble sulphate, total sulphate, ammonia as N, phenol, free cyanide and total cyanide
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
VOC	Volatile Organic Compounds
SVOC	Semi Volatile Organic Compounds
PAH	Speciated Poly Aromatic Hydrocarbons
PCB EC7	PCBs EC7 Congeners

PCB WHO12	PCBs WHO12 Congeners
WAC	Total Waste Acceptance Criteria Suite
Asbestos	Screen only
SOM	Soil Organic Matter

Table 4 - Summary of Chemical Testing for Leachate

Strata	Soil Leachate Laboratory Analysis (no.)					
	Metals	General	TPHCWG	SVOC	PAH	% Samples in Upper 1m
Made Ground	26	26	26	4	26	65.4
Natural Ground Clay)	0	0	0	0	0	0
Natural Ground (Silt)	0	0	0	0	0	0
Natural Ground (Sand)	1	1-2	3	0	3	0
Natural Ground (Gravel)	0	0	0	0	0	0

Key	
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc
General	pH, water soluble sulphate, ammonia as N, phenol, free cyanide and total cyanide
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
SVOC	Semi Volatile Organic Compounds

PAH	Speciated Polyaromatic Hydrocarbons

CHEMICAL TESTING - WATER

Water Samples were extracted from the monitoring wells on site on six occasions by Geosphere Ltd and submitted for chemical analysis at Chemtest Ltd. The results of the contamination testing are presented in Annex C. The following testing was carried out:

Table 5 – Summary of Chemical Testing for Water (Groundwater and Surface Water)

Water Body	Laboratory Analysis (no.)					
	Metals	General Suite	TPHCWG	VOC	SVOC	PAH
Groundwater	52	52	52	52	52	52
Key						
Metals	Arsenic, cadmium, chromium (hexavalent and total), lead, mercury, copper, nickel, selenium and zinc),					
General Suite	pH, Sulphate water soluble, Ammonia as N, Cyanide (total and free) and phenol					
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene					
VOC	Volatile Organic Compounds					
SVOC	Semi Volatile Organic Compounds					
PAH	Speciated Polyaromatic Hydrocarbons (PAH)					

CHEMICAL TESTING – LAKE BED SEDIMENT GRAB SAMPLES

Lake bed sediment surface grab samples were taken by CMS-Geotech Ltd from 12 locations within the Lake and were submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in Annex D. The following testing was scheduled by WSP Ltd:

Strata	Laboratory Analysis (no.)

	Metals	TPHCWG	Pesticides	PAH	PSD	PCB	Organotins
Lake Lothing Sediments	12	12	12	12	12	12	12

Key	
Metals	Arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
Pesticides	Organo-chloride and organo-phosphate pesticides and triazine herbicides
PAH	Speciated Polyaromatic Hydrocarbons
PSD	Particle size distribution
PCB	Polychlorinated biphenyls EC7 and WHO12 Congeners.
Organotins	Organotin compounds

CHEMICAL TESTING – LAKE BED SEDIMENT VIBROCORE SAMPLES

Lake bed sediment samples at nominal 1m intervals to 4m depth were taken from 12 Vibrocore locations within the Lake Lothing bed sediments by CMS-Geotech Ltd and were submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in Annex D. The following testing was scheduled by WSP Ltd:

Strata	Laboratory Analysis (no.)												
	Metals	General Suite	ASbestos	Pesticides	PBDE	PAH	PSD	PCB	Organotins	TPHCWG	SVOC	VOC	WAC
Lake Lothing Sediment Vibrocore Samples	34	34	34	34	34	34	34	34	34	34	34	34	34

Key	
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium and zinc
General Suite	Soil organic matter, pH, sulphate - water soluble and total, cyanide (total and free) and phenol, solid content.
Asbestos	Asbestos screen
Pesticides	Organo-chloride and organo-phosphate pesticides and triazine herbicides
PBDE	Polybrominated Diphenyl Ethers
PAH	Speciated Polyaromatic Hydrocarbons
PSD	Particle size distribution
PCB	Polychlorinated biphenyls EC7 and WHO12 Congeners.
Organotins	Organotin compounds
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
SVOC	Semi volatile organic carbon
VOC	Volatile Organic Carbon
WAC	Total Waste Acceptance Criteria suite

CHEMICAL TESTING – LAKE LOTHING SURFACE WATER SAMPLES

Four water samples were taken from Lake Lothing by CMS-Geotech and submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in Annex D. The following testing was carried out:

Table 6 – Summary of Chemical Testing for Surface Water

Water Body	Laboratory Analysis (no.)					
	Metals	General Suite	TPHCWG	VOC	SVOC	PAH
River (Lake Lothing)	4	4	4	4	4	4
Key						

Metals	Arsenic, cadmium, chromium (hexavalent and total), lead, mercury, copper, nickel, selenium and zinc),
General Suite	pH, Sulphate water soluble, Ammonia as N, Cyanide (total and free) and phenol
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene
VOC	Volatile Organic Compounds
SVOC	Semi Volatile Organic Compounds
PAH	Speciated Polyaromatic Hydrocarbons (PAH)

Annex C

LAND BASED GROUND INVESTIGATION FACTUAL INFORMATION

IN SITU
SITE INVESTIGATION



STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT GEOSPHERE

PROJECT LAKE LOTHING, LOWESTOFT

Project	**Lake Lothing, Lowestoft**
Project No.	**1170332**
Client	**Geosphere Environmental**
Address	**Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ**

Attention: Mr Stephen Gilchrist

Dear Mr Gilchrist,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,
In Situ Site Investigation Limited

[redacted]

Darren Ward
Director

Report Issue

Issue	Date	Description	Prepared	Sign	Checked	Sign
01	04/09/2017	Final	Rachel Cleaver	[redacted]	Darren Ward	[redacted]

Table of Contents

1.0 INTRODUCTION 5

2.0 FIELDWORK 6

2.1 CONE PENETRATION TESTS 6

2.1.1 Rig Information 6

2.1.2 CPTU Cone 6

2.1.3 CPTU Cone Calibration 7

2.1.4 CPTU Cone Saturation 7

2.1.5 Test Procedure 7

2.1.6 In Situ Pore Pressure (u_0) 8

2.2 POSITIONING 8

3.0 CONE PENETRATION MEASURED PARAMETERS 9

3.1 DATA PROCESSING 9

3.1.1 Zero Measurements 9

3.2 MEASURED PARAMETERS 9

3.2.1 Cone Resistance (q_c) 9

3.2.2 Sleeve Friction (f_s) 9

3.2.3 Porewater pressure (u_2) 10

3.2.4 Inclination (I_x, I_y) 10

3.3 ESTIMATED SOIL BEHAVIOUR TYPE 10

3.3.1 Friction Ratio (R_f) 10

3.3.2 Estimated Soil Behaviour Type (SBT) 10

3.3.3 Pore Pressure Ratio (B_q) 11

3.4 APPLIED CORRECTIONS 12

3.4.1 Corrected Cone Resistance (q_t) 12

3.4.2 Depth Correction 12

4.0 GEOTECHNICAL DERIVED PARAMETERS 13

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c) 13

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60}) 15

4.3 RELATIVE DENSITY (D_r) 15
4.4 FRICTION ANGLE (φ') 17
4.5 FINES CONTENT (*FC*) 18
4.6 UNDRAINED SHEAR STRENGTH (s_u) 18
4.7 SENSITIVITY (S_t) 19
4.8 SOIL UNIT WEIGHT (γ) 19
4.9 STATE PARAMETER (ψ) 20
4.10 IN SITU STRESS RATIO (K_0) 22
4.11 OVERCONSOLIDATION RATIO (OCR) 22
4.12 SMALL STRAIN YOUNG MODULUS (E_0) 23
4.13 CONSTRAINED MODULUS (M) 24
4.13.1 Equivalent Oedometer Coefficient of Compressibility (mv) 25
4.14 SMALL STRAIN SHEAR MODULUS (G_0) 25
4.14.1 Mass Density of Soil (ρ) 26
4.15 HIDRAULIC CONDUCTIVITY (k) 26
4.16 CONSOLIDATION CHARACTERISTICS 28
4.16.1 Rigidity Index (I_R) 28
4.16.2 Coefficients of consolidation (c_h, c_v) 28
4.17.3 Coefficients of permeability (hydraulic conductivity, k_h, k_v) 30
5.0 CPTU RESULTS APPLICATIONS 32
5.1 SOIL PROFILING AND APPLICATIONS IN GEOTECHNICAL DESIGN 32
5.1.1 Soil Behaviour Type 32
Figure 5.1: Normalized CPTU Soil Behaviour Type (SBT_n) chart, Q_{tn}-F_R using general large strain soil behaviour description (Robertson, 2012) 33
5.1.2 Soil Profiling 33
5.1.3 Applications in geotechnical design 35
6.0 REFERENCES 36
APPENDIX A 40
APPENDIX A1 – Site Map 41
APPENDIX A2 – Cone Datasheet 42
APPENDIX A3 – Cone Calibration Certificate 43
APPENDIX A4 – Project Summary Sheet 44
CPT Tests Summary Sheet 44
APPENDIX A5 – CPT Rig Datasheet 45

APPENDIX A6 – Symbol List....46
English 46
Greek 47
APPENDIX A7 – Abbreviations....48
APPENDIX A8 – Glossary....49
APPENDIX A9 – Soils Description Tables....51
APPENDIX B....52
Cone Penetration Measured Parameters....52
APPENDIX C....53
Geotechnical Derived Parameters....53

1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Lake Lothing, Lowestoft at the request of Geosphere Environmental Limited (the client). The site investigation consisted of completing 12 *Static Piezocone Penetration Tests (CPTU)* to provide information on the soil conditions and derived geotechnical parameters at:

Off the roundabout of Denmark Road
Bernards Way
NR32 2EW

All test locations were provided by the client, as shown on the site map, in *Appendix A.1*. The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in *Appendix A.2* and on each CPTU log.

The fieldwork was carried out between the 10/09/2017 and 11/09/2017 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *BS EN ISO 22475-1:2012*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Darren Hughes and Lewis Smith
Date Started	10/08/2017
Date Finished	11/08/2017
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Stephen Gilchrist

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.3*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT 001	20 Tonne Wheel Mounted CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2012*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section area**	**Filter position**
S15CFIIP.1186	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.4*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
12 CPTU to a maximum depth of 25.00m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters and AGS data.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2012* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.5*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test (ISO 22476-1:2012)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.2*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 2cm/s ±10% except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B* and *C*.

2.1.6 *In Situ Pore Pressure (u_0)*

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. These values are presented on the pore pressure plot, *Form 01*, which is included in *Appendix B*. For this report, the values were estimated by our client.

2.2 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in *Appendix A.1*.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *Lunne et al. (1997)*, *Robertson (2015)* and *BS EN ISO 22475-1:2012.* Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B* and *C*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

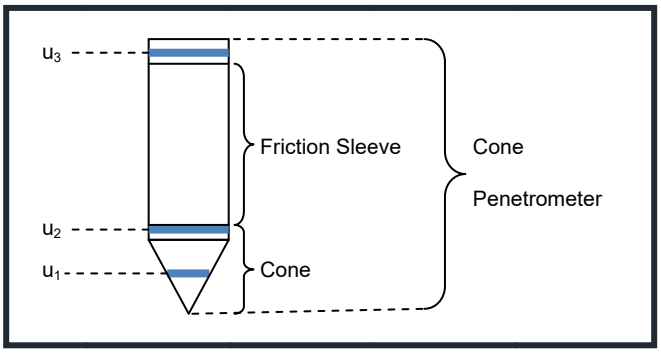


Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The

friction ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et. al. (1986)*, which is shown in Figure 3.2. The results are presented on *Log 01*, in *Appendix B*.

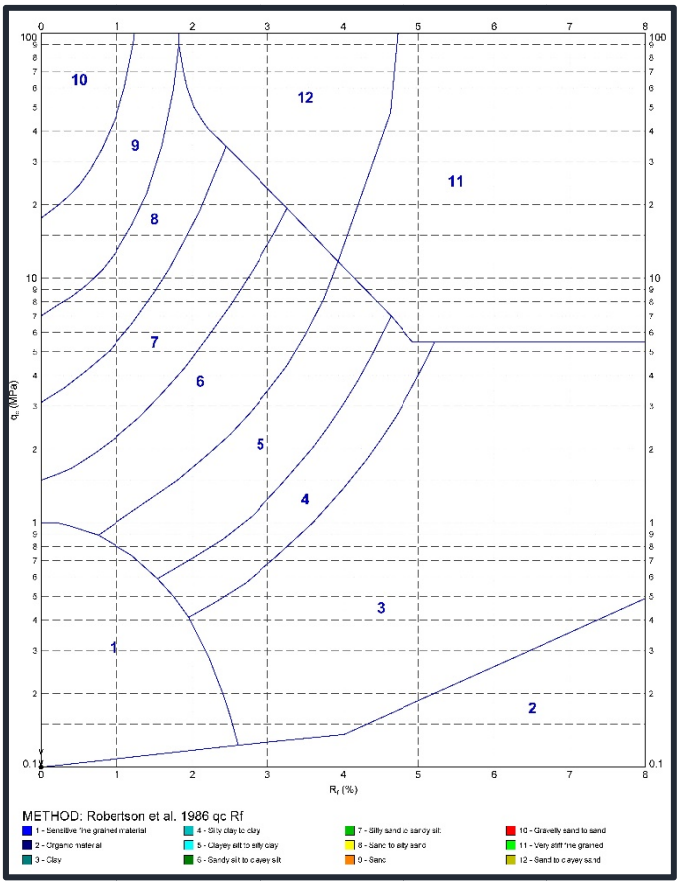


Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ''unequal area effect'' due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone used on this project has a cone area ratio of *0.79*. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2012*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*
l is penetration length, in *m*
C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *Log 02* and *Log 03* in *Appendix C*.

Please note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A6* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, `*(Lunne et al., 1997)*.

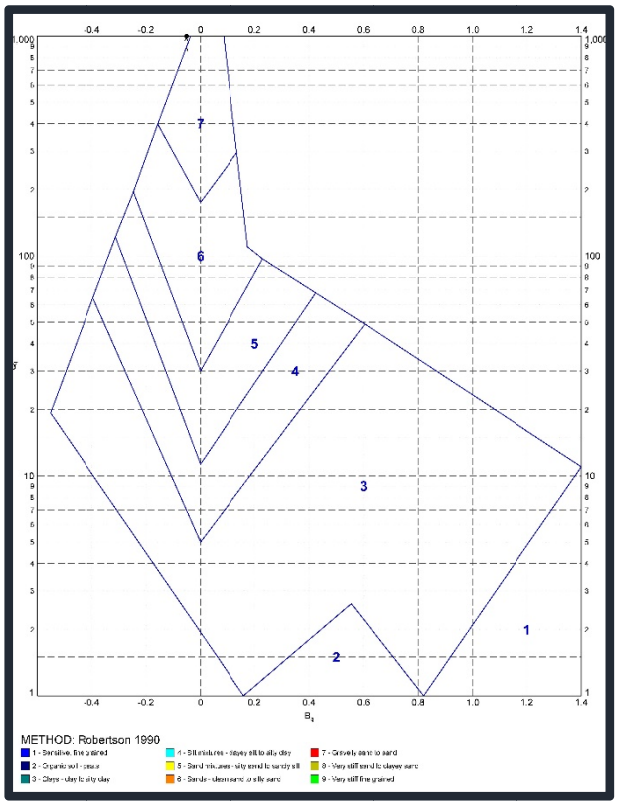


Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%*

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily overconsolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT,* N_{60}, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)* and *Jefferson and Davies (1998)*

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferson and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

where

q_c	is the cone resistance
p_a	is the atmospheric pressure equal to *100 kPa*
I_c	is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that this method provides a better estimation of the *N* value than the actual *SPT* test, due to its poor repeatability. But in fine grained soil with high sensitivity these methods of estimating N_{60} may overestimate it *(Jefferies and Davies, 1991).*

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamilkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ'*, is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot \left[0.256 + 0.336 \cdot B_q + logQ_t\right]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Roberston and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily overconsolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies *0.1* < B_q < *1.0*. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$
$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75I_C^{3.25} - 3.7$$
$$3.5 < I_C: \ FC = 100\%$$

2) Suzuki et al (1998)

$$FC(\%) = 2.8I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)
σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear direction of lading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays , $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

1) Mayne (2007)

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth
V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log(f_s) + 18.5$
G_s is the specific gravity of solids, typically between *2.40* and *2.90*

4.9 STATE PARAMETER (ψ)

The state parameter, *ψ* is defined as the difference between the current void ratio, *e* and the void ratio at critical state e_{cs}, at the same mean effective stress for granular soils.

The problem of evaluating the state parameter from CPTU response is complex and depends on several soil parameters, including shear stiffness, shear strength, compressibility and plastic hardening. (*Jefferis and Been, 2006*)

In this report, the state parameter is calculated based on five methods as follows:

1) Been et al. (1987)

$$\psi = -\frac{ln\left(\frac{Q_p}{k}\right)}{m}$$

and

$$Q_p = \left(\frac{3Q_t}{1 + 2K_0}\right)$$

where
Q_t is the normalized cone resistance
K_0 is the coefficient of lateral earth pressure

2) Shuttle and Jefferies (1998)

$$\psi = -\frac{ln\left(\frac{Q_p}{k}\right)}{m}$$

where

$$k = \left((3.79 + 1.12ln(I_r))(1 + 1.06(M - 1.25))(1 - 0.30(N - 0.2))(H/1000)^{0.326}(-1.55(\lambda - 0.01))\right)^{1.45}$$

$$m = 1.45(1.04 + 0.46ln(I_r))(1 - 0.4(M - 1.25))(1 - 0.30(N - 0.2))(H/100)^{0.15}(1 - 2.21(\lambda - 0.01))$$

where
Q_t is the normalised cone resistance
I_r is rigidity index

K_0 is the coefficient of lateral earth pressure
M is critical state ratio
N is dilation parameter
H is plastic hardening modulus;
λ is slope *CSL* line

3) Shuttle and Jefferies (1998)

The state parameter calculated according this third method is similar to state parameter calculated as presented in the second method, except for the rigidity index that is calculated as follows:

$$I_r = I_{r100}\left(\frac{P_a}{\sigma'_{v0}}\right)^{0.5}$$

where

I_{r100} is rigidity index in reference pressure
P_a is the reference pressure equal to 100 kPa
σ'_{v0} is effective vertical overburden stress

4) Plewes (1992)

$$\psi = -\frac{ln\left(\frac{Q_p/(1-B_q)}{k'}\right)}{m'}$$

where

$$k' = M\left(3 + \frac{0.85}{\lambda}\right)$$
$$m' = 11.9 - 13.3\lambda$$
$$\lambda = \frac{F_r}{10}$$

where

Q_t is the normalized cone resistance
B_q is pore pressure ratio
K_0 is the coefficient of lateral earth pressure
F_R is normalized friction ratio
M is critical state ration

5) Been and Jefferies (1992)

$$\psi = -\frac{ln\left(\frac{Q_p/(1-B_q)}{k'}\right)}{m'}$$

where

$$k' = M\left(3 + \frac{0.85}{\lambda}\right)$$
$$m' = 11.9 - 13.3\lambda$$
$$\lambda = \frac{1}{34 - 10I_C}$$

For high-risk projects a detailed interpretation of CPTU results using laboratory results and numerical modelling can be appropriate (e.g. *Shuttle* and *Cunning*, *2007*), although soil variability can complicate the interpretation procedure. For low risk projects and in the initial screening for high-risk projects there is a need for a simple estimate of soil state.

Plewes et al (1991) provided a means to estimate soil state using the normalized soil behaviour type, *SBTn* chart suggested by *Jefferies and Davies (1991)*. *Jefferis and Been (2006)* suggested that soils with a state parameters less than *-0.05* are dilative at large strains.

4.10 IN SITU STRESS RATIO (K_0)

There are various estimations to determine in situ stress ratio, K_0, from CPTU in fine grained soils. In this report the methods suggested by *Mayne (2007)* and *Kulhawy and Mayne (1990)* are used, as given below:

1) Mayne (2007)

$$K_0 = (1 - sin\varphi')OCR^{sin\varphi'}$$

$$Max\ K_0 = K_p = \frac{(1 + sin\varphi')}{(1 - sin\varphi')}$$

$$K_0 = 0.192\left(\frac{q_t}{\sigma_{atm}}\right)^{0.22}\left(\frac{\sigma_{atm}}{\sigma_{v0}}\right)^{0.22}OCR^{0.27}$$

where

OCR is the overconsolidation ration, calculated as presented in session *4.12*

2) Kulhawy and Mayne (1990)

$$K_0 = 0.1\left(\frac{q_t - \sigma_{v0}}{\sigma_{v0}'}\right)$$

These approaches are generally limited to mechanically overconsolidated, fine grained soils. As considerable scatter exits in the database used for these correlations, in moderate to high risk projects further tests should be performed and these correlations must be considered only as a guide.

4.11 OVERCONSOLIDATION RATIO (OCR)

Overconsolidation ratio, *OCR* is defined as the ratio of the maximum past effective consolidation tress and the present effective overburden stress:

$$OCR = \frac{\sigma'_p}{\sigma'_{v0}}$$

This definition is appropriate for mechanically overconsolidated soils, where the only change has been the removal of overburden stress. For cemented and aged soils the *OCR* may represent the ratio of the yield stress and the present effective overburden stress.

In this report σ'_p is calculated based on six methods as presented below:

1) Mayne (1995)

$$\sigma'_p = 0.33(q_t - \sigma_{v0})$$

2) Chen & Mayne (1996)

$$\sigma'_p = 0.53\Delta u$$

3) Mayne (2005)

$$\sigma'_p = 0.6(q_t - u_2)$$

4) Robertson (2009)

$$\sigma'_p = 0.25(Q_t^{1.25} - \sigma'_{v0})$$

5) Mayne (2005)

$$\sigma'_p = \left[\frac{0.192\left(\frac{q_t}{\sigma_{atm}}\right)^{0.125}}{(1 - sin\varphi')\left(\frac{\sigma'_{v0}}{\sigma_{atm}}\right)^{0.31}}\right]^{\left(\frac{1}{sin\varphi' - 0.27}\right)} \sigma'_{v0}$$

6) Mayne (2007)

$$\sigma'_p = 0.101\sigma_{atm}^{0.102}(G_0)^{0.478}\sigma'^{0.420}_{v0}$$

For larger, moderate to high risk projects, where additional high quality field and laboratory data may be available, site specific correlations should be developed based in consistent and relevant values of *OCR*.

4.12 SMALL STRAIN YOUNG MODULUS (E_0)

Deriving small strain undrained Young's modulus, E_0, from CPTU is difficult. There is insufficient data available to make a direct correlation, and it is recommended that c_u should be derived, then E_U estimated, as a rough order of value from one of the available correlations between E_U and c_u (*Meigh, 1987*).

In this report the small strain Young's modulus is derived as follows:

1) Defined from elastic theory:

$$E_0 = 2(1+\nu)G_0$$

where

v is the Poisson ratio, equal to *0.2*

G_0 is the small strain shear modulus calculated by the formula given below:

$$G_0 = 1634\left(\frac{q_c}{\sqrt{\sigma'_{v0}}}\right)^{-0.75} q_c$$

2) Calculated based on the degree of loading, q_c, effective stress and reduction factor

$$E_0 = \alpha q_c$$

where

α is calculated from degree of loading, q_c, effective stress and reduction factor, given in *Figure 4.2*

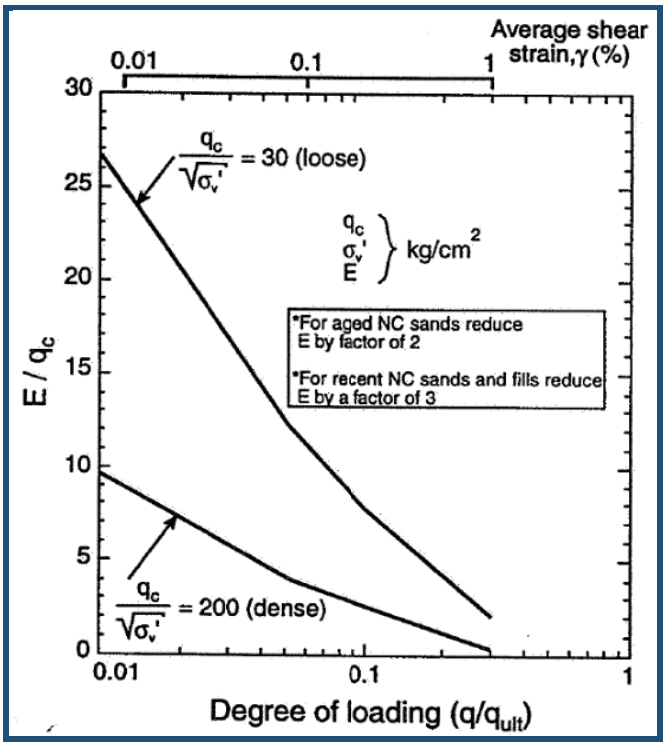


Figure 4.2: *Estimation of equivalent Young's modulus for sand based on degree of loading (Robertson, 1990)*

4.13 CONSTRAINED MODULUS (M)

Constrained Modulus, *M*, can be estimated by CPTU using the following empirical relationship:

$$M = \alpha_M(q_t - \sigma_{v0})$$

where

α_M varies with soil plasticity and natural water content for a wide range of fine grained soils and organic soils. *Meigh (1987)* suggested that α_M lies in the range of *2 to 8*, whereas *Mayne (2001)* suggested the value of *5*.

Robertson (2001) suggested that α_M varies with Q_t, such that:

When $I_c > 2.2$ (fine grained soils) use: $\alpha_M = Q_t$ when $Q_t < 14$

$\alpha_M = 14$ when $Q_t > 14$

When $I_c < 2.2$ (coarse grained soils) use: $\alpha_M = 0.0188[10^{(0.55I_c+1.68)}]$

In this report the Constrained Modulus, *M*, is calculated after *Kulhawy and Mayne (1990)* using the equation below:

$$M = 8.25(q_t - \sigma_{v0})$$

Also an alternative method is included in the results, developed by *Burns and Mayne (2002)* using the following relationship:

$$M = 0.02G_0$$

4.13.1 Equivalent Oedometer Coefficient of Compressibility (mv)

Equivalent oedometer coefficient of compressibility, m_v can be calculated directly by the Constrained Modulus, *M*, as follows:

$$m_v = \frac{1}{M}$$

4.14 SMALL STRAIN SHEAR MODULUS (G_0)

Elastic theory states that the small strain shear modulus, G_0, can be determined from the following equation:

$$G_0 = \rho v_s^2$$

where

ρ is the mass density of the soil

v_s is the shear wave velocity

In this report the small strain shear modulus, G_0, will be presented calculated by the three methods shown below, developed by *Rix & Stoke (1992)*, *BE* and *UB Rix & Stoke (1992)*, respectively.

$$G_0 = 1634\left(\frac{q_c}{\sqrt{\sigma'_{v0}}}\right)^{-0.75} q_c$$

$$G_0 = \frac{\gamma_{bulk}}{g} v_s^2$$

where

q_c is the net cone tip resistance in kPa
σ'_{v0} is the effective initial vertical stress in kPa
γ_{bulk} is the bulk density of the soil
v_s is the shear wave velocity

This correlation of G_0 is applicable to all soil types.

4.14.1 Mass Density of Soil (ρ)

Mass density of soil, ρ, is defined as:

$$\rho = \frac{\gamma}{g}$$

where

γ is the elastic stiffness of the soils at shear strain less than 10^{-4} %, $\gamma<10^{-4}$ %.

4.15 HIDRAULIC CONDUCTIVITY (k)

An approximate estimate of soil hydraulic conductivity of coefficient of permeability, *k*, can be made from an estimate of soil behaviour type using the CPTU *SBT chart*, and presented in the table below:

SBT Zone	SBT	Range of k (m/s)	SBT_n I_c
1	Sensitive fine grained	$3x10^{-10}$ to $3x10^{-8}$	NA
2	Organic soils-clay	$1x10^{-10}$ to $1x10^{-8}$	$I_c>3.60$
3	Clay	$1x10^{-10}$ to $1x10^{-9}$	$2.95<I_c<3.60$
4	Silt Mixture	$3x10^{-9}$ to $1x10^{-7}$	$2.60<I_c<2.95$
5	Sand Mixture	$1x10^{-7}$ to $1x10^{-5}$	$2.05<I_c<2.60$
6	Sand	$1x10^{-5}$ to $1x10^{-3}$	$1.31<I_c<2.05$
7	Dense sand to gravelly sand	$1x10^{-3}$ to 1	$I_c<1.31$
8	*Very dense/ stiff soil	$1x10^{-8}$ to $1x10^{-3}$	NA
9	*Very stiff fine grained soil	$1x10^{-9}$ to $1x10^{-7}$	NA

**Overconsolidated and/ or cemented*

Table 4.2: *Estimated soil permeability (k) based on the CPTU SBT chart by Roberston (2009)*

The average relationship between soil permeability, *k* and SBT_n I_c, shown in *Table 4.1*, can be represented by the following relationships:

When $1.0 < I_c \leq 3.27$ $\quad k = 10^{(0.952-3.04I_c)}$
When $3.27 < I_c \leq 4.0$ $\quad k = 10^{(-4.52-1.37I_c)}$

In this report, the hydraulic conductivity is given using 2 methods, *Robertson et al. (1986)* and *Robertson et al. (1990)*, considering both minimum and maximum values for each method.

The hydraulic conductivity (permeability), *k*, values, minimum and maximum, defined after soil behaviour type *Robertson et al. (1986)* are presented in *Table 4.3*, below:

SBT Zone	Soil Behaviour Type (SBT)	Range of hydraulic conductivity, *k (m/s)*
1	Sensitive fine grained	$3x10^{-9}$ to $3x10^{-8}$
2	Organic soils	$1x10^{-8}$ to $1x10^{-6}$
3	Clay	$1x10^{-10}$ to $1x10^{-9}$
4	Silty CLAY to CLAY	$3x10^{-9}$ to $1x10^{-8}$
5	Clayey SILT to silty CLAY	$1x10^{-8}$ to $1x10^{-7}$
6	Sandy SILT to clayey SILT	$1x10^{-7}$ to $1x10^{-6}$
7	Silty SAND to sandy SILT	$1x10^{-5}$ to $1x10^{-6}$
8	SAND to silty SAND	$1x10^{-5}$ to $1x10^{-4}$
9	SAND	$1x10^{-4}$ to $1x10^{-3}$
10	Gravelly SAND to SAND	$1x10^{-3}$ to 1
11	Very stiff fine grained	$1x10^{-8}$ to $1x10^{-6}$
12	SAND to clayey SAND	$3x10^{-7}$ to $3x10^{-4}$

Table 4.3: *Estimated soil permeability (k) based on SBT chart by Robertson et al. (1986)*

The hydraulic conductivity (permeability), *k*, minimum and maximum values, defined after soil behaviour type by *Robertson et al. (1990)* are presented in *Table 4.4*, here below:

SBT Zone	Soil Behaviour Type (SBT)	Range of hydraulic conductivity, *k (m/s)*
1	Sensitive fine grained	$3x10^{-9}$ to $3x10^{-8}$
2	Organic soils	$1x10^{-8}$ to $1x10^{-6}$
3	Clay	$1x10^{-10}$ to $1x10^{-9}$
4	Silt Mixture	$3x10^{-9}$ to $1x10^{-7}$
5	Sand Mixture	$1x10^{-7}$ to $1x10^{-5}$
6	Sand	$1x10^{-5}$ to $1x10^{-3}$
7	Gravelly sands to dense sands	$1x10^{-3}$ to 1

8	Very stiff sand to clayey sand	$1x10^{-8}$ to $1x10^{-6}$
9	Very stiff fine grained	$1x10^{-8}$ to $1x10^{-6}$

Table 4.4: *Estimated soil permeability (k) based on SBT chart by Robertson et al. (1990).*

4.16 CONSOLIDATION CHARACTERISTICS

All the results of consolidation characteristics calculated using the formulas below are presented in *Appendix D*.

4.16.1 Rigidity Index (I_R)

The rigidity index, I_R, for fine materials is defined using the following formula, developed by *Mayne (2001)*:

$$I_R = \exp\left[\left(\frac{1.5}{M} + 2.925\right)\left(\frac{q_t - \sigma_{v0}}{q_t - u_2}\right) - 2.925\right.$$

where

M is the Cam Clay constant, slope of the critical state line defined as:

$$M = \frac{6sin\varphi'}{3 - sin\varphi'}$$

where

φ' is the internal friction angle.

The second method used to define the rigidity index, I_R, for fine material is based on plasticity index and overconsolidation ratio, *OCR*, and calculated after the relationship developed by *Keaveny and Mitchel (1986)* as follows:

$$I_R = \frac{\exp\left(0.0435(137 - PI)\right)}{[1 + \ln\{1 + 0.385(OCR - 1)^{3.2}\}]^{0.8}}$$

where

PI is the plasticity index of the soil, equal to 20.
OCR is the overconsolidation ratio of the soil

4.16.2 Coefficients of consolidation (c_h, c_v)

The coefficient of consolidation is interlinked with the hydraulic conductivity through the formula below:

$$c = \frac{kM}{\gamma_w}$$

where

M is the 1-D constrained modulus relevant to the problem (i.e. unloading, reloading, virgin loading, etc)

γ_w is the unit weight of water
k is the hydraulic conductivity

In geotechnical practice it is very difficult to measure *c* and *k*, because due to soil anisotropy *c* and *k* have different values in the horizontal, c_h and k_h and vertical c_v and k_v direction. The relevant design values depend on drainage and loading direction.

The coefficient of consolidation can be estimated by measuring the dissipation or rate of decay of pore pressure with time after a stop in CPTU penetration. The coefficient of consolidation should be interpreted at *50%* dissipation, using the following formula:

$$c = (\frac{T_{50}}{t_{50}})r_0^2$$

where

T_{50} is theoretical time factor
t_{50} is measured time for *50%* dissipation
r_0 is penetrometer radius

In soils of very low permeability the time for dissipation can be decreased by using smaller diameter probes. A theoretical solution for this cases is given by *Teh and Houlsby (1991)* and it is compared with data from around the world by *Robertson et al. (1992)*, as shown in *Figure 4.3*.

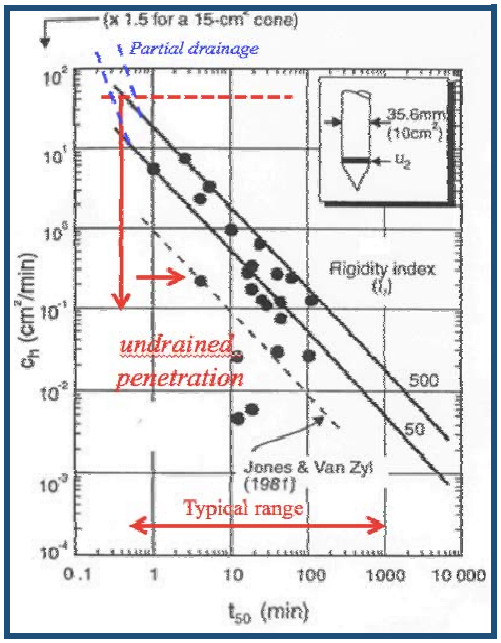


Figure 4.3: *Average laboratory c_h values and CPTU results*
(after Robertson et al. 1992, Teh and Houlsby theory shown as solid lines for I_R = 50 and I_R = 500).

c_h estimation is controlled by soil stress history, sensitivity, anisotropy, rigidity index (relative stiffness), fabric and history. In overconsolidated soils, the pore pressure behind the cone

tip can be low or negative, results in dissipation data that can initially rise before decreasing to the equilibrium values. Care is required to ensure the dissipation test to end at the right moment of time, not stopped prematurely after the initial rise.

An approximate estimate of the coefficient of consolidation in the vertical direction can be obtained using the ratios of permeability in the horizontal and vertical direction given in the section on hydraulic conductivity, since:

$$c_v = c_h(\frac{k_v}{k_h})$$

For relative short dissipations, the dissipation results can be plotted on a square-root time scale. The gradient of the initial straight line in m, where:

$$c_h = (\frac{m}{M_T})^2 r^2 I_r^{0.5}$$

where

M_T is *1.15* for u_2 position and *10 cm²* cone (*r=1.78 cm*).

4.17.3 Coefficients of permeability (hydraulic conductivity, k_h, k_v)

The horizontal coefficient of permeability can be estimated from the following expression:

$$k_h = \frac{\gamma_w}{2.3\sigma'_{v0}} RR c_h$$

where

RR is the compression ratio in the overconsolidated range. It represents the strain per log cycle of effective stress during recompression and can be determined from laboratory consolidation tests (*$0.5x10^{-2}$ <RR<$2x10^{-2}$* was recommended by *Baligh and Levadoux*).

Robertson et al. (1992a) presented a summary of available data from dissipation tests and laboratory determined k_h values.

Nature of clay	k_h/k_v
No macrofabric, or only slightly developed macrofabric, essentially homogeneous deposits	1 to 1.5
From fairly well to well developed macrofabric, e.g. sedimentary clays with discontinuous lenses and layers of more permeable material	2 to 4
Varved clays and other deposits containing embedded and more or less continuous permeable layers	3 to 15

Table 4.4: *Range of field values of k_h/k_v for soft clays (from Jamiolkowski et al., 1985).*

Estimation of soil permeability from CPTU and dissipation data is subject to much uncertainty and should be used as a guide only.

5.0 CPTU RESULTS APPLICATIONS

5.1 SOIL PROFILING AND APPLICATIONS IN GEOTECHNICAL DESIGN

5.1.1 Soil Behaviour Type

The major applications of CPTU are on *soil behaviour type and soil profiling*. Typically, the cone resistance, q_c is high in sands and low in clays, and the friction ratio, $R_f = f_s/q_t$ is low in sands and high in clays. The CPTU cannot be expected to provide accurate predictions of soil type based on *physical characteristics,* e.g. *grain size distribution*, but provides a guide to the *mechanical characteristics*, including: *strength*, *stiffness*, and *compressibility* of the soils, or the *soil behaviour type*, *SBT*.

The most commonly used CPTU soil behaviour type chart, suggested by *Robertson et al. (1986)* uses the basic CPTU measured parameters of cone resistance, q_c and friction ratio, R_f. The chart is global in nature and can provide reasonable predictions of soil behaviour type for CPTU testing. The expected overlap in some zones is modified in the interpretations of this report somewhat based on previous experience or local knowledge of the site.

Since both the penetration resistance and sleeve resistance increase with depth due to the increase in effective overburden stress, the CPTU data requires normalization for overburden stress for very shallow and/or very deep tests. A popular CPTU soil behaviour chart based on normalized CPTU data is firstly proposed by *Robertson (1990)*. The chart identifies general trends in ground response, such as: *increasing soil density*, *OCR*, *age* and *cementation* for granular soils, and *increasing stress history*, *OCR* and *soil sensitivity* for cohesive soils.

A more general normalized CPTU *SBT* chart, using large strain *soil behaviour* descriptions, proposed by *Robertson (2012)* is shown in *Figure 5.1*.

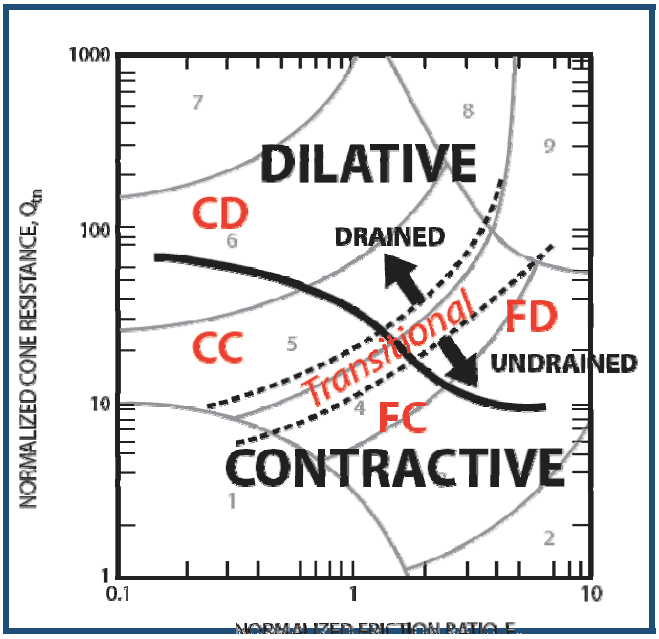


Figure 5.1: *Normalized CPTU Soil Behaviour Type (SBT_n) chart, Q_{tn}-F_R using general large strain soil behaviour description (Robertson, 2012).*

*

CD	is coarse grained dilative soil-predominately drained CPTU
CC	is coarse grained contractive soil-predominately drained CPTU
FD	is fine grained dilative soil-predominately undrained CPTU
FC	is fine grained contractive soil-predominately undrained CPTU

5.1.2 Soil Profiling

CPTU is an excellent test for soil profiling. The continuous monitoring of pore pressure during the cone penetration improves the soil stratigraphy descriptions. The pore pressure develops in response to the soil type being penetrated in the area where the pore pressure element is located. Soft, firm or stiff clays and contractive silts can show very high pore pressure. Very stiff overconsolidated clays and dilative silts can give very low or negative pore pressures same as very dense silty sands.

The thin layers of sand, or silt in a thick layer of clay, or thin layers of clay or silt in a thick layer of sand are easily distinguished during a CPTU test, which will give a response time sufficiently fast to observe pore pressure changes even in the very thin layers of soils (< *5mm*), depending on the response of soil to the advancing of cone.

The sandy soils tend to produce high cone resistance and low friction ratio, whereas soft clayey soils tend to produce low cone resistance and high friction ratio. Organic soils such as peat tend to have very low cone resistance and very high friction ratio. Soils with high horizontal stresses (*high OCR*) tend to have higher cone resistance and friction ratio.

CPTU is an excellent tool to classify the soils based on their behaviour type, and not based on grain size distribution. (*Douglas and Olser, 1981*)

The measurements of sleeve friction, f_s are often less reliable than the measurements of cone resistance, q_c (*Lunne et al., 1986*), but to overpass these problems pore pressure parameter ratio, B_q, and the classification charts based on it, which are also presented in *Appendix A.9*, are used when necessary.

For more reliability in soil profiling, the soil interpretations in this report are carried out based on three parameters measured on site, cone resistance, sleeve friction and pore pressure and three derived geotechnical parameters soil behaviour type index for all soils, undrained shear strength for cohesive soils and relative density for granular soils.

Generally, soils that fall in zones *8*, *9* and *10* of *Robertson et al (1986)* chart (*6* and *7* of *Robertson (1990)* chart) represent approximately drained penetration, whereas, soils in zones 1, 2, 3, 4, 5 and 6 of *Robertson et al (1986)* chart (1, 2, 3 and 4 of *Robertson (1990)* chart) represent approximately undrained penetration. Soils in zones 7, 11 and 12 of *Robertson et al (1986)* (5, 8 and 9 of *Robertson (1990)* chart) may represent partially drained penetration. The classification is often influenced by changes in *stress history*, *in situ stresses*, *sensitivity*, *stiffness*, *mineralogy*, etc. An advantage of pore pressure measurements during cone penetration is the ability to evaluate drainage conditions more directly. (*Lunne et al., 1997*)

The information about the rate and manner of excess pore pressures during the dissipations significantly helps the accurate classification in the corresponding depths of dissipation tests. In very stiff, overconsolidated clayey soils, the pore pressure behind the cone is very low and sometimes negative of the equilibrium pore pressure, u_0, whereas the pore pressure on the face of the cone is very large due to the large increase in normal stresses created by the cone penetration. When penetration is stopped in overconsolidated clays, pore pressure recorded behind the cone may initially increase before decreasing to the equilibrium pore pressure. The rise is caused by local equalization of the high pore pressure gradient around the cone.

Cone penetration in fine grained soils, such as clays and silts, is generally undrained. Cone penetration tests under undrained conditions generate high pore pressure and this reading is extremely useful, because it affects both cone resistance and sleeve friction measurements. These parameters should be corrected using the measured pore pressure.

CPTU in coarse gained soils, such as sandy or gravelly soils is generally drained. In these conditions there is no excess pore pressure generated as a result of cone penetration. Relative density has been used as the main parameter for description of sandy deposits.

5.1.3 Applications in geotechnical design

CPTU measured parameters are used to derive geotechnical parameters, which are the input in several geotechnical analyses. An alternate approach is to directly apply CPTU results to the geotechnical calculations.

As a guide, *Table 5.1* shows a summary of the applicability of CPTU results for direct design applications. The ratings shown in the table have been assigned based on current experience and represent a qualitative evaluation of the confidence level assessed to each design problem and general soil type. Details of ground conditions and project requirements can influence these ratings.

Type of soil	Pile Design	Bearing Capacity	Settlement	Compaction Control	Liquefaction
Sand	A-B	A-B	B-C	A-B	A-B
Clay	A-B	A-B	B-C	C-D	A-B
Intermediate Soils	A-B	B-C	B-C	B-C	A-B

Table 5.1: *Perceived applicability of CPTU for various direct design problems.*

A is high
B is high to moderate
C is moderate
D is moderate to low

6.0 REFERENCES

ASTM D7400-14 (2015), "Standard and ISSMGE TC10 guideline", by *Butcher, A. P. et al.*

Baldi et al. (1986) / Al-Hamoud and Wehr (2006), "Interpretation of CPTs and CPTUs; 2nd part: drained penetration of sands / Experience of vibrocompaction in calcareous sand of UAE"

Been at al (1987), "Cone Penetration Test Calibration For Erksak (Beaufort Sea) Sand", Canadian Geotechnical Journal, 24, 4, pp. 601-610

Been and Jefferies (1992), "Towards Systematic CPT Interpretation", Proceedings Wroth Memorial Symposium, Thomas Telford, London, pp. 121–134

Boulanger and Idriss (2014), "CPT and SPT Based Liquefaction Triggering Procedures", Report No. UCD/CGM-14/01, Center of Geotechnical Modelling, Department of Civil and Environmental Engineering, College of Engineering, University of California at Davis

British Standard BS5930:1999, "Code of practice for site investigations". BSI, 1999

British Standard BS EN ISO 22475-1:2012

Burns and Mayne (2002), "Analytical Cavity Expansion Critical State Model for Piezocone Dissipation in Fine Grained Soils, Soils and Foundations", Vol. 42, No. 2, 2002

Houlsby, G.T. and Teh, C. I. (1998), "Analysis of the piezocone in clay". Proceedings of the International Symposium on Penetration Testing, ISOPT-1, Orlando, 2, 777-83, Balkema Pub., Rotterdam

Idriss and Boulanger (2008), "Soil liquefaction during earthquakes", Earthquake Engineering Research Institute, MNO-12

International Standard for Electrical Cone and Piezocone Penetration Test, ISO 22476-1:2012

International Standard, "Geotechnical Investigation and testing- field testing – part 1: electrical cone and piezocone penetration test", ISO/ FDIS 22476-1.

Jamiolkowski et al. (2001), Evaluation of relative density in shear strength of sands from cone peonetration tests (CPT) and flat dilatometer (DMT), Soil Behaviour and Soft Ground Construction (GSP 119), American Society of Civil Engineers, Reston, Va., 2001, pp. 201-238

Jefferies, M.G. and Davies, M.P. (1991), "Soil classification by the cone penetration test": Discussion. Canadian Geotechnical Journal, 28(1), 173-6

Jefferis and Been (2006), "Soil liquefaction: a critical state approach", Taylor and Frencis.

Jones, G.A. and Rust, E. (1995), "Piezocone settlement prediction parameters for embankments on alluvium". Proceedings of the International Symposium on Cone Penetration Testing, CPT '95, Linköping, Sweden, 2, 501-8, Swedish Geotechnical Society

Kulhawy, F.H. and Mayne, P.H. (1990) "Manual on estimating soil properties for foundation design". Electric Power Research Institute, EPRI, August, 1990.

Keaveny and Mitchel (1986), "Strength of Fine-Grained Soils Using the Piezocone," Use of In-Situ Tests in Geotechnical Engineering (GSP 6), American Society of Civil Engineers, Reston, Va., 1986, pp. 668–699

Lord, J.A., Clayton, C.R.I., and Mortimore, R.N. (2002), "Engineering in chalk". Ciria Guide C574.

Lunne, T. And Kleven, A. (1981), "Role of CPT in North Sea foundation engineering". Session at the ASCE National Convention: Cone Penetration Testing and Materials, St. Louis, 76-107, American Society of Engineers (ASCE).

Lunne, T. And Christophersen, H.P. (1983), "Interpretation of cone penetrometer data for offshore sands". Proceedings of the Offshore Technology conference, Richardson, Texas, Paper No. 4464.

Lunne, T., Robertson, P. K. And Powell, J. J. M. (1997), "Cone Penetration testing in Geotechnical Practice". Blackie.

Mayne and Rix (1995) / Lune et al. (1997), "Gmax-qc relationships for clays", Geotechnical Testing Journal, ASTM, 16 (1), pp. 54-60/ CPT in Geotechnical Practice (1997)

Mayne (2001), "Stress-Strain-Strength-Flow Parameters from Enhanced In-Situ Tests", International Conference on In-Situ Measurement of Soil Properties and Case Histories, Indonesia, 2001, pp. 27–48

Mayne and Campanella (2005), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mayne (2007), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mitchell, J.K. and Gardner, W.S. (1975), "In situ measurement of volume change characteristics". Proceedings of the ASCE Specialty Conference on In Situ

Measurements os Soil Properties, Raleigh, North Carolina, 2, 279-345, American Society of Engineers (ASCE)

Rix, G.J. and Stokoe, K.H. (1992), "Correlation of Initial Tangent Modulus and Cone Resistance", Proceedings of the International Symposium on Calibration Chamber Testing, Potsdam, New York, 1991, pp. 351-362, Elsevier

Robertson, P.K. and Campanella, R.G. (1983) "Interpretation of cone penetrometer test: Part 1: Sand". Canadian Geotechnical Journal, 20(4), 718-33

Robertson, P.K., Campanella, R.G., Gillespie, D. And Greig, J (1986), "Use of piezometer cone data". Proceedings of the ASCE Specialty Conference In Situ '86: Use of In Situ Tests in Geotechnical Engineering, Blacksburg, 1263-80, American Society of Engineers (ACE)

Robertson, P.K. (1990), "Soil classification using the cone penetration test". Canadian Geotechnical Journal, 27(1), 151

Robertson, P.K. and Fear, C.E. (1995), "Liquefaction of sands and its evaluation. IS TOKYO '95". First International Conference on Earthquake Geotechnical Engineering, Keynote Lecture, November, 1995

Robertson, P.K. and Wride (Fear), C.E. (1998), "Evaluating cyclic liquefaction potential using the cone penetration test". Can. Geotech. J. Vol. 35

Robertson (2010), "Soil behaviour type from the CPT: an update", Gregg Drilling and Testing Inc. Signal Hill, California, USA, CPT 10, paper 2-56

Robertson (2015), "Guide to Cone Penetration Testing", 6th Edition (2015)

Senneset K. And Janbu, N. (1985), "Shear strength parameters obtained from static cone penetration tests. Strength Testing of Marine Sediments; Laboratory and In Situ Measurements". Symposium, San Diego, 1984, ASTM Special technical publication, STP 883, 41-54

Senneset, K., Sandven, R. And Janbu, N. (1989), "The evaluation of soil parameters from piezocone tests". Transportation Research Record, No. 1235, 24-37

Schmertmann, J.H (1978), "Guidelines for cone penetration test, performance and design", US Federal Highway Administration, Washington, DC, Report, FHWA-TS-78-209, 145

Shuttle and Jefferies (1998), "Dimensionless and unbiased CPT interpretation in sand", International Journal for Numerical and Analythical Methods in Geomechanics, 22, pp. 351-391.

Suzuki, Y., Tokimatsu, K., Taya, Y. And Kubota, Y. (1995), "Correlation between CPT data and dynamc properties of in situ frozen samples". Proceedings of the Third

International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, St. Louis, 1, 249-52, University of Missouri Rolla.

Topp, G.C., Davis, J.L. and Anna, A.P. (1980),. "Electromagnetic determination of soil water content: Measurements in coaxial transmission lines". Water Resiur. Res., 16, 574-582.

Waltham, A.C., 2002, "Foundations of Engineering Geology". Blackie Academic and Professional, 2002.

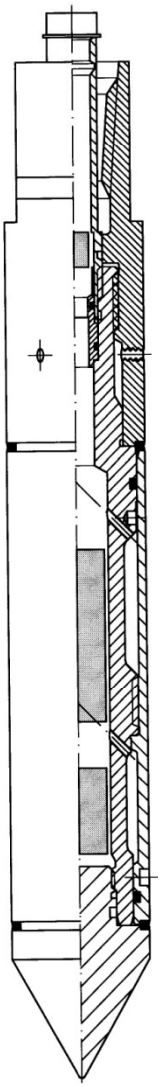
APPENDIX A

APPENDIX A1 – Site Map

Not provided

APPENDIX A2 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A3 – Cone Calibration Certificate

Sondeerapparatuur Waterspanningsmeters Hellingmeters Veldmeet-apparatuur

GeoPoint Systems bv

Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
BTW : NL814690178.B01
IBAN : NL28 INGB0682301396
BIC : INGBNL2A

Cone Calibration Certificate

Certificate:	**GS-1186-009**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	1186	
Calibration date:	15-06-2017	
Client:	Insitu	
Calibrated by:	M. van Es	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
HBM certificate no. :	49046	
Calibration conditions		
Ambient temperature:	24.3	°C
Atmospheric pressure:	1016	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	50	kN
Friction sleeve area:	20000	mm2
Load tip + local friction (nom.):	50	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0319		0311		0187			
	0	0	0	0	0	0	0	2503	2479
	5	0312	5	0326	0.4	1397	-20	0457	0471
	10	0623	10	0652	0.8	2787	20	4476	4518
	15	0936	15	0979	1.2	4171			
	20	1249	20	1306	1.6	5551			
	25	1561	25	1632	2.0	6925			
	30	1874	30	1958					
	35	2185	35	2288					
	40	2496	40	2615					
	45	2816	45	2944					
	50	3132	50	3274					

Max. eror, abs. qc: 35 kPa
Max. error, abs. fs: 2 kPa
Max. error, abs. u2: 10 kPa
Max. error, abs. I: 1 °

This calibration is compliant with GeoPoint Systems internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-) National Standards.

[redacted]

Approved by: B. v
Date: 15-0

www.geopoint.nl
www.geopoint.eu

Ingeschreven in het handelsregister van de K.v.K. voor Rijnland onder nummer 28106251.
Op al onze leveranties en/of overeenkomsten zijn de algemene verkoopvoorwaarden van Geopoint Systems B.V. van toepassing.

APPENDIX A4 – Project Summary Sheet

CPT Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPTC-01A	9.40	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-02	7.94	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-03	8.22	10/08/2017	S15CFIIP.1186	Test stopped due to buckling rods.
CPTC-04	15.00	10/08/2017	S15CFIIP.1186	Test completed at target depth.
CPTC-05	11.40	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-06	12.58	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-07	10.75	11/08/2017	S15CFIIP.1186	Test stopped due to buckling rods.
CPTC-08	1.65	11/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-08A	10.36	11/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-09	25.00	11/08/2017	S15CFIIP.1186	Test completed at target depth.
CPTC-10	10.61	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-11	20.27	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.

APPENDIX A5 – CPT Rig Datasheet

RIGS

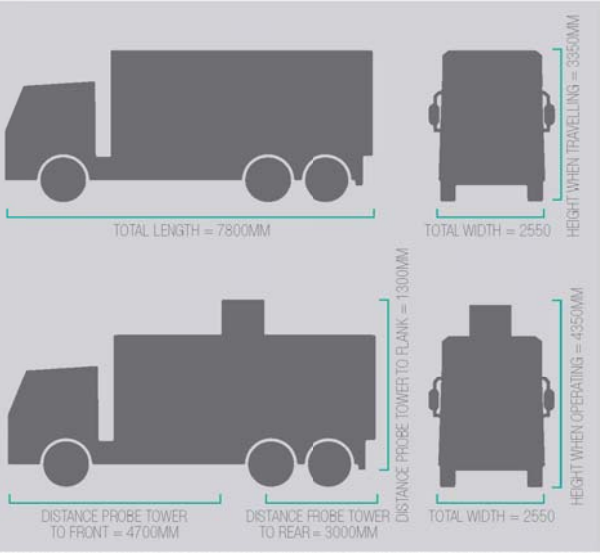
21 TONNE WHEELED RIG (CPT010)

This rig is ideal for geotechnical testing on hardstanding sites such as car parks, motorways and docks. Fitted with reflective yellow and red chevrons, these high visibility rear markings meet the 'Chapter 8' requirements for vehicles working on highways. In addition, there are beacons fitted to the front and strobes to the back corners to ensure further safety and visibility for night work on the motorways. This efficient truck is capable of pushing to a depth of 30 to 40 metres depending on the ground conditions of the site. Furthermore, the interior is large enough to house our MiHpt equipment for environmental testing.

CPT RIG DETAILS

DRIVE SYSTEM	6 X 2 WHEELED DRIVE
TOTAL WEIGHT	21 TONNES
GROUND BEARING PRESSURE	75KPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M CF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	HARDSTANDNG SITES E.G. ROADS INCLUDING MOTORWAYS, CAR PARKS, DOCKS DRY NON HARDSTANDNG SITES.

CPT RIG DIMENSIONS









IN SITU SITE INVESTIGATION INSITUSI.COM

APPENDIX A6 – Symbol List

English

a	is area ratio of the cone ($= {}^{A_n}/_{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {}^{(u_2 - u_0)}/_{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {}^{f_s}/_{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {}^{G}/_{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {}^{\sigma'_{h0}}/_{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	measured cone resistance

q_e effective cone resistance $(= q_t - u_2)$
q_n is net cone resistance $(= q_t - \sigma_{v0})$
q_t is corrected cone resistance $(= q_c - (1-a)u_2)$
Q_c is total force acting on the cone
Q_t is normalized cone resistance $(= {}^{q_t - \sigma_{v0}}/_{\sigma'_{v0}})$
R_f is friction ratio $(= \left({}^{f_t}/_{q_t}\right) x100\%$ or alternatively $= \left({}^{f_t}/_{q_t}\right) x100\%)$
s_u is undrained shear strength
s_{ur} is remoulded undrained shear strength
S_t is sensitivity
t is time
t_{50} is time for 50% dissipation of excess pore water pressure
T_{50} is time factor at $U = 50\ \%$
u is pore water pressure
u_0 is in situ pore pressure
u_1 is pore pressure measured on the cone
u_2 is pore pressure measured behind the cone
u_3 is pore pressure measured behind sleeve friction
Δu is excess pore water pressure
U is normalized excess pore pressure
V_s is shear wave velocity
z is depth

Greek

α is constant
α is cone roughness
β is constant
β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ is unit weight of soil
γ_w unit weight of water
Δ is change
Δu is excess pore pressure $(= u - u_0)$
μ is Poisson's ratio
ρ is density
ψ is state parameter
σ, σ' is normal stress (total, effective)
σ_h, σ_h' is horizontal stress (total, effective)
σ_v, σ_v' is horizontal stress (total, effective)
σ_{v0},σ_{v0}' is overburden stress (total, effective)
τ_{av} average cyclic shear stress
τ_{cy} cyclic shear stress
φ' effective friction angle

APPENDIX A7 – Abbreviations

ASTM	is American Society for Testing and Materials
CPTU	Cone Pentration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Overconsolidated
OCR	Overconsolidation Ratio
PL	Limit Pressure
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A8 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected cone resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, u
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {}^{F_s}/_{A_s}$

APPENDIX A9 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX B

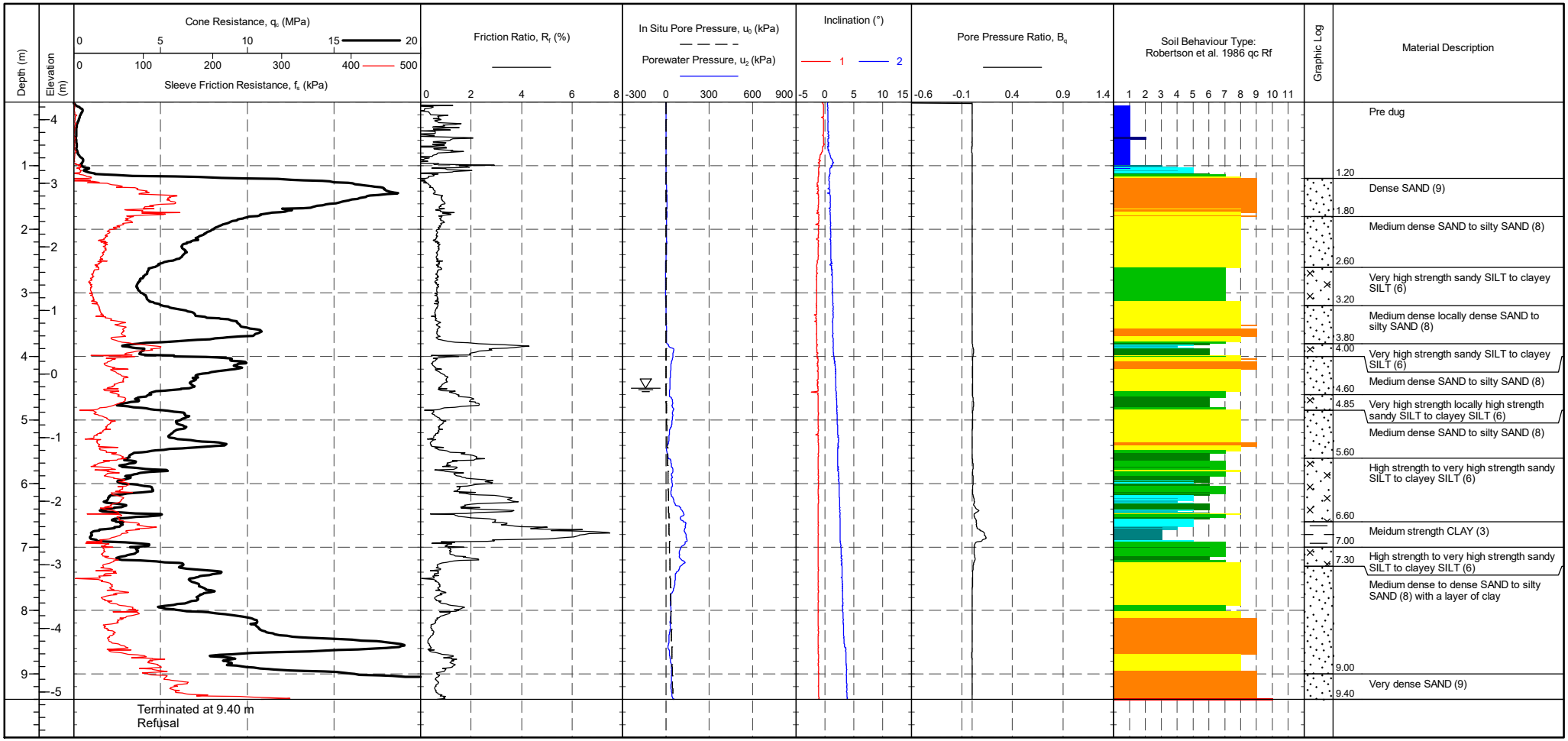
Cone Penetration Measured Parameters

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-01A**

CLIENT : Geosphere Environmental	EASTING : 653755.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293037.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 4.28 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre / Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV / 324 mV	0.074 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	289 mV / 306 mV	0.013 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-01A	Pore Pressure 2	216 mV / 271 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2463 mV / 2436 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

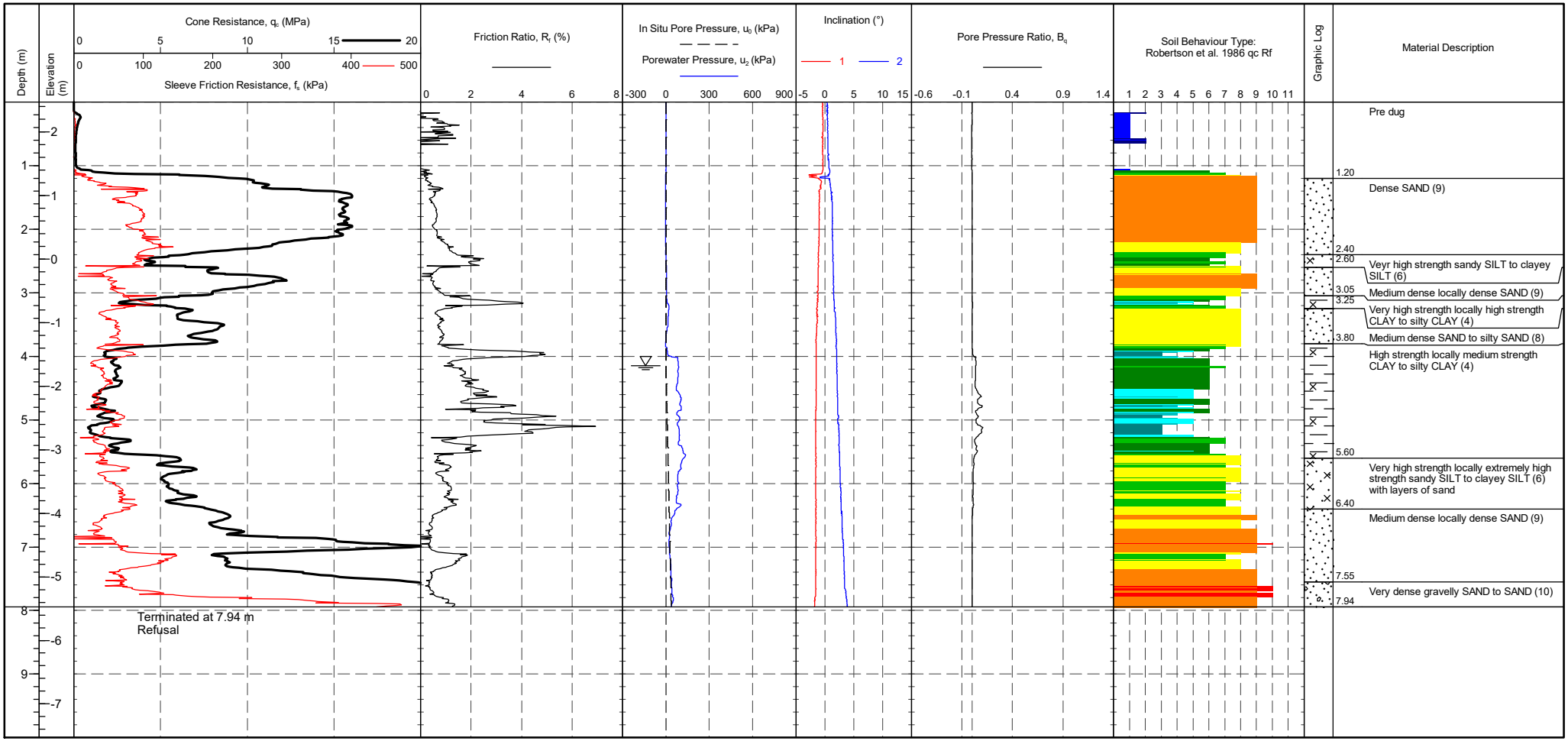
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-02**

CLIENT : Geosphere Environmental	EASTING : 653810.7 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292976.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.47 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES		
CONE AREA : 15cm^2	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	317 mV	320 mV	0.032 MPa
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	302 mV	310 mV	0.006 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-02	Pore Pressure 2	250 mV	286 mV	0.01 kPa
FRICTION REDUCER : None	WEATHER : Overcast & Mild	X-Y Inclinometer	2467 mV	2477 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

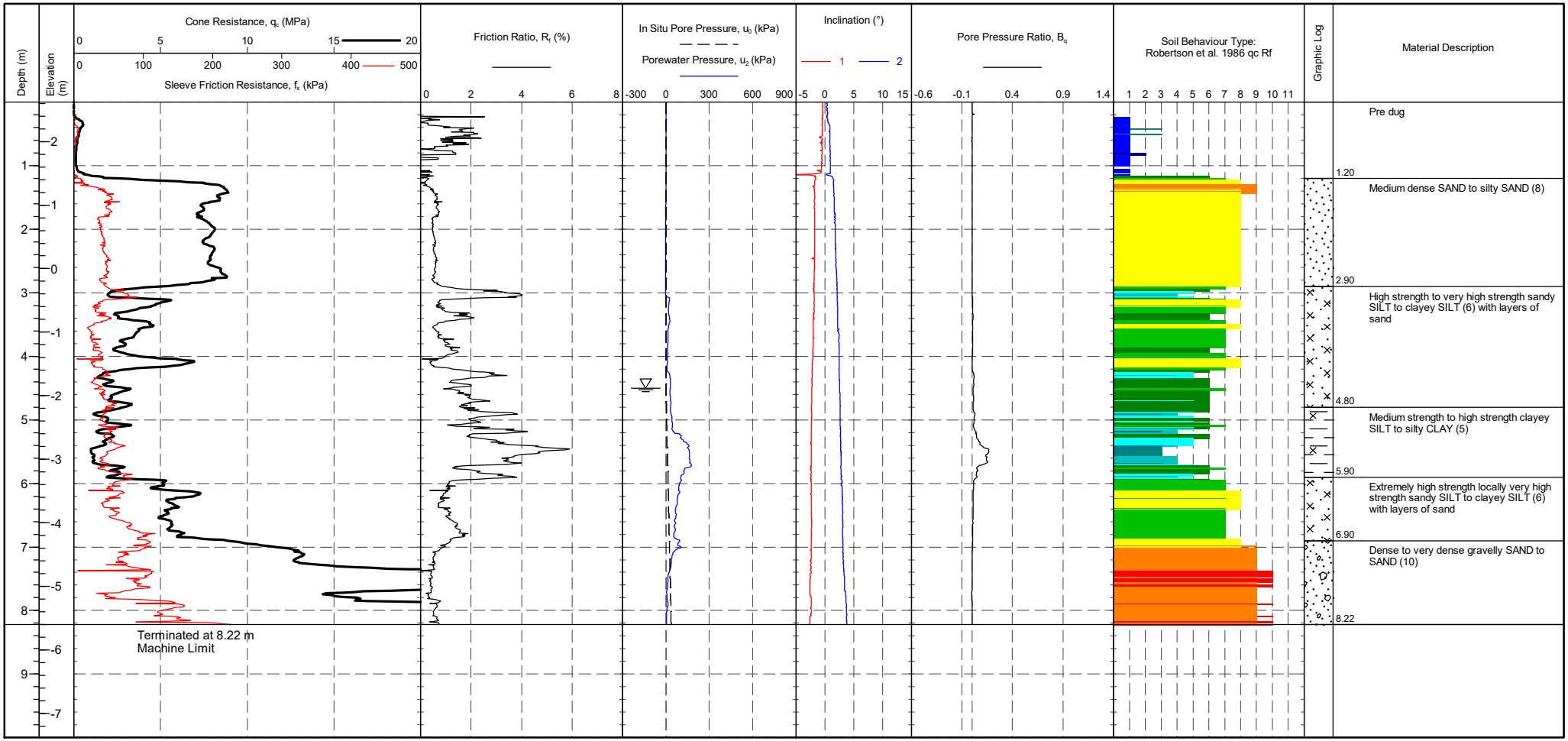
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-03**

CLIENT : Geosphere Environmental	EASTING : 653781.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292986.6 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.62 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-03		
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	319 mV	318 mV	-0.011 MPa
Sleeve	306 mV	308 mV	0.002 kPa
Pore Pressure 2	268 mV	284 mV	0.005 kPa
X-Y Inclinometer	2469 mV	2484 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

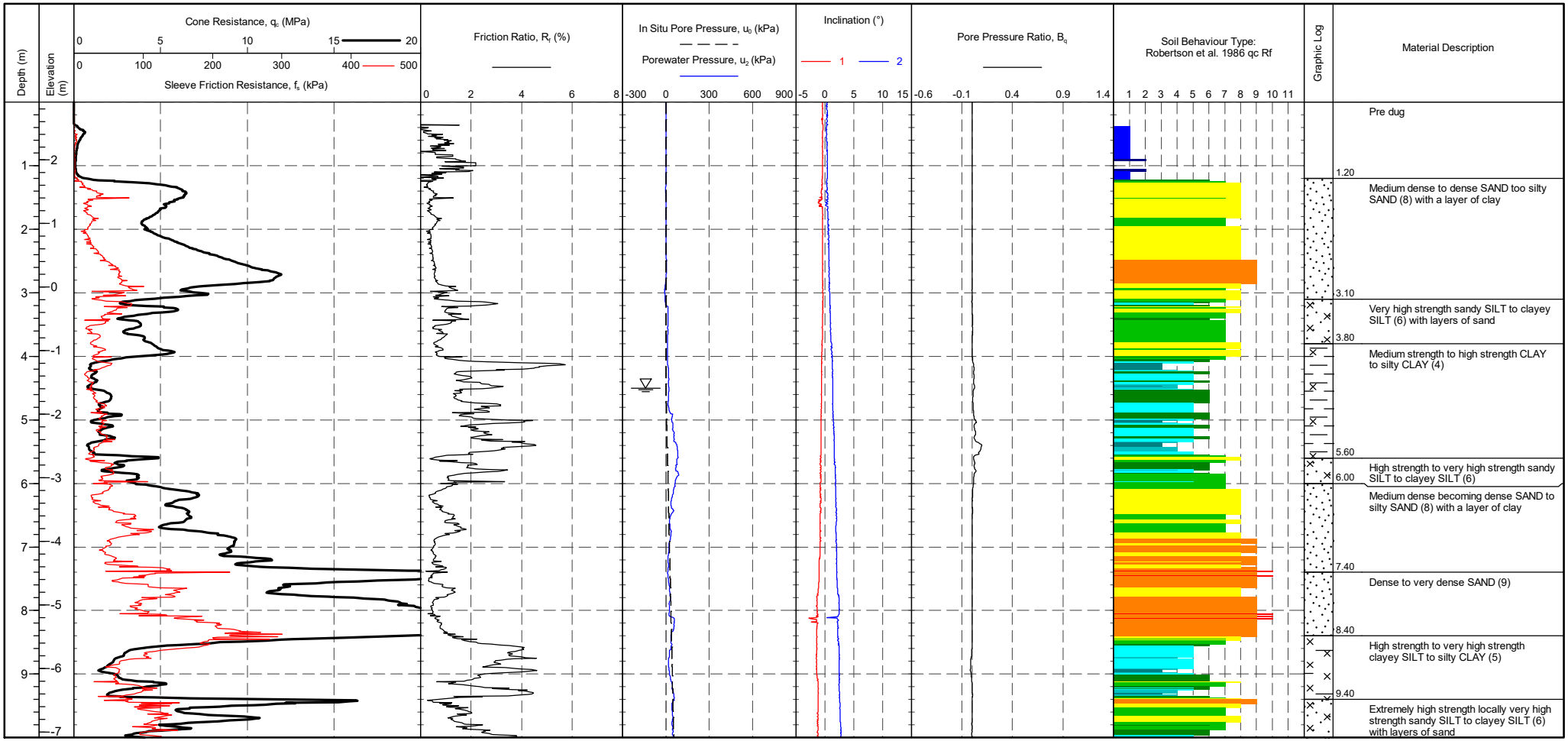
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	
FILTER POSITION	: u2	OPERATOR	: LS & DH	
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	318 mV	315 mV	-0.032 MPa
Sleeve	299 mV	300 mV	0.001 kPa
Pore Pressure 2	231 mV	315 mV	0.024 kPa
X-Y Inclinometer	2459 mV	2388 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

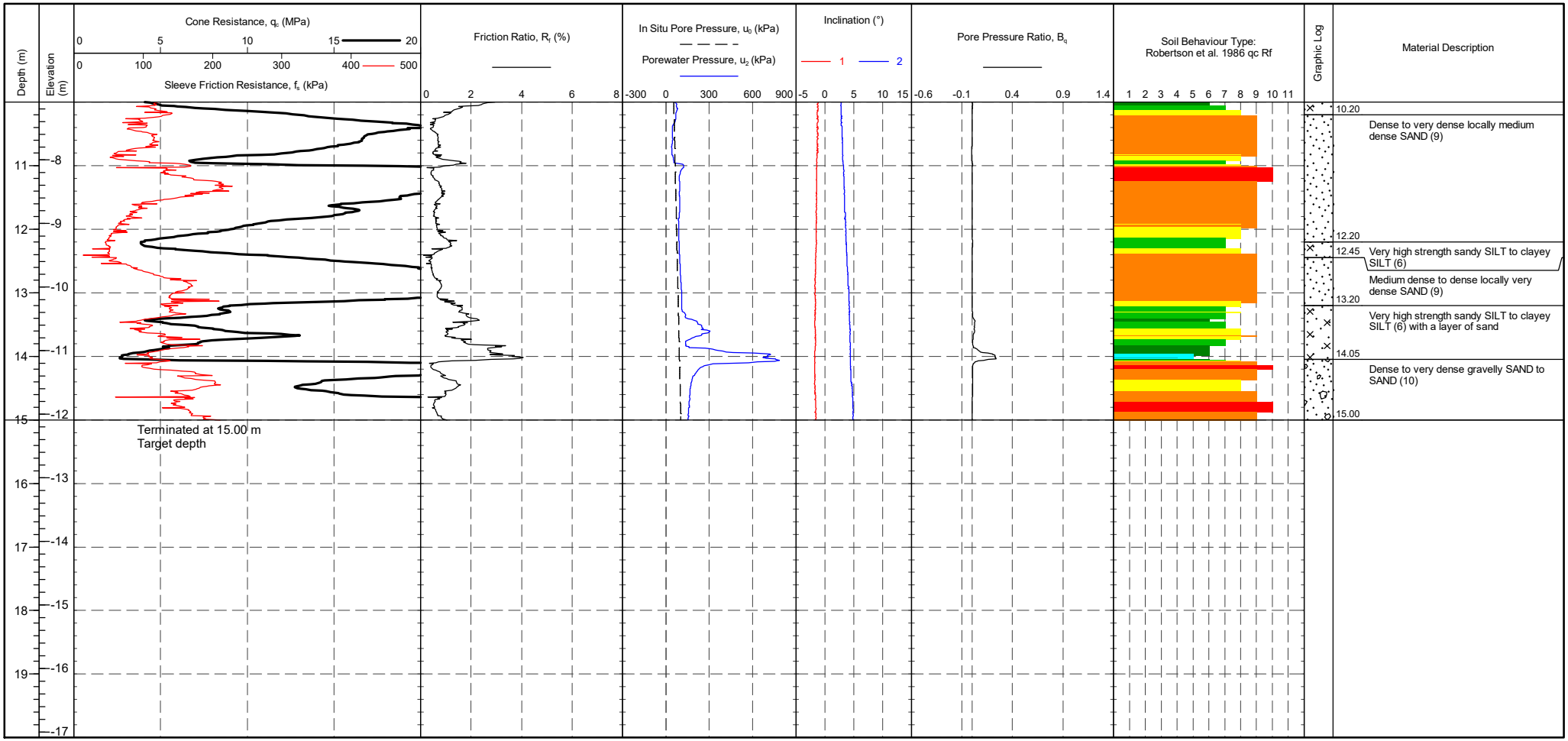
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

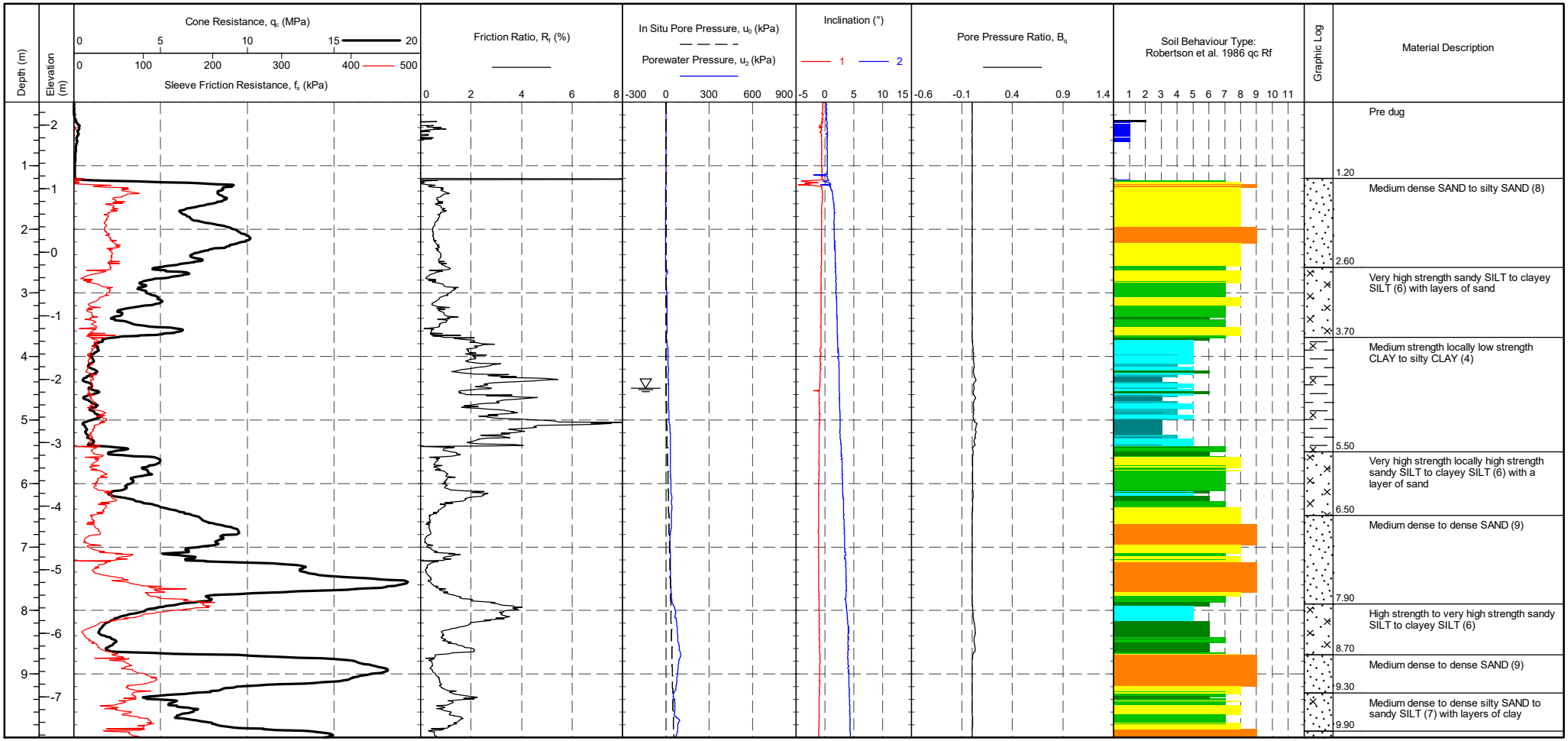
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05		
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	317 mV	318 mV	0.011 MPa
Sleeve	305 mV	308 mV	0.002 kPa
Pore Pressure 2	251 mV	341 mV	0.026 kPa
X-Y Inclinometer	2473 mV	2479 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

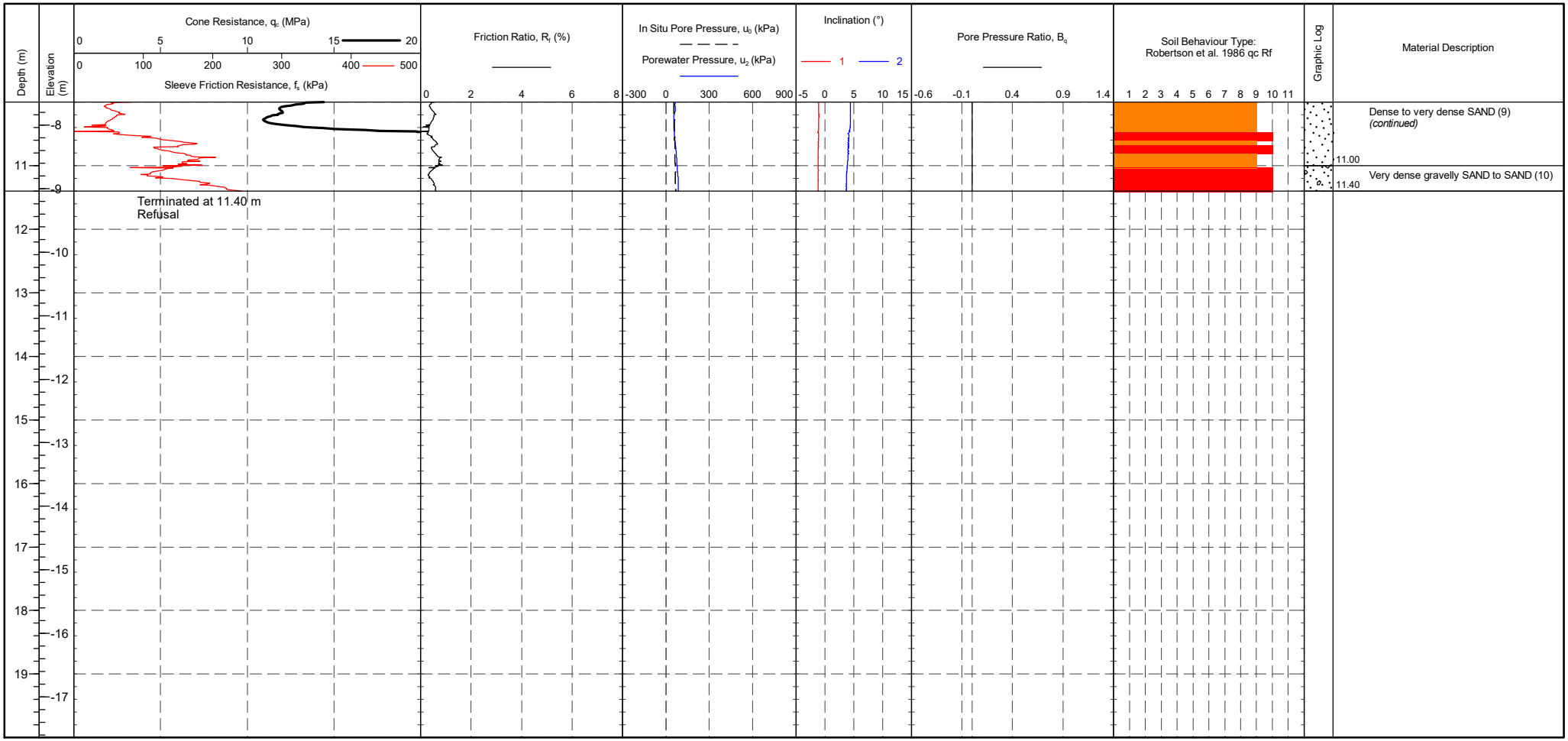
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV	0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

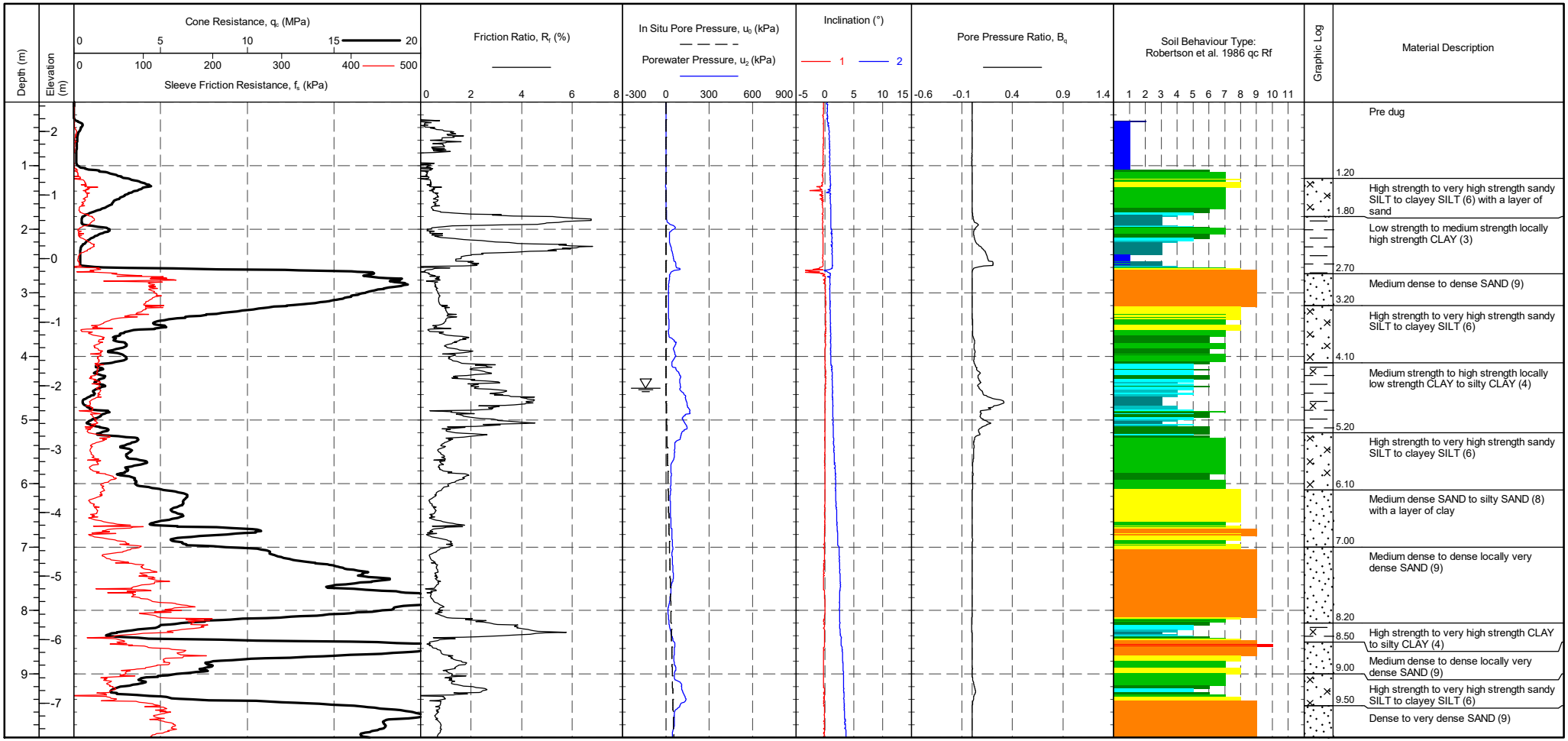
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

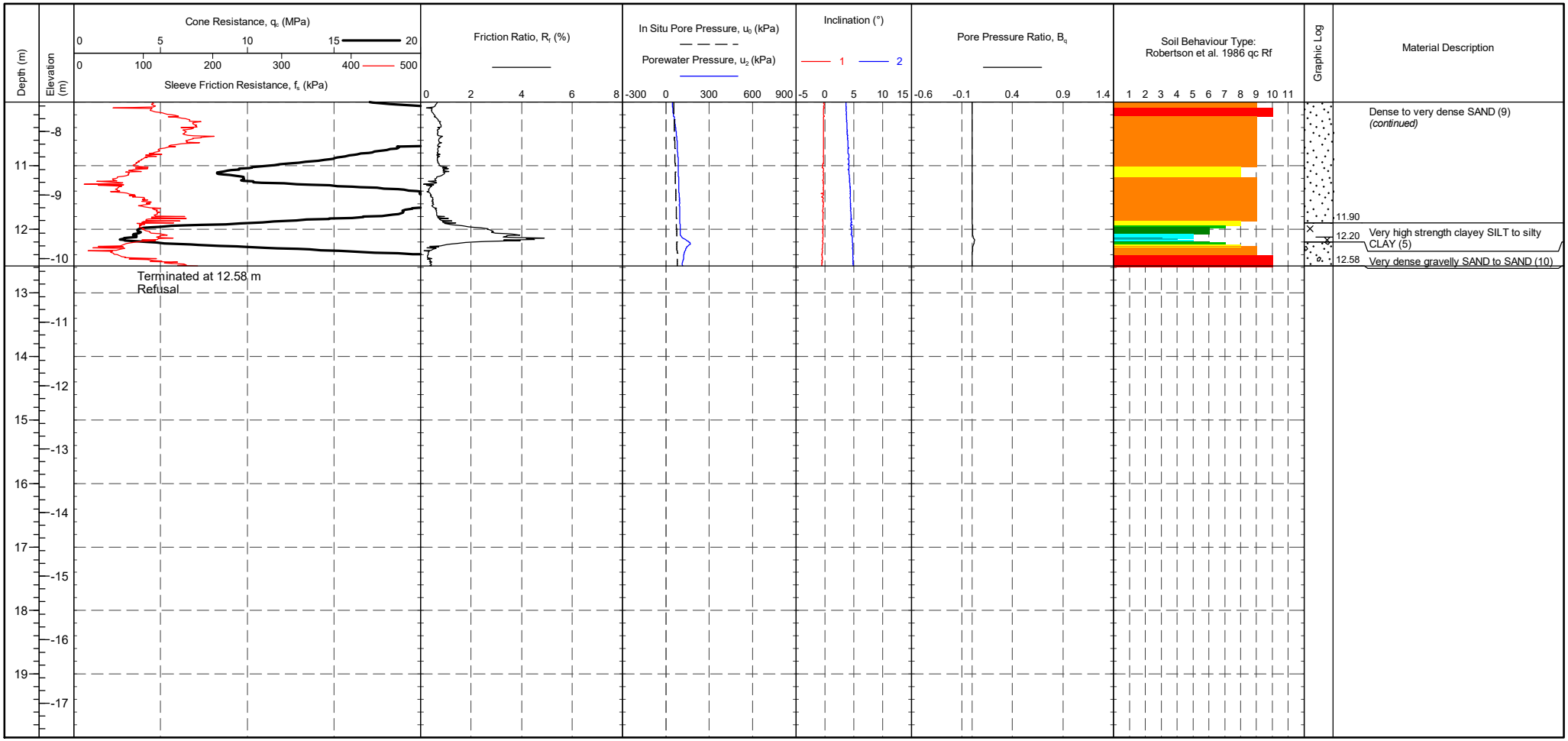
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

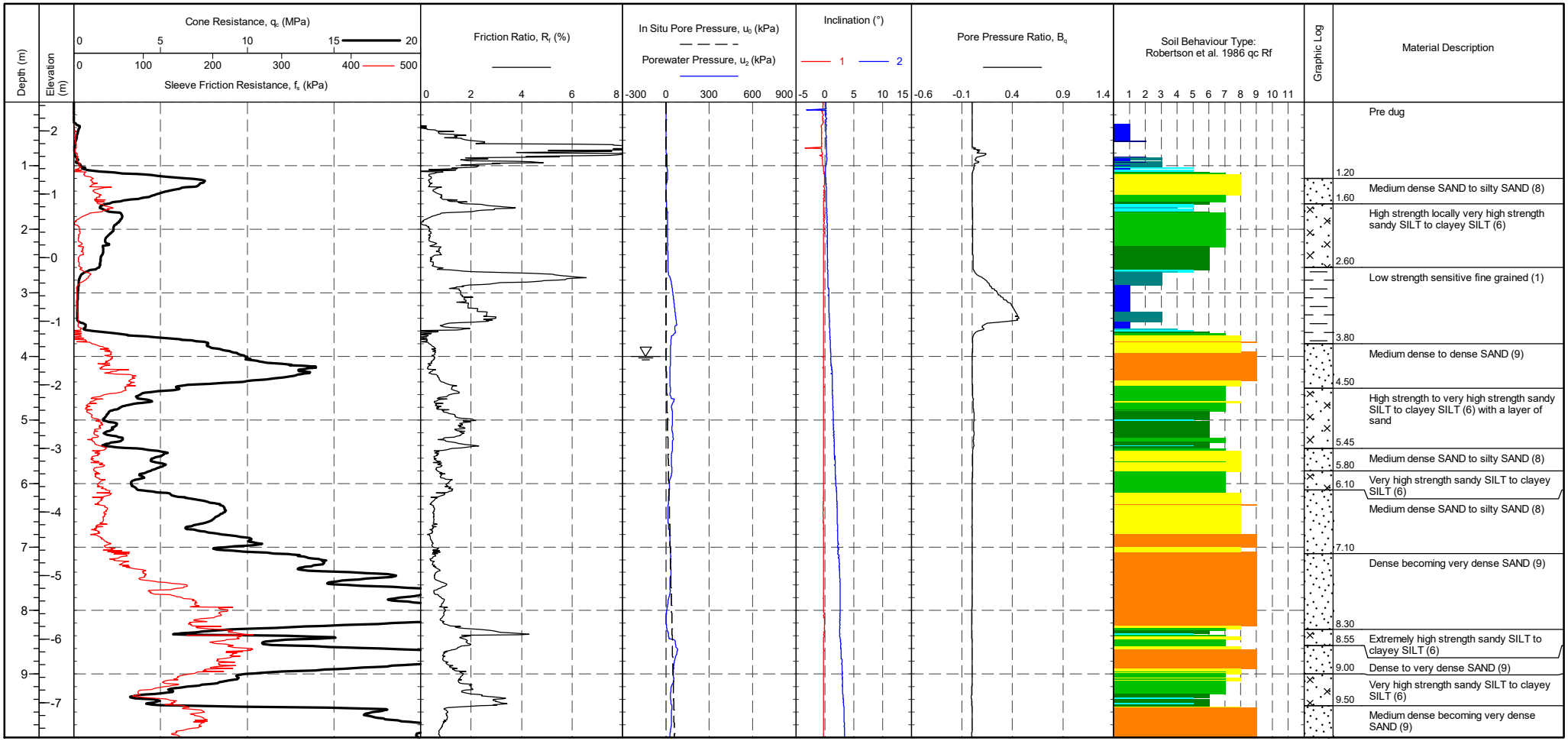
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES		
CONE AREA : 15cm²	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER : None	WEATHER : Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

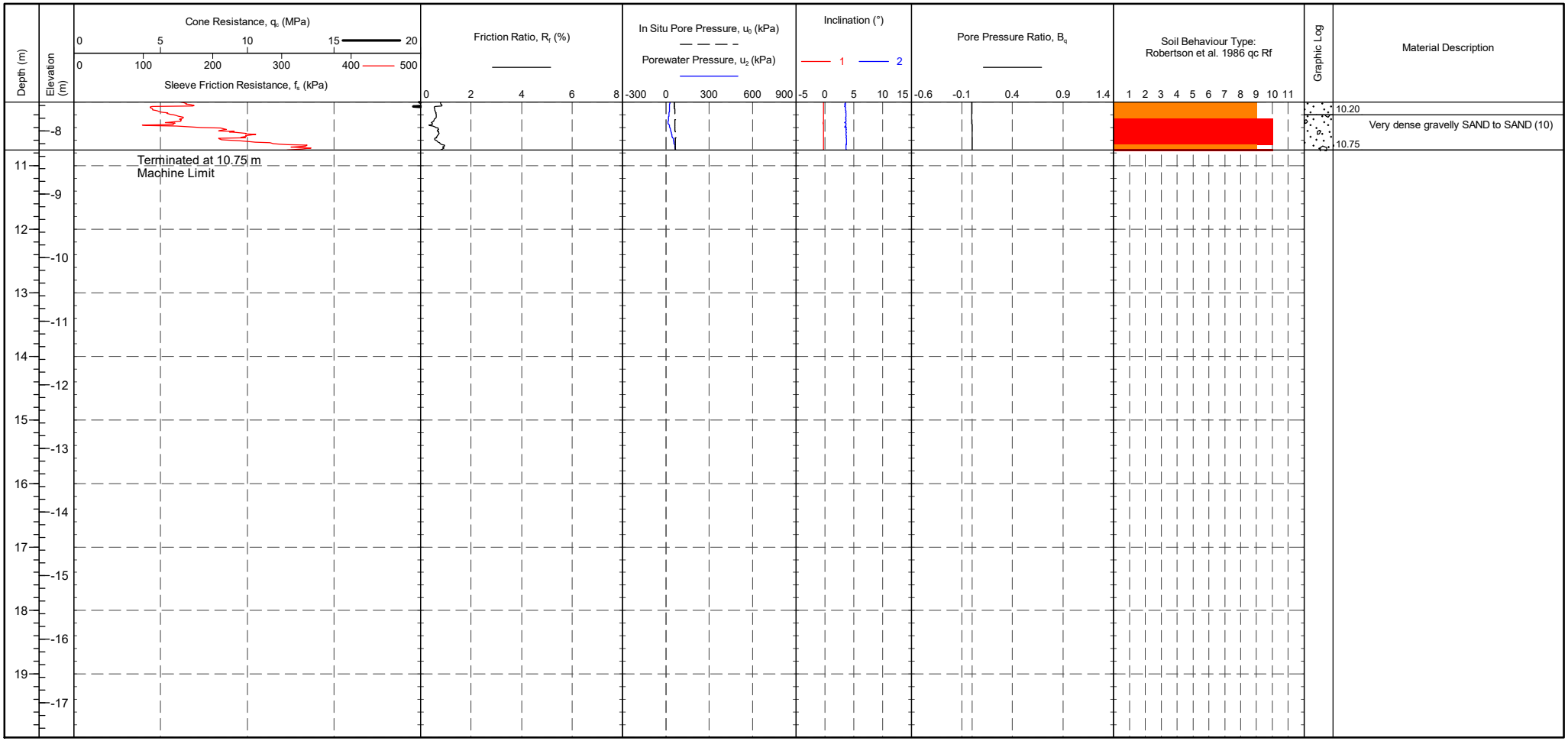
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

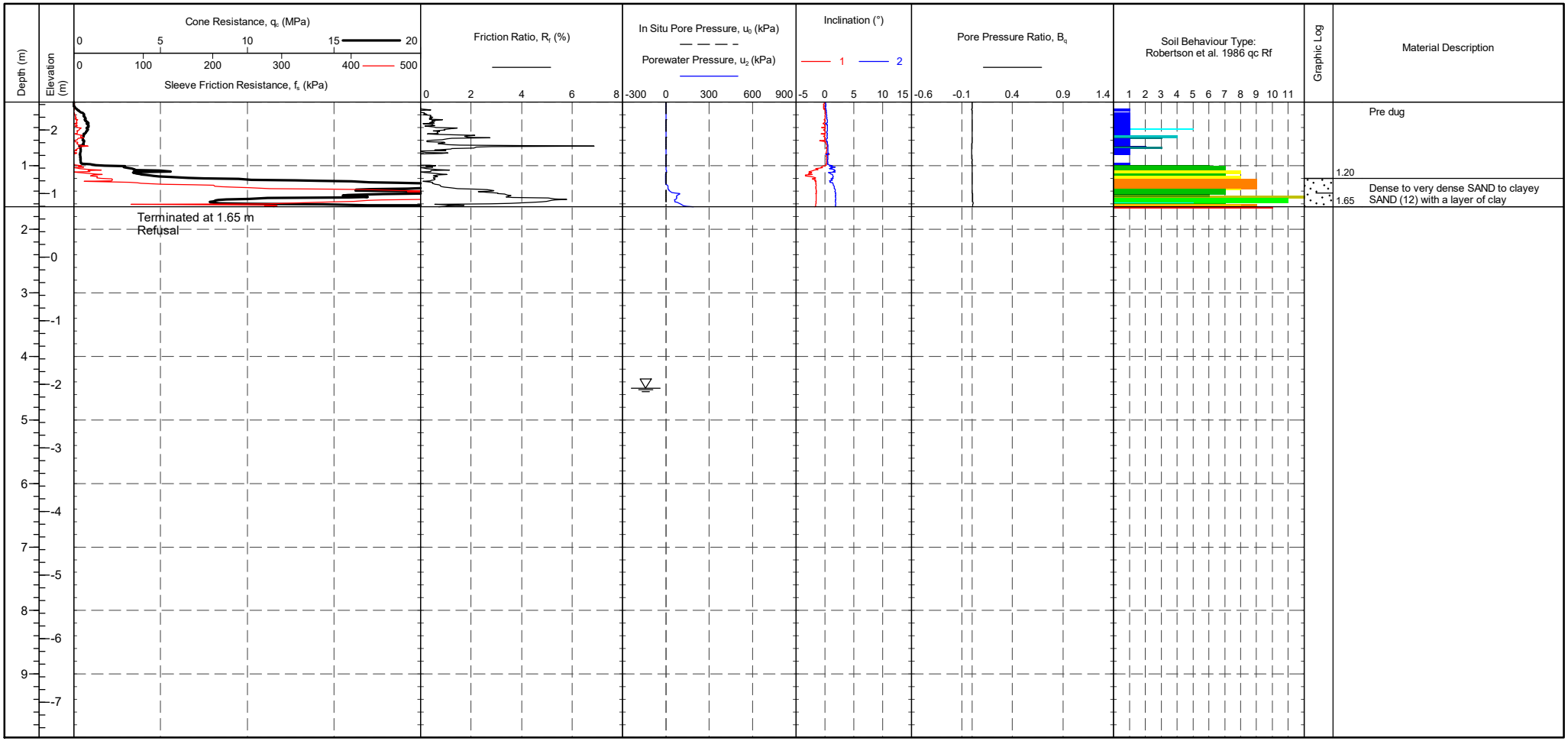
Working with: geosphere environmental ltd

CPT LOG 01

PointID

CPTC-08

CLIENT	: Geosphere Environmental	EASTING	: 653888.0 m	REMARK	SHEET : 1 OF 1
PROJECT	: Lake Lothing, Lowerstoft	NORTHING	: 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION	: Lowerstoft	ELEVATION	: 2.44 m		TEST DATE : 11/08/2017
PROJECT No.	: 1170332	CHECKED BY	: LD		PLOT DATE : 25/08/2017
		TERMINATION REASON	: Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	311 mV	-0.064 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	309 mV	0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08	Pore Pressure 2	238 mV	263 mV	0.007 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2484 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

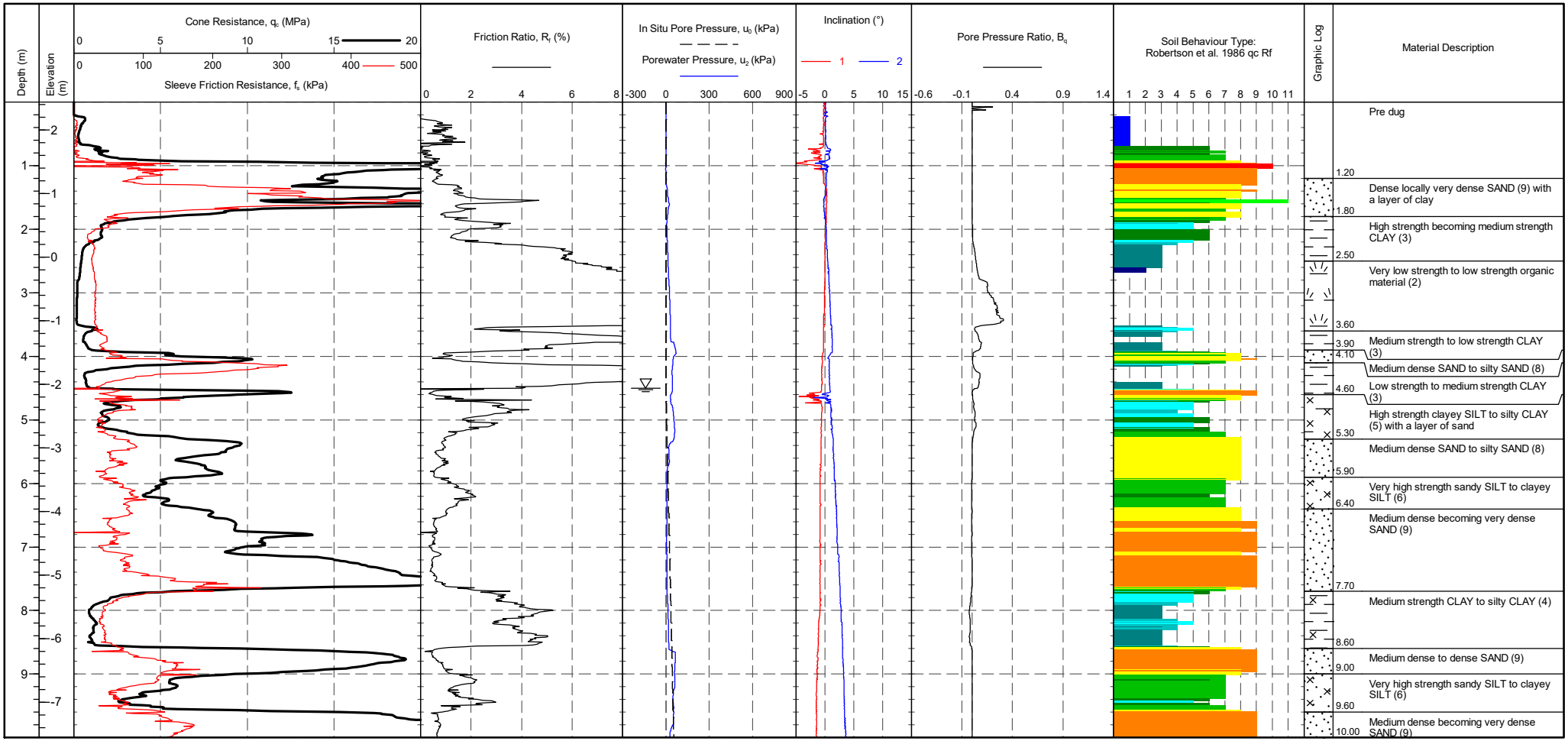
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

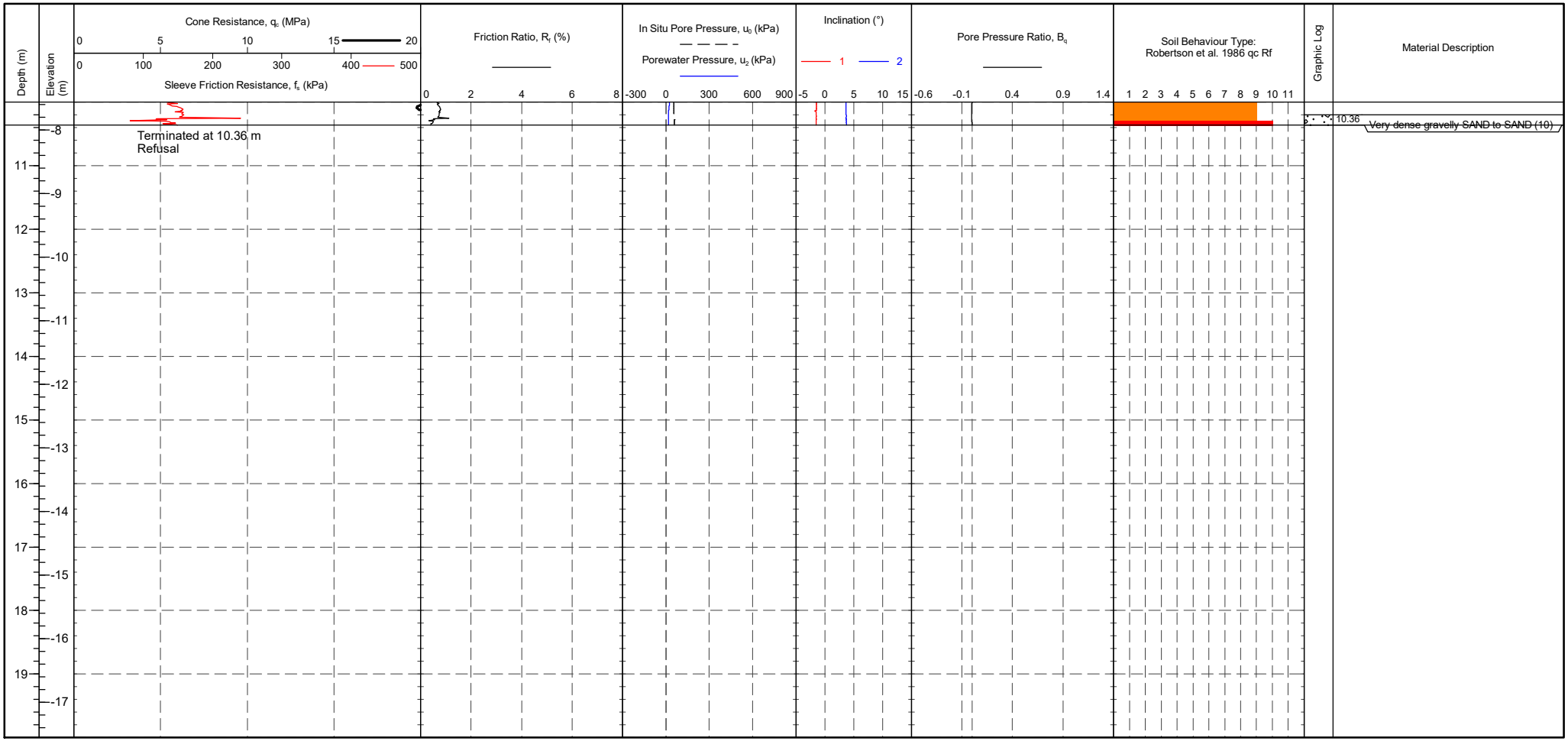
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



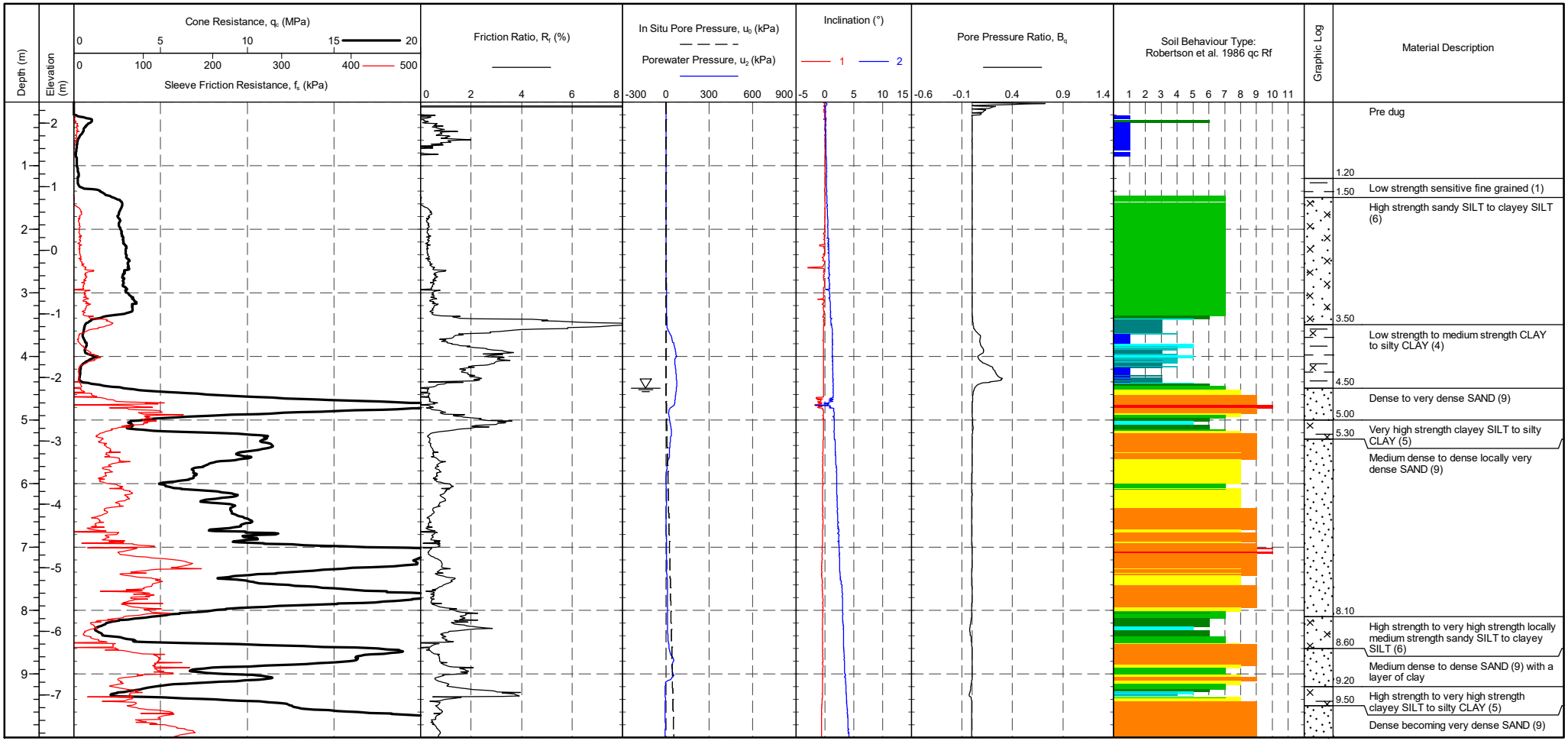
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES				METHOD: Robertson et al. 1986 qc Rf			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	1 - Sensitive fine grained material	5 - Clayey silt to silty clay	9 - Sand	Groundwater Level
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa	2 - Organic material	6 - Sandy silt to clayey silt	10 - Gravelly sand to sand	
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa	3 - Clay	7 - Silty sand to sandy silt	11 - Very stiff fine grained	Dissipation Test
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa	4 - Silty clay to clay	8 - Sand to silty sand	12 - Sand to clayey sand	
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV					

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES		
CONE AREA : 15cm²	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER : None	WEATHER : Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

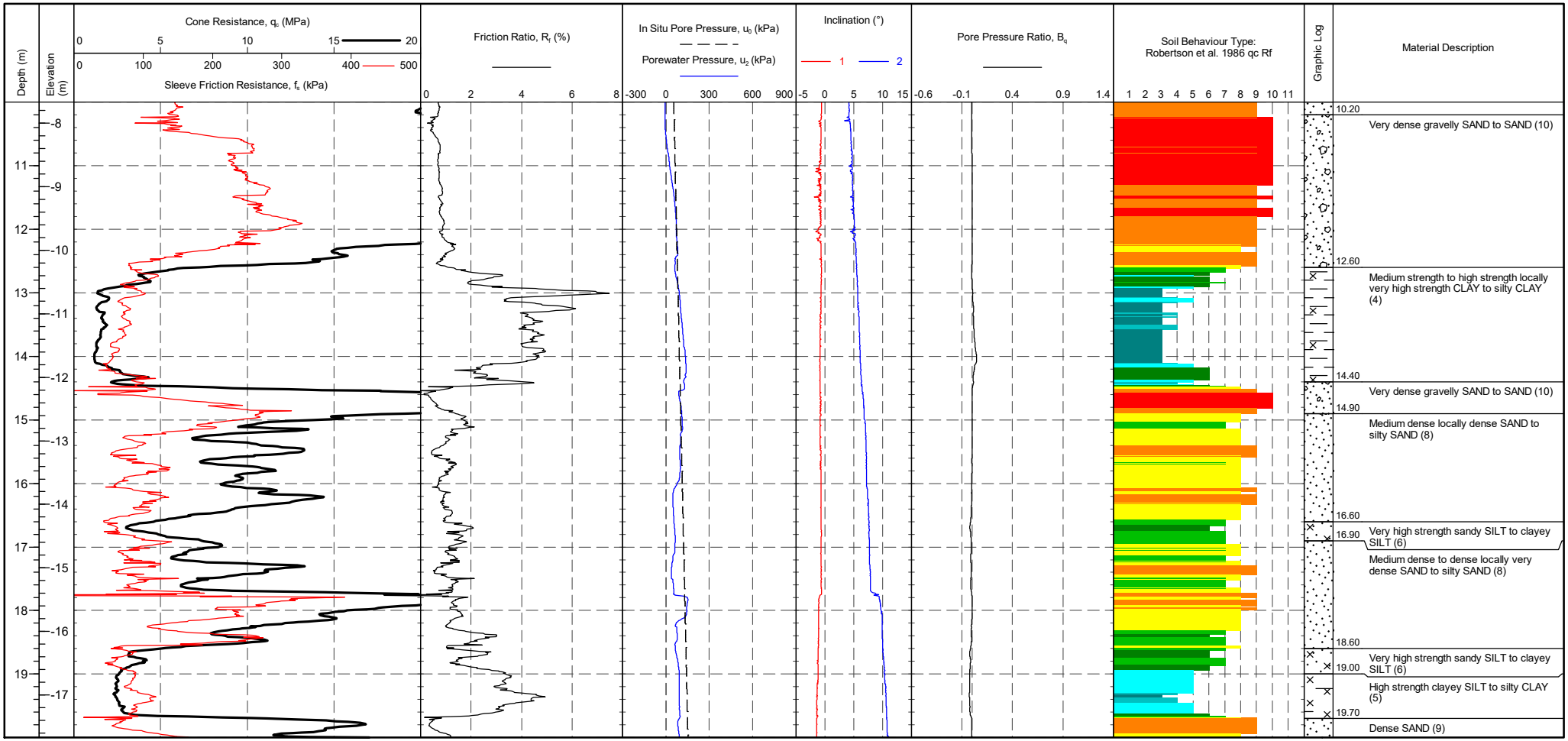
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

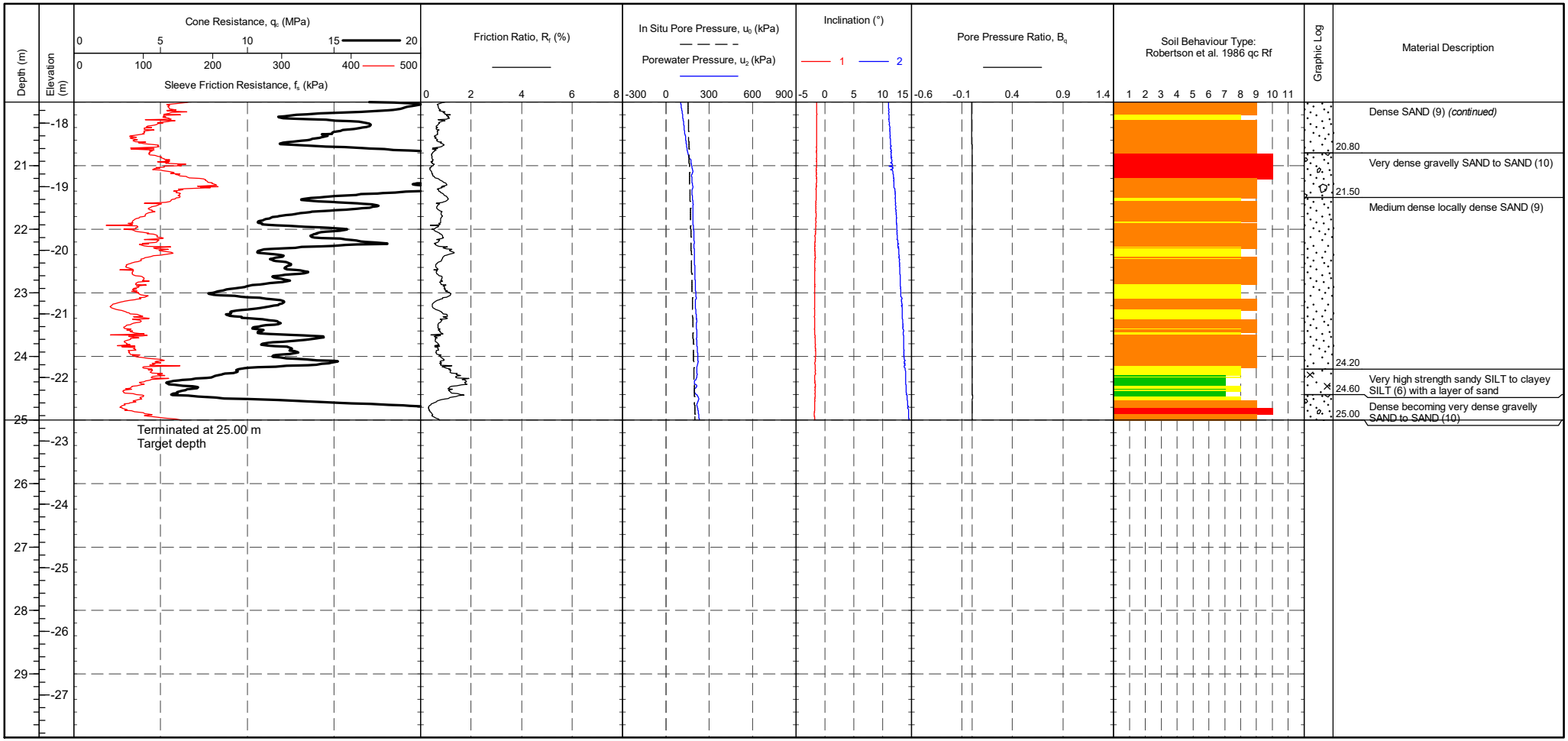
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

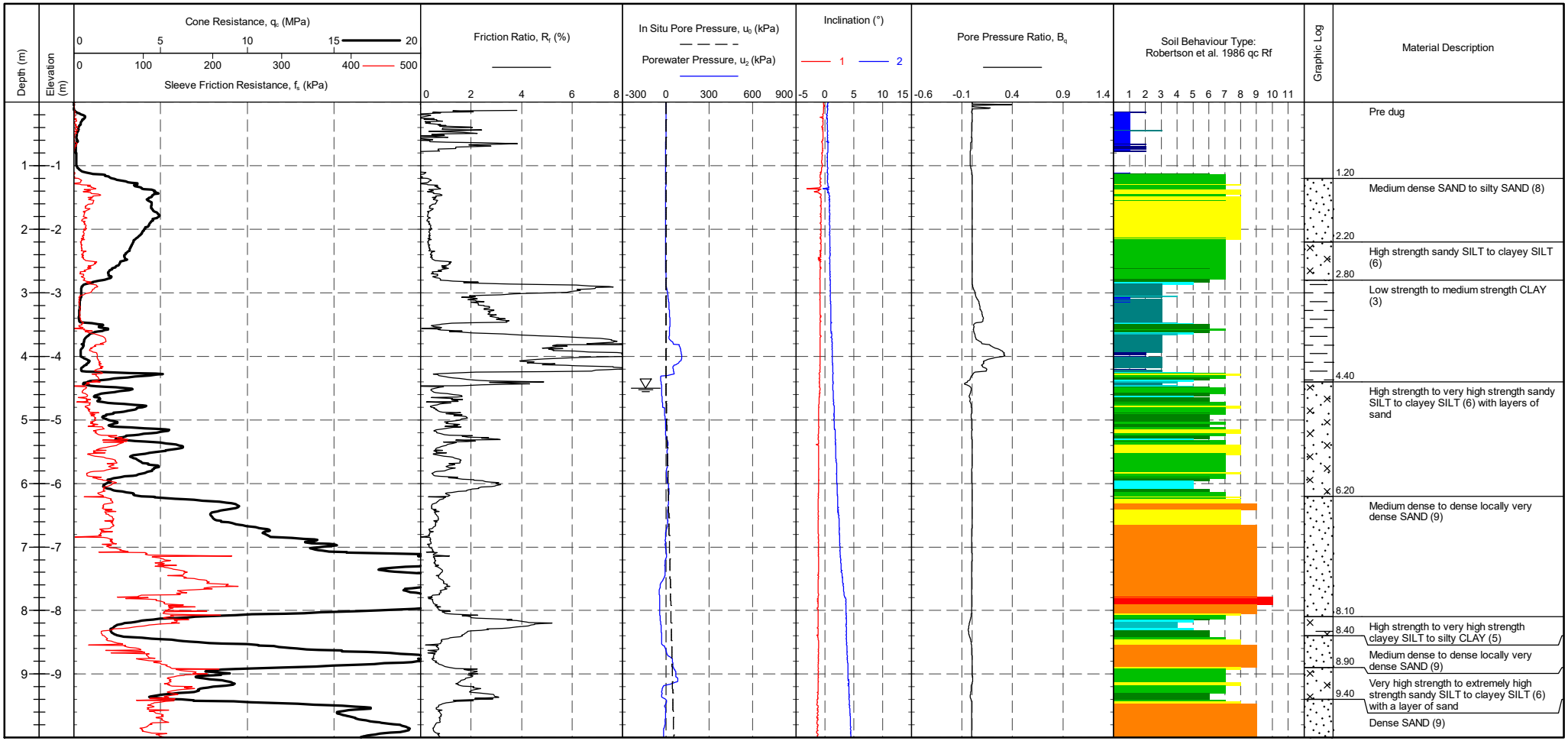
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

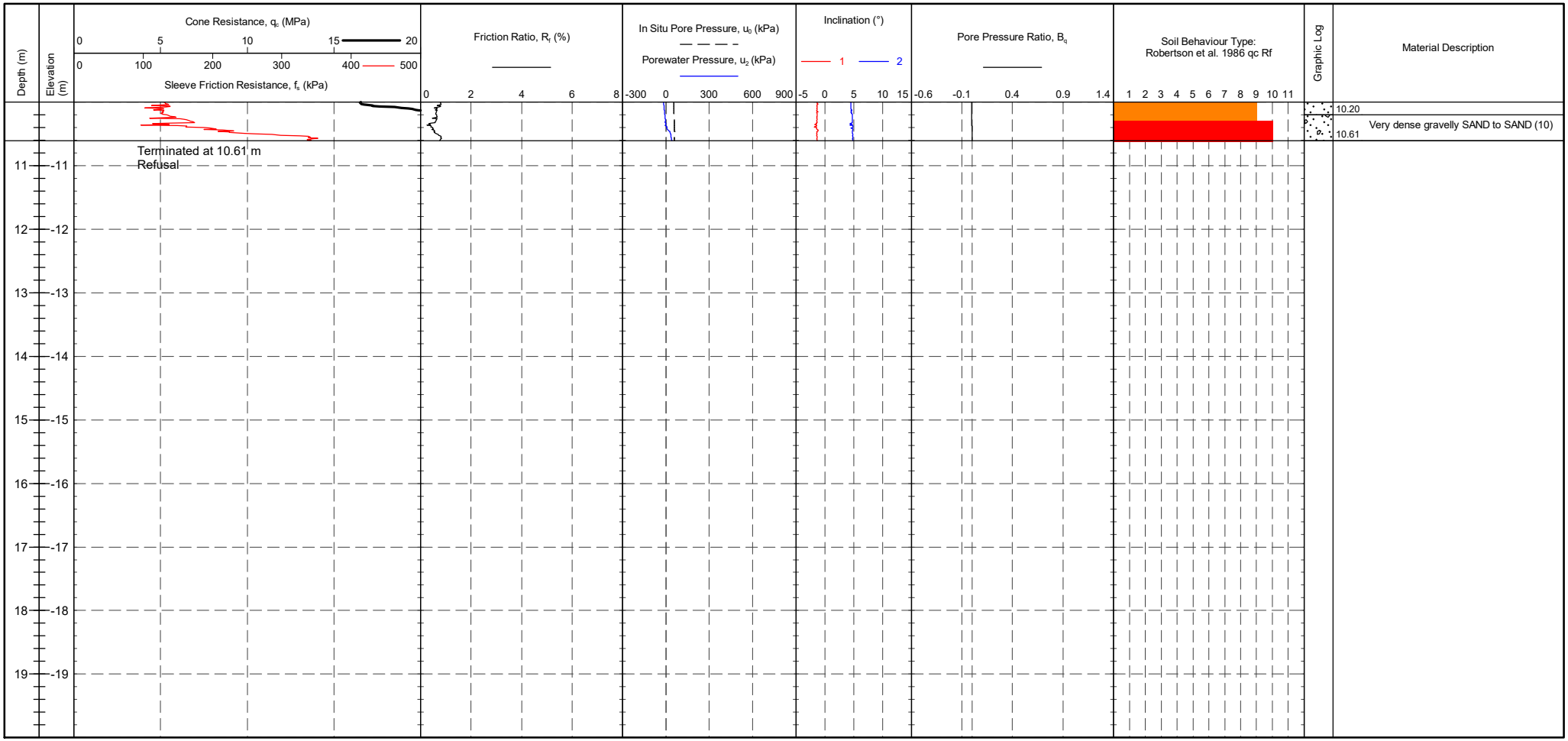
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV

Difference
0.021 MPa
0.004 kPa
-0.002 kPa

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

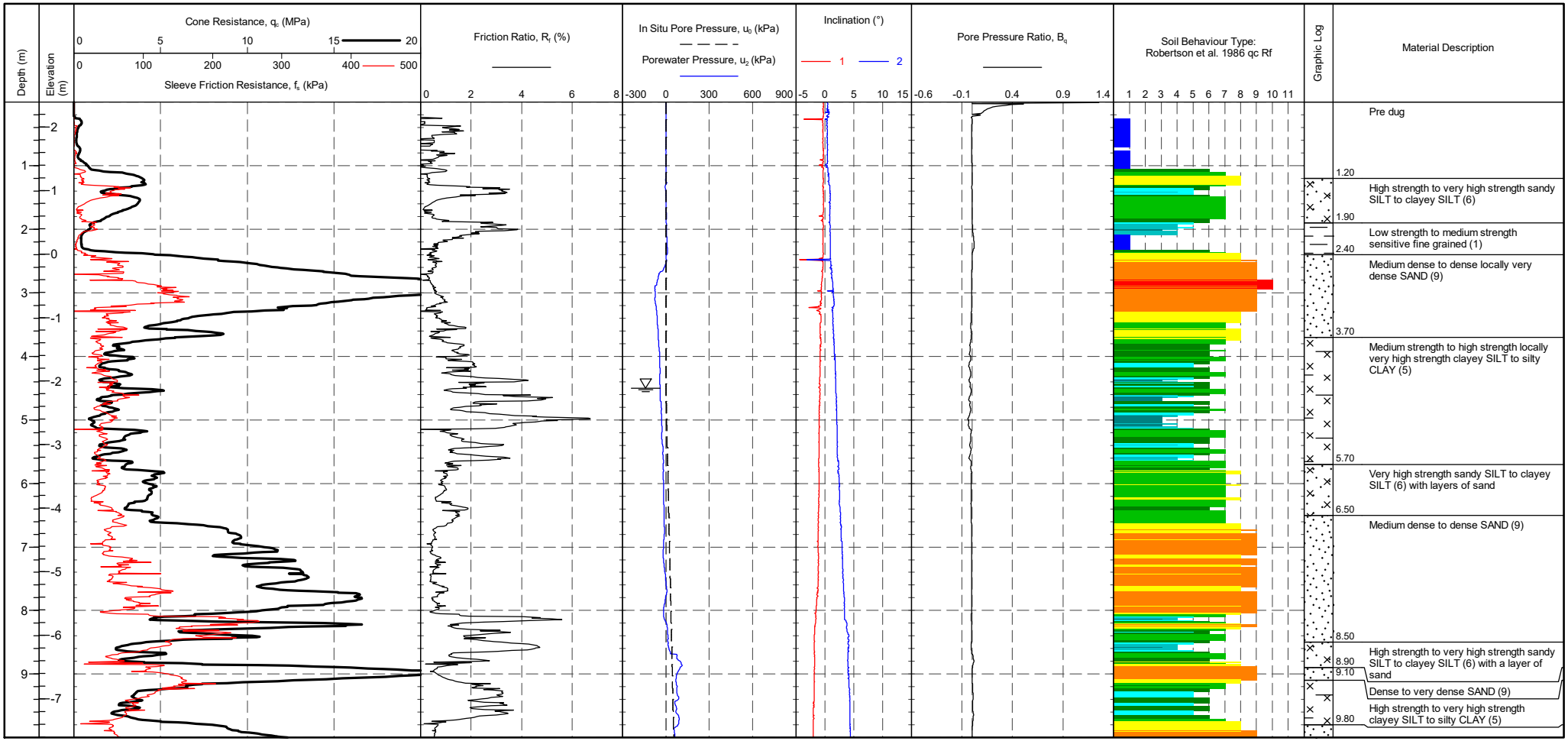
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11		
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	319 mV	318 mV	-0.011 MPa
Sleeve	307 mV	306 mV	-0.001 kPa
Pore Pressure 2	223 mV	226 mV	0.001 kPa
X-Y Inclinometer	2479 mV	2436 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

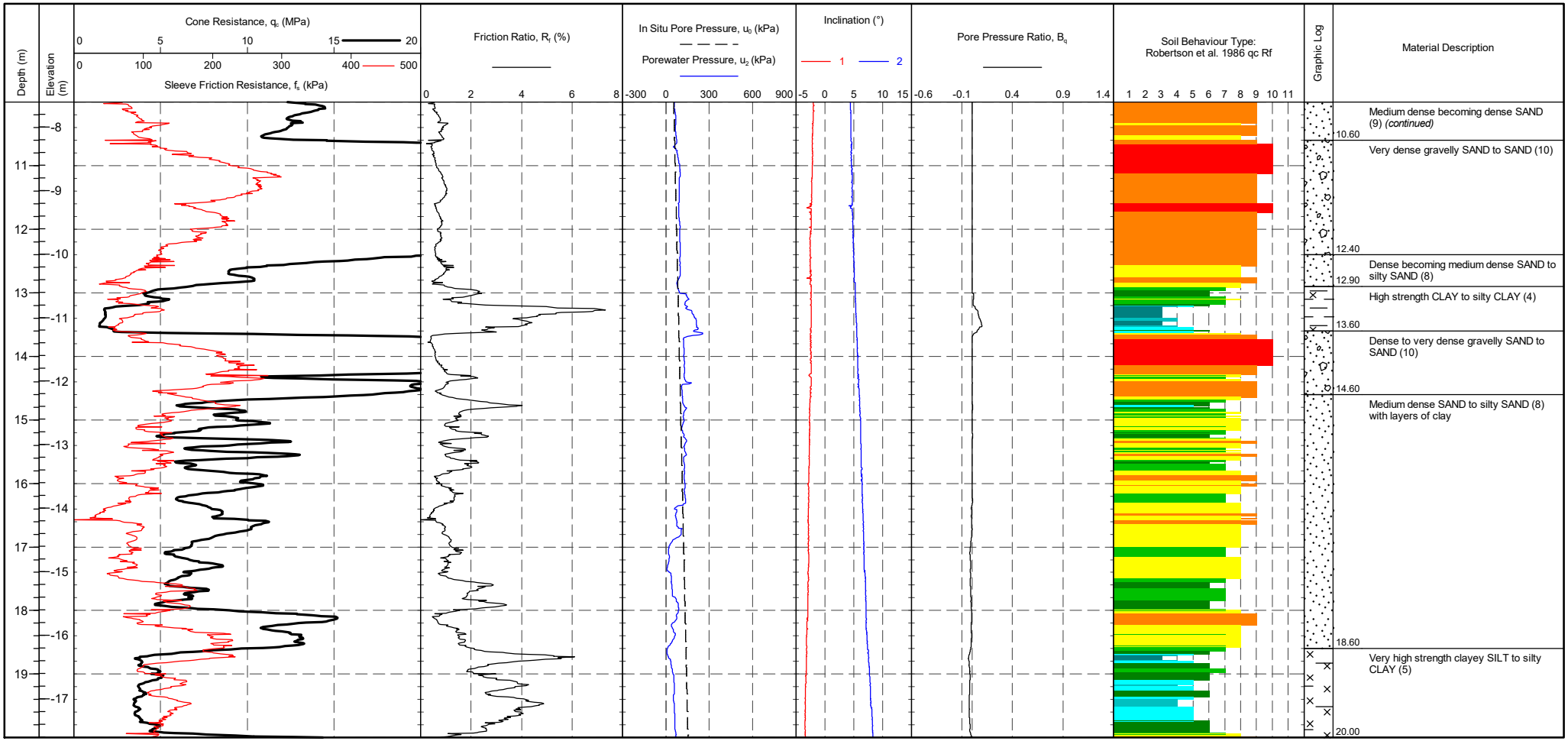
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES			
CONE AREA : 15cm²	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER : None	WEATHER : Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

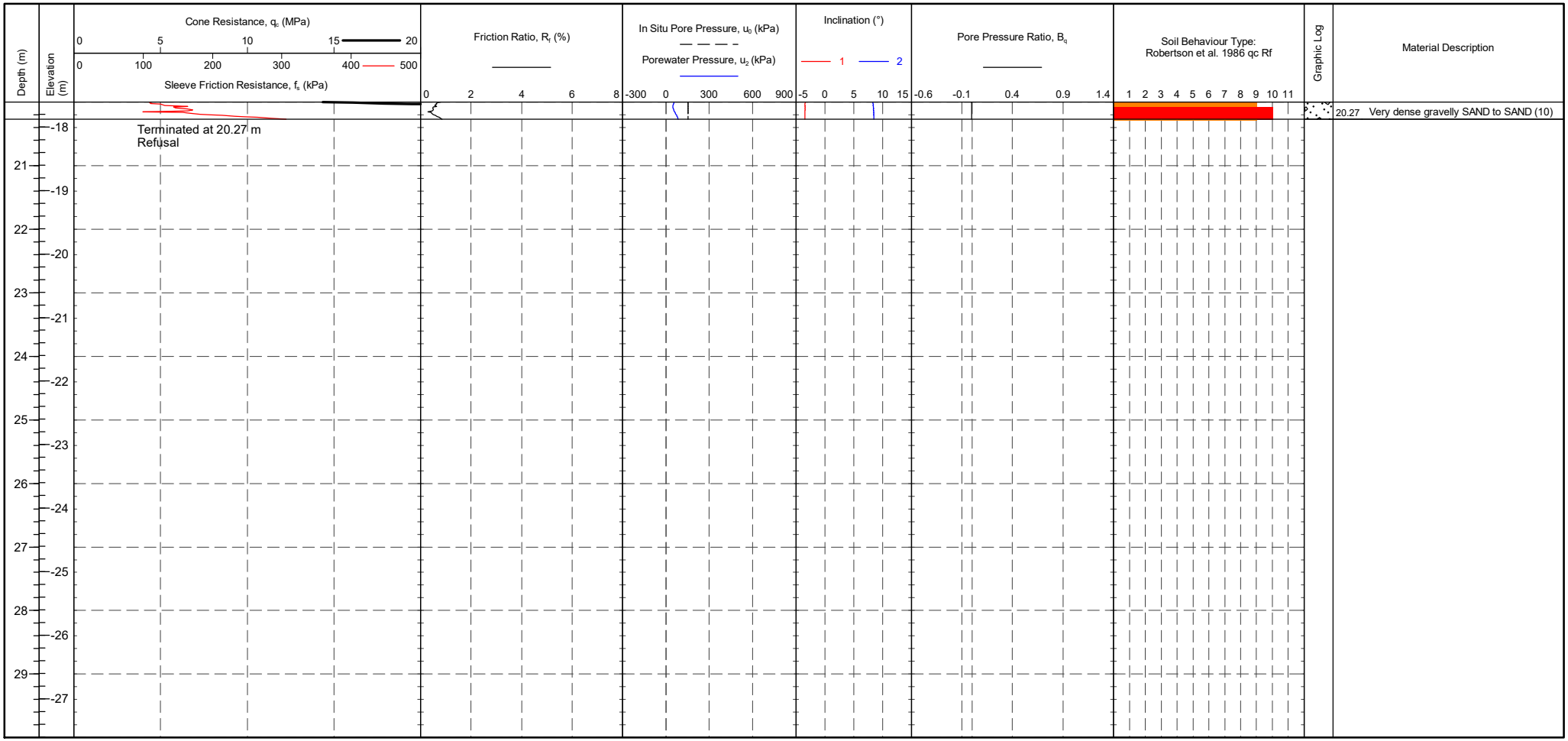
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES				
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa	
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa	
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV		

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

APPENDIX C

Geotechnical Derived Parameters

IN SITU SITE INVESTIGATION

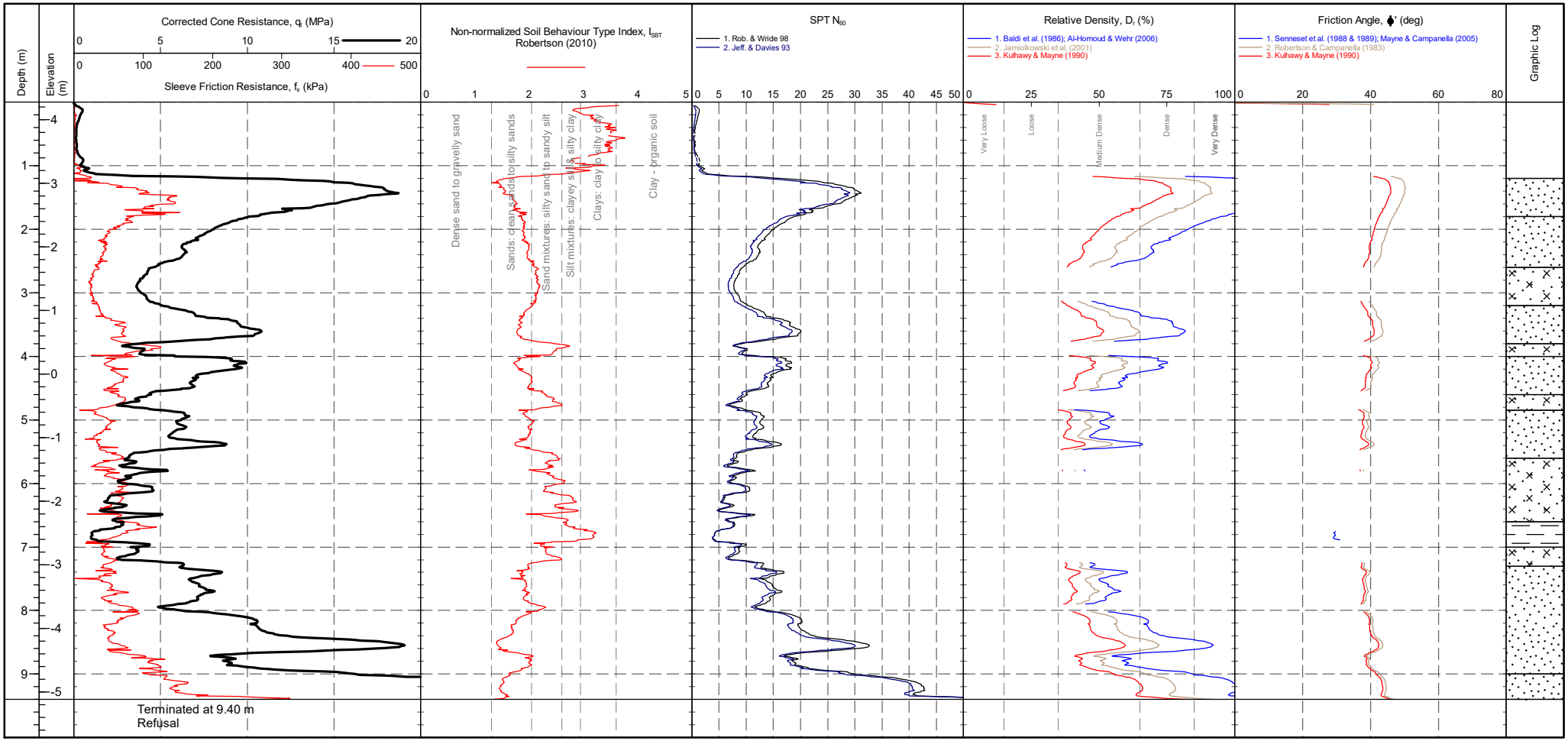
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-01A

CLIENT	: Geosphere Environmental	EASTING	: 653755.6 m	REMARK	SHEET : 1 OF 1
PROJECT	: Lake Lothing, Lowerstoft	NORTHING	: 293037.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION	: Lowerstoft	ELEVATION	: 4.28 m		TEST DATE : 10/08/2017
PROJECT No.	: 1170332	CHECKED BY	: LD		PLOT DATE : 25/08/2017
		TERMINATION REASON	: Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	324 mV	0.074 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	289 mV	306 mV	0.013 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	216 mV	271 mV	0.016 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-01A	X-Y Inclinometer	2463 mV	2436 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

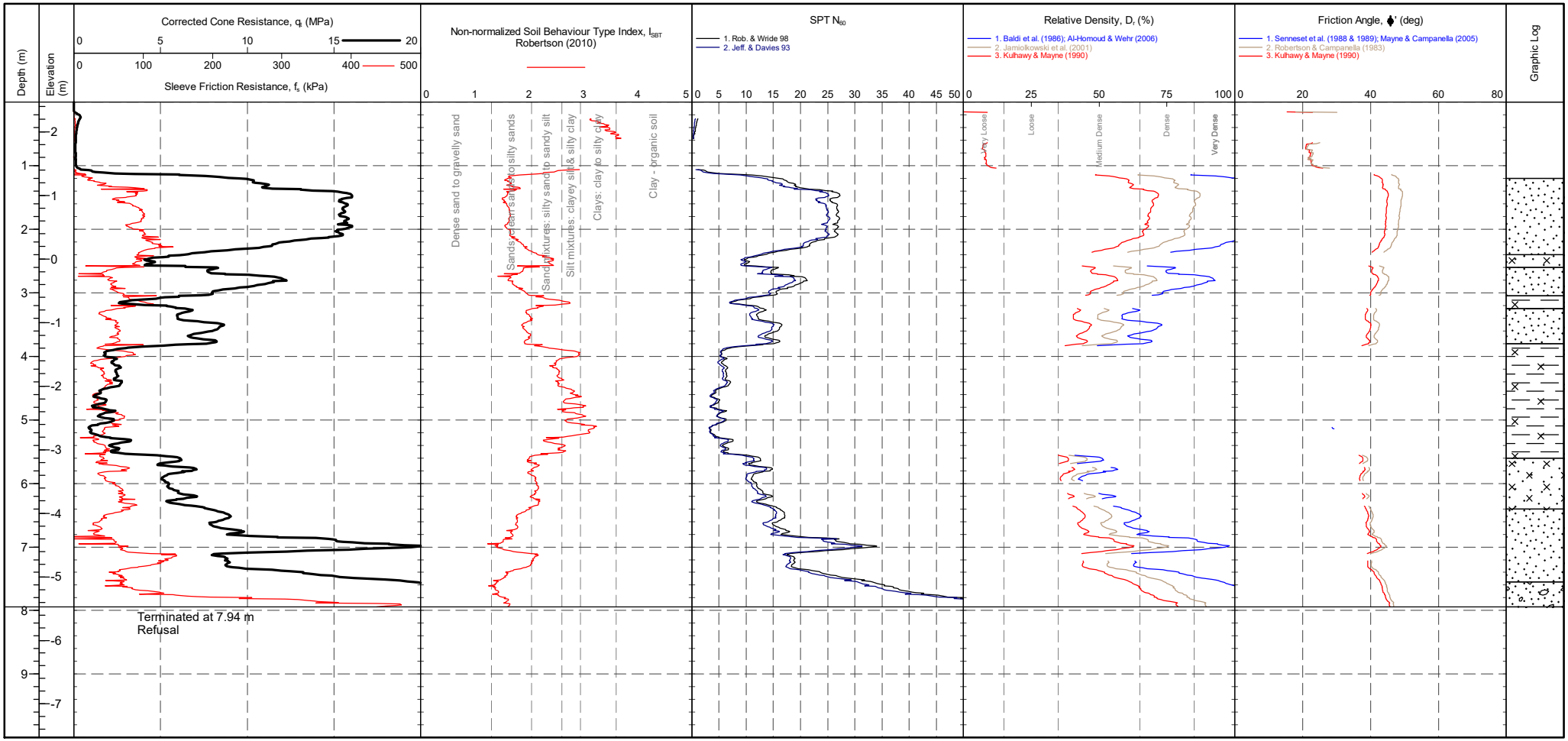
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-02**

CLIENT : Geosphere Environmental	EASTING : 653810.7 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292976.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.47 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	320 mV	0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	302 mV	310 mV	0.006 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	250 mV	286 mV	0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-02	X-Y Inclinometer	2467 mV	2477 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

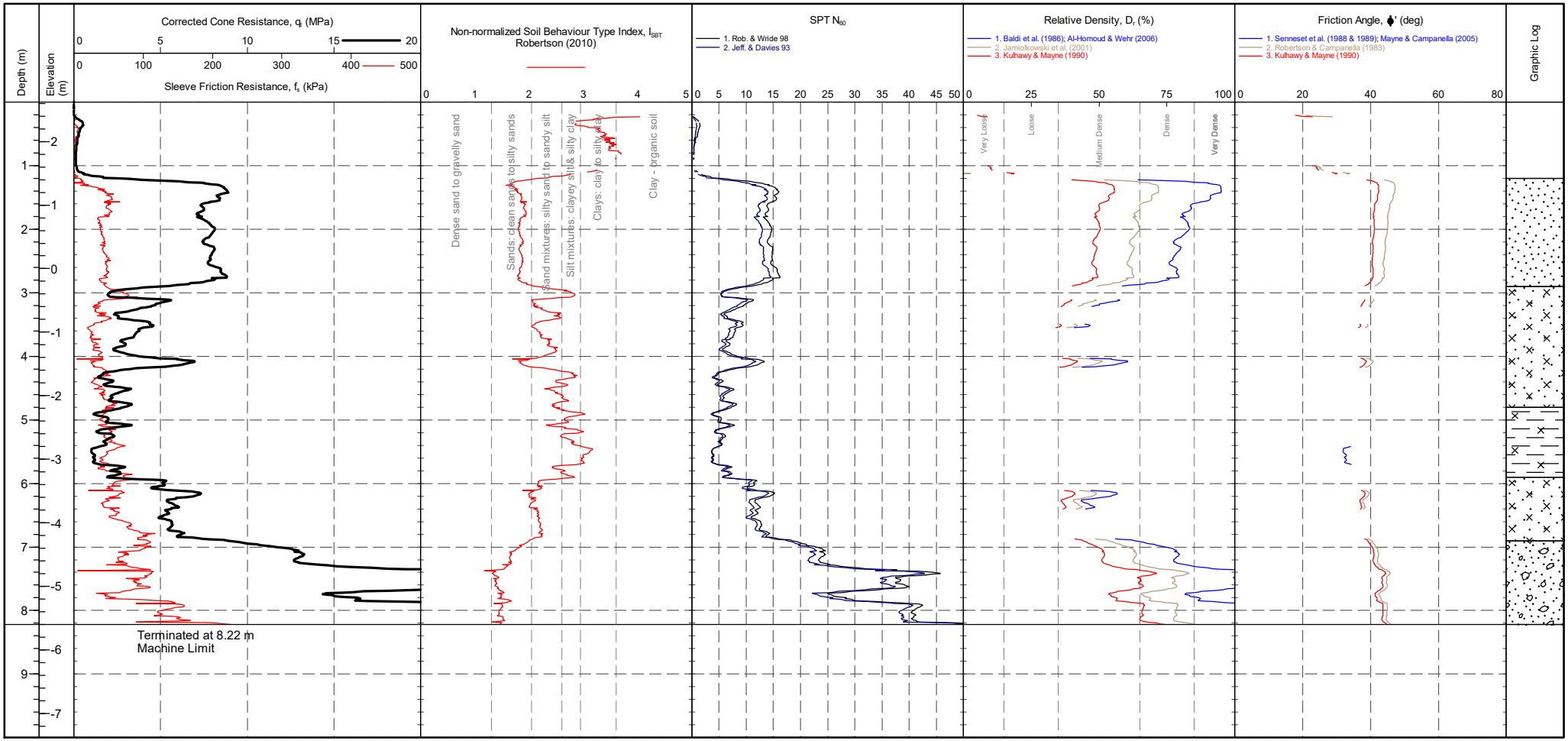
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-03**

CLIENT : Geosphere Environmental	EASTING : 653781.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292986.6 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.62 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-03	Pore Pressure 2	268 mV	284 mV	0.005 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2469 mV	2484 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

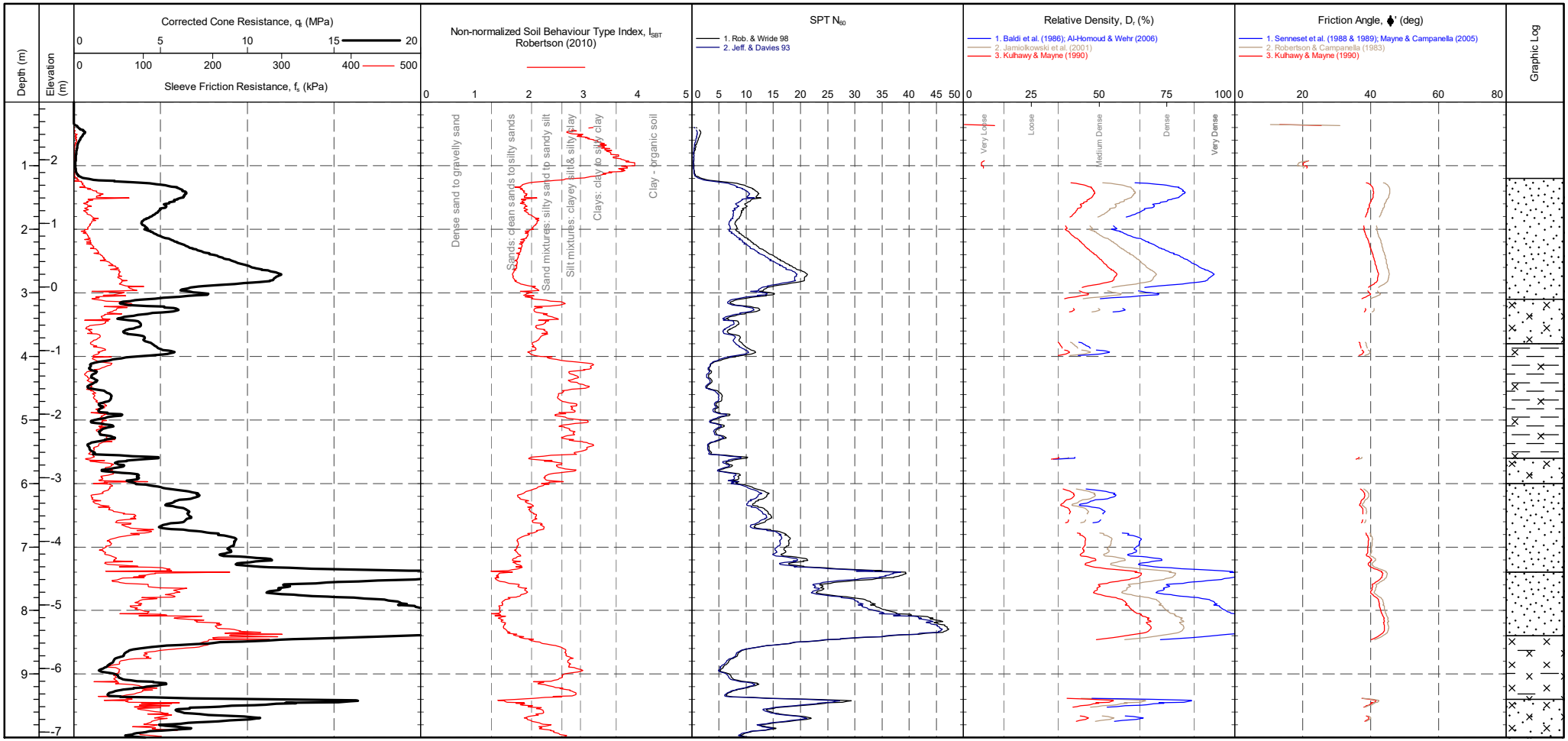
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-04

CLIENT : Geosphere Environmental	EASTING	: 653809.4 m	REMARK	SHEET	: 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 293019.1 m	Test completed at target depth.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.91 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Target depth		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

Groundwater Level

Dissipation Test

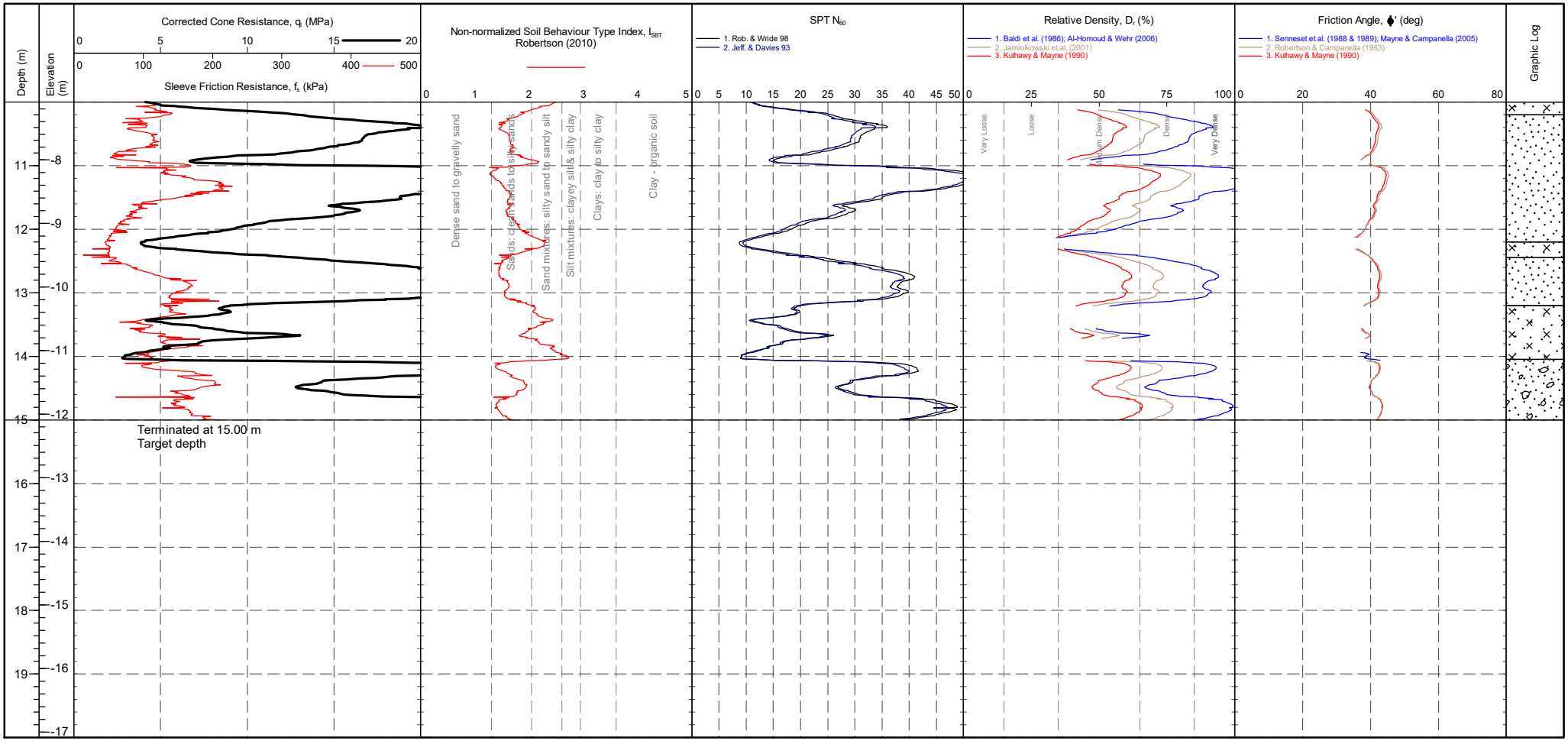
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

Groundwater Level

Dissipation Test

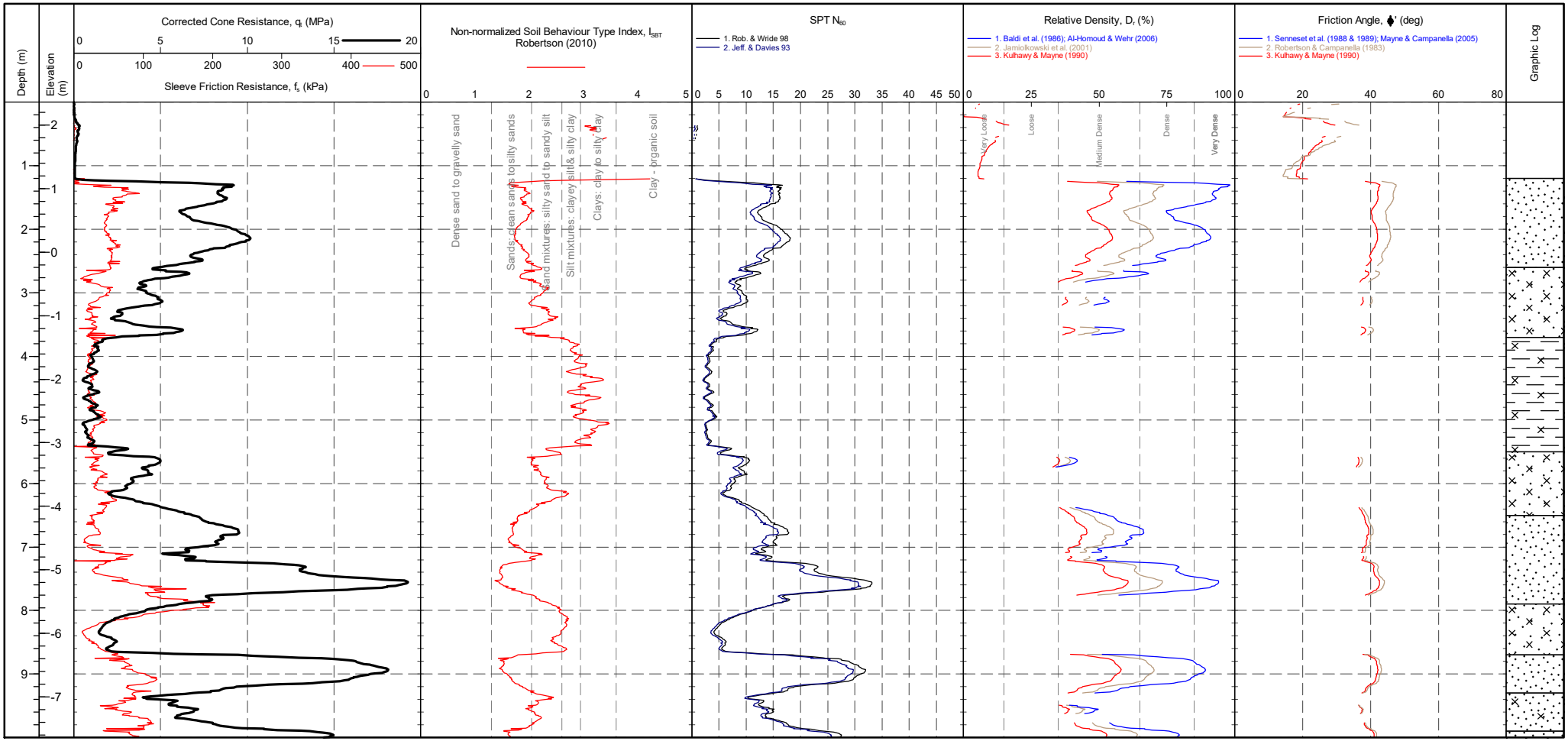
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV / 0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV / 0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV / 0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV

Groundwater Level

Dissipation Test

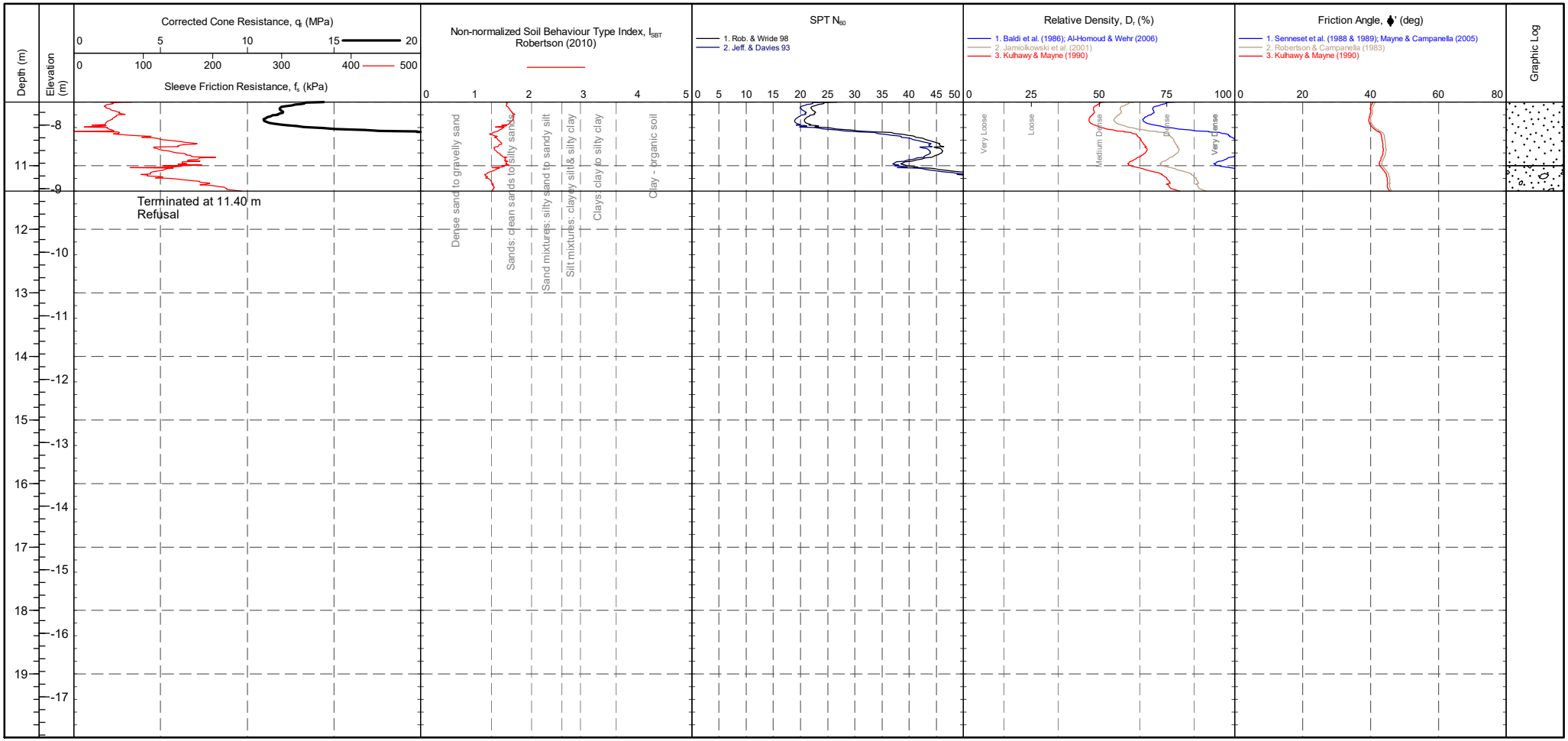
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	318 mV	0.011 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	305 mV	308 mV	0.002 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	X-Y Inclinometer	2473 mV	2479 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

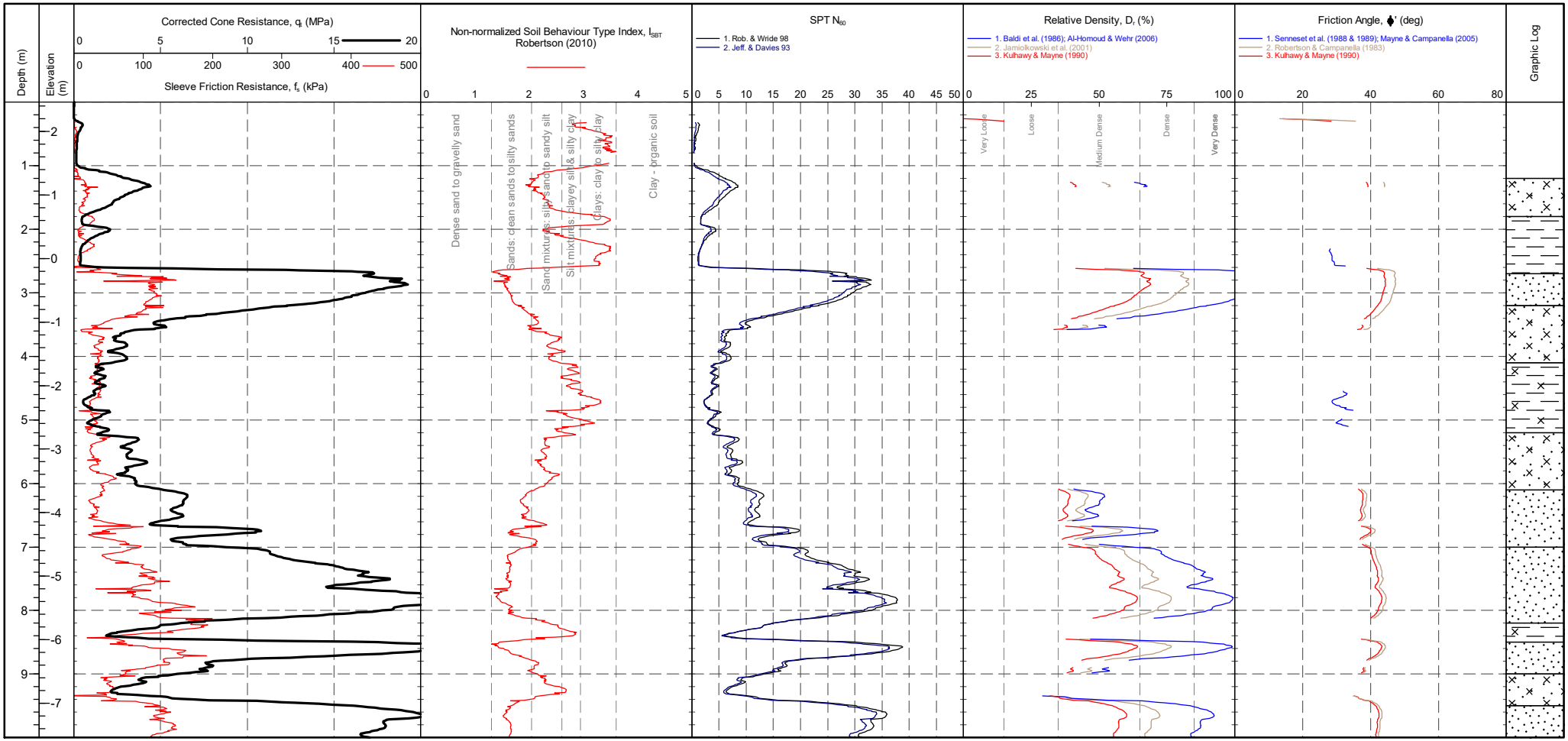
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

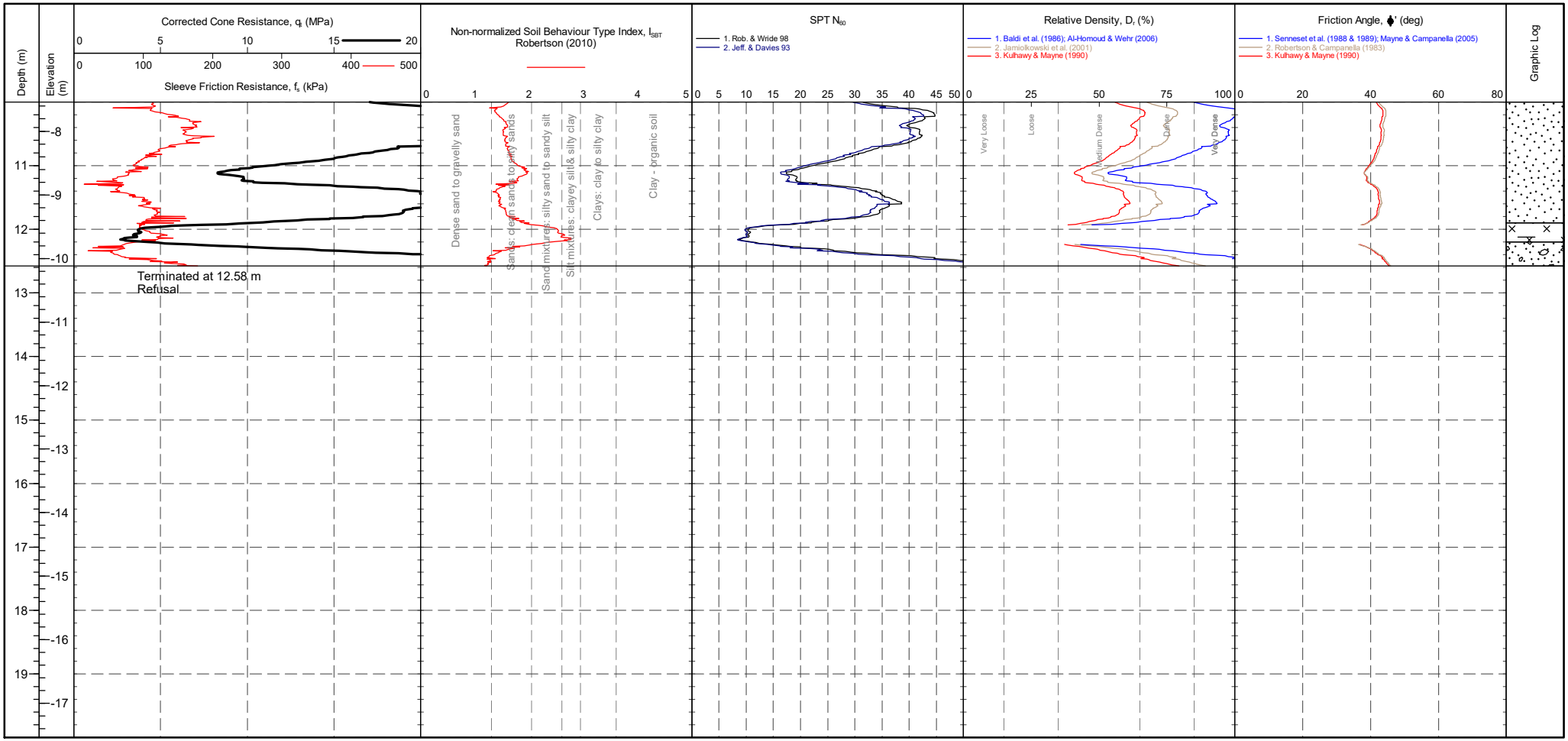
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	318 mV	318 mV	0 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	305 mV	305 mV	0 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	X-Y Inclinometer	2484 mV	2486 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

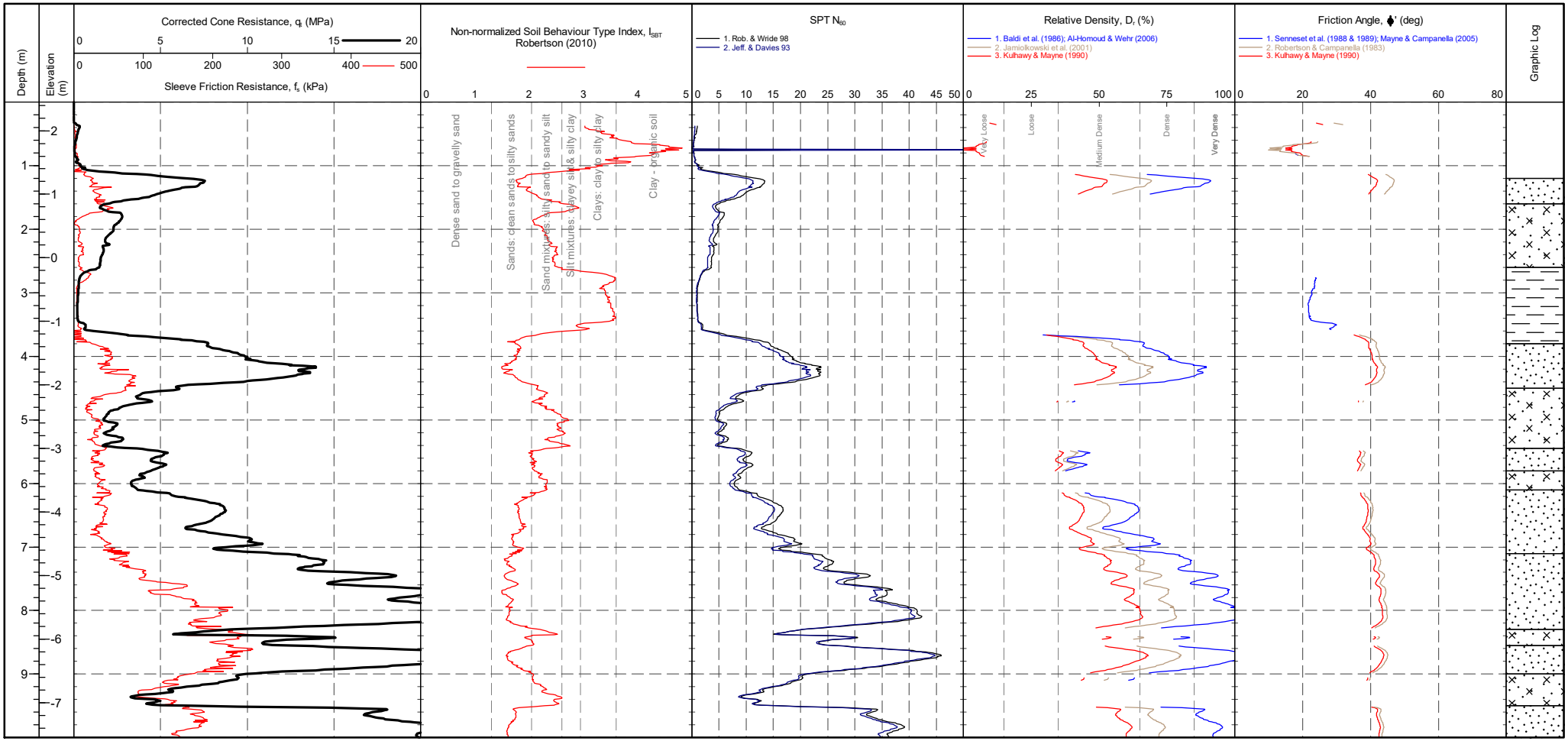
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-07

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

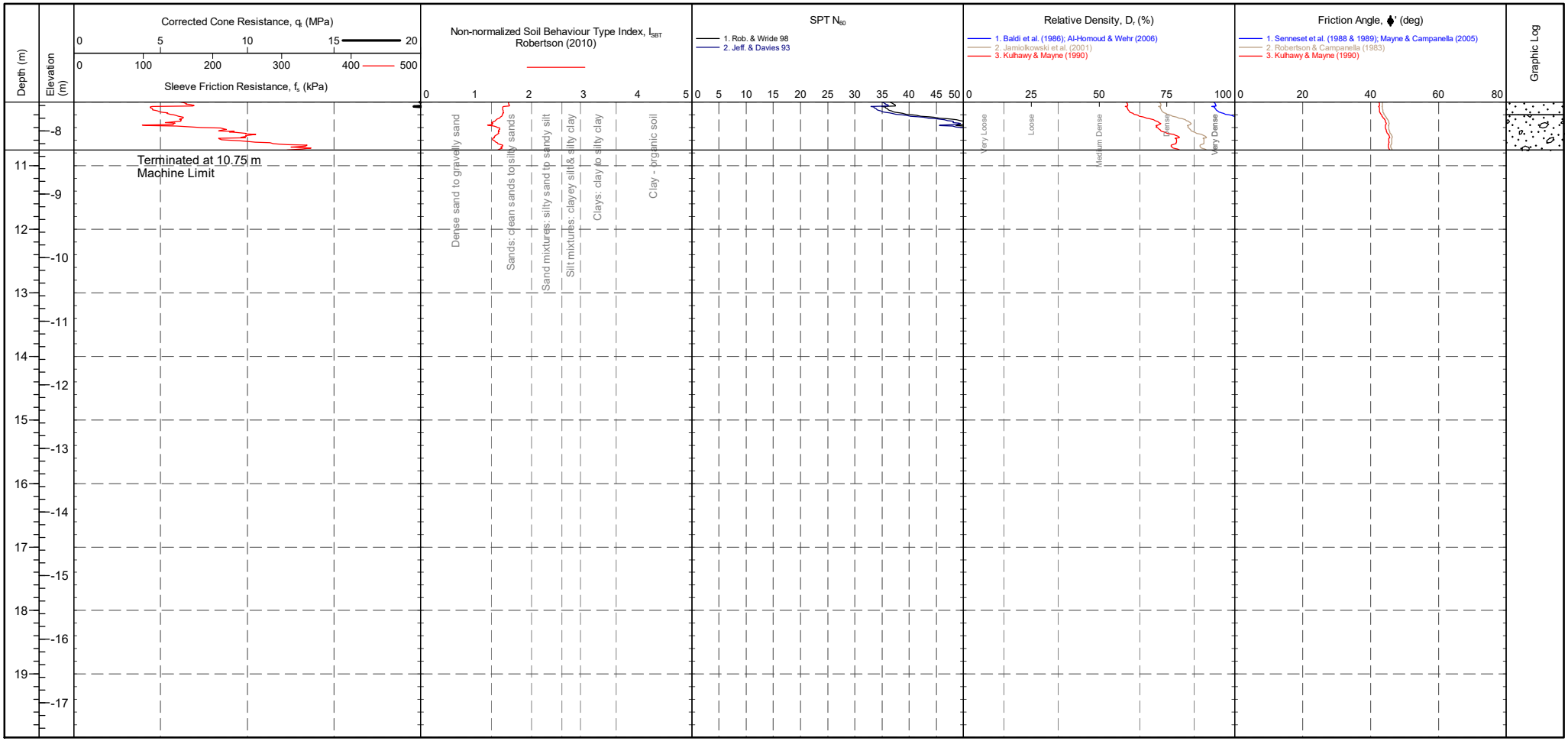
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-07

CLIENT : Geosphere Environmental	EASTING	: 653858.5 m	REMARK	SHEET	: 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292968.4 m	Test stopped due to buckling rods.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.45 m		TEST DATE	: 11/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Machine Limit		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

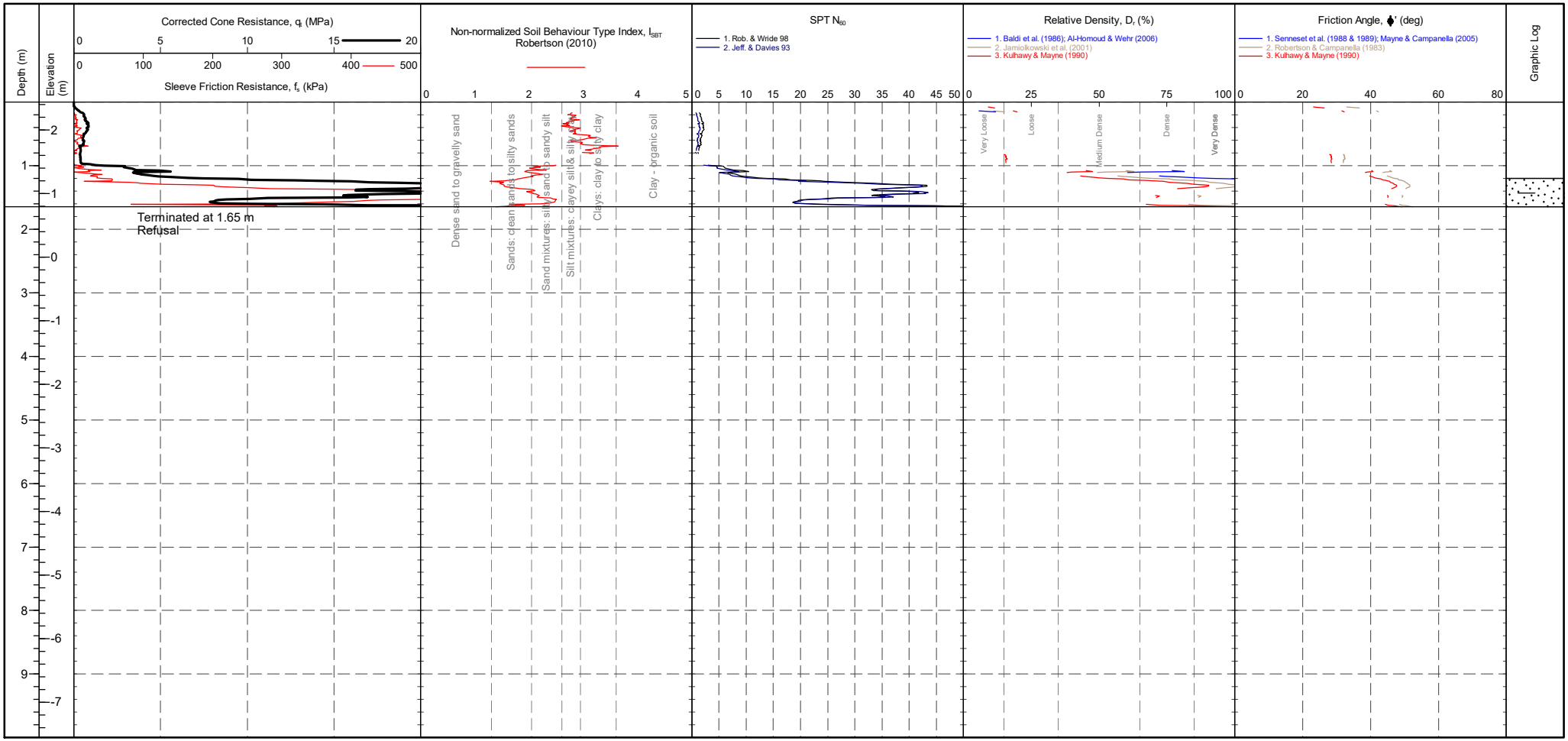
PointID **CPTC-08**

CLIENT : Geosphere Environmental
PROJECT : Lake Lothing, Lowerstoft
LOCATION : Lowerstoft
PROJECT No. : 1170332

EASTING : 653888.0 m
NORTHING : 292957.6 m
ELEVATION : 2.44 m
CHECKED BY : LD
TERMINATION REASON : Refusal

REMARK
Test refused on tip resistance.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 11/08/2017
PLOT DATE : 25/08/2017
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	311 mV	-0.064 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	309 mV	0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08	Pore Pressure 2	238 mV	263 mV	0.007 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2484 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

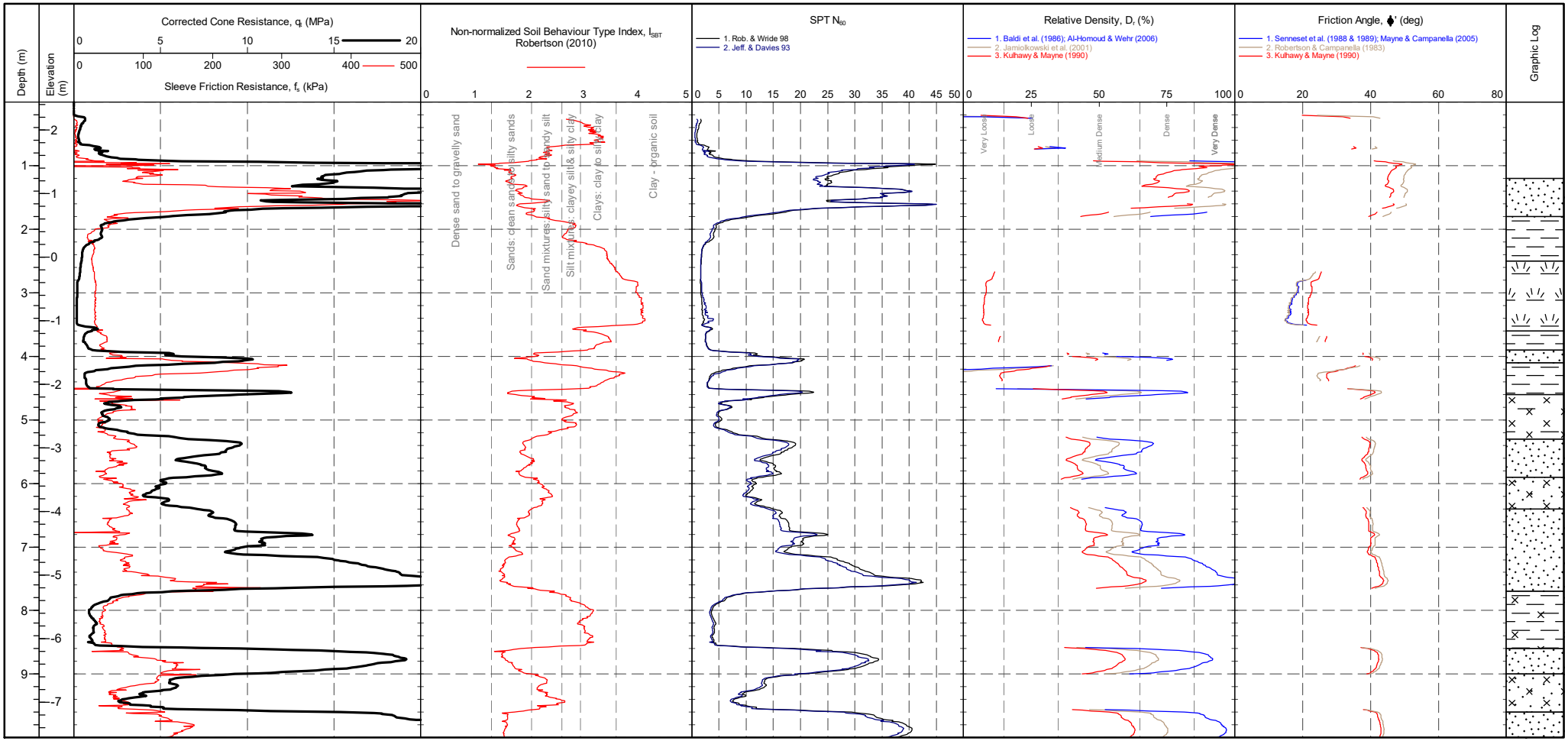
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-08A

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID : S15-CFIP.1186	TEST TYPE : TE2			Transducer	Pre	Post	Difference
CONE AREA : 15cm²	APPLICATION CLASS : 2			Tip	318 mV	314 mV	-0.043 MPa
CONE AREA RATIO : 0.79	RIG : CPT 010			Sleeve	302 mV	317 mV	0.011 kPa
FILTER POSITION : u2	OPERATOR : LS & DH			Pore Pressure 2	217 mV	250 mV	0.01 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-08A			X-Y Inclinometer	2488 mV	2510 mV	
FRICTION REDUCER : None	WEATHER : Sunny & Mild						

Groundwater Level

Dissipation Test

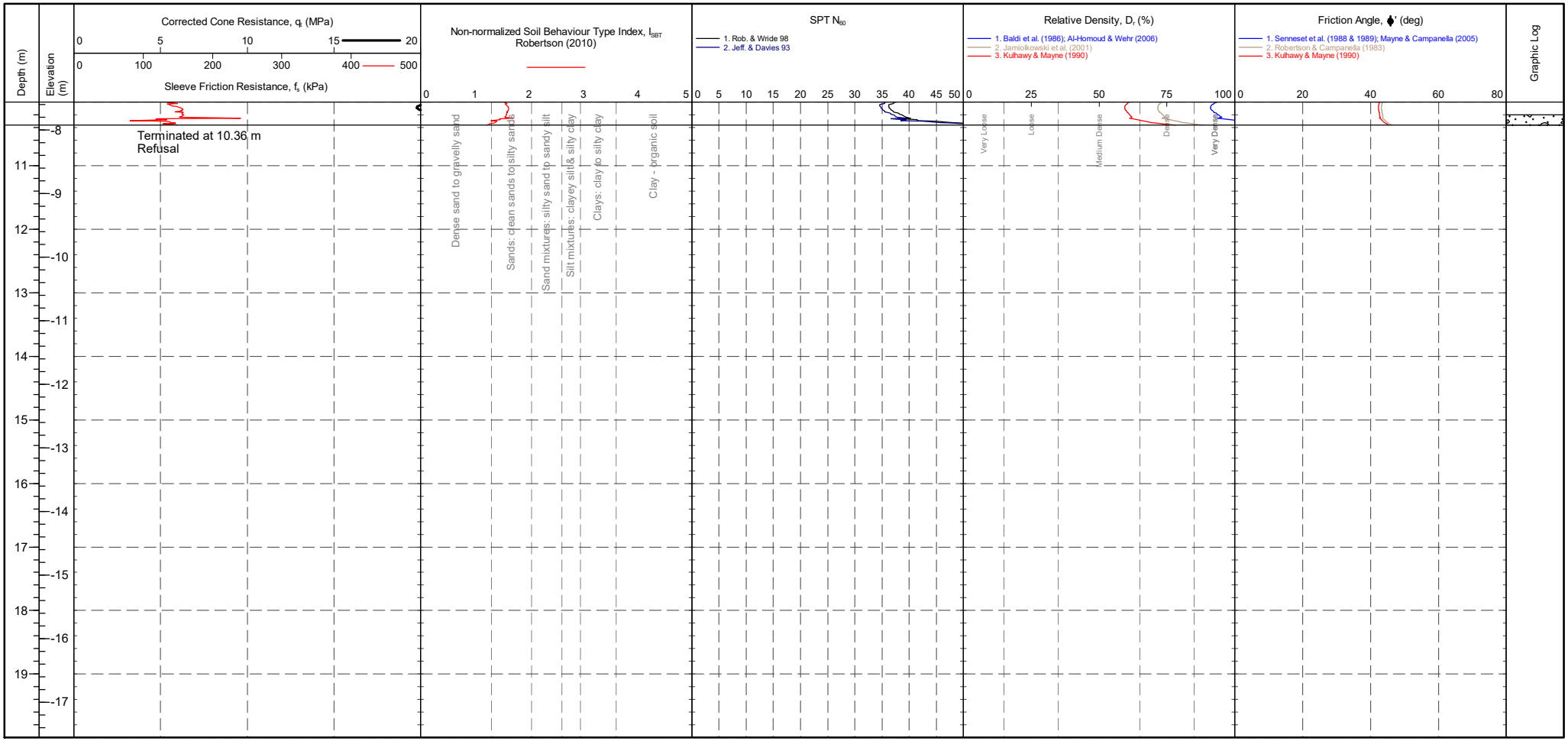
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

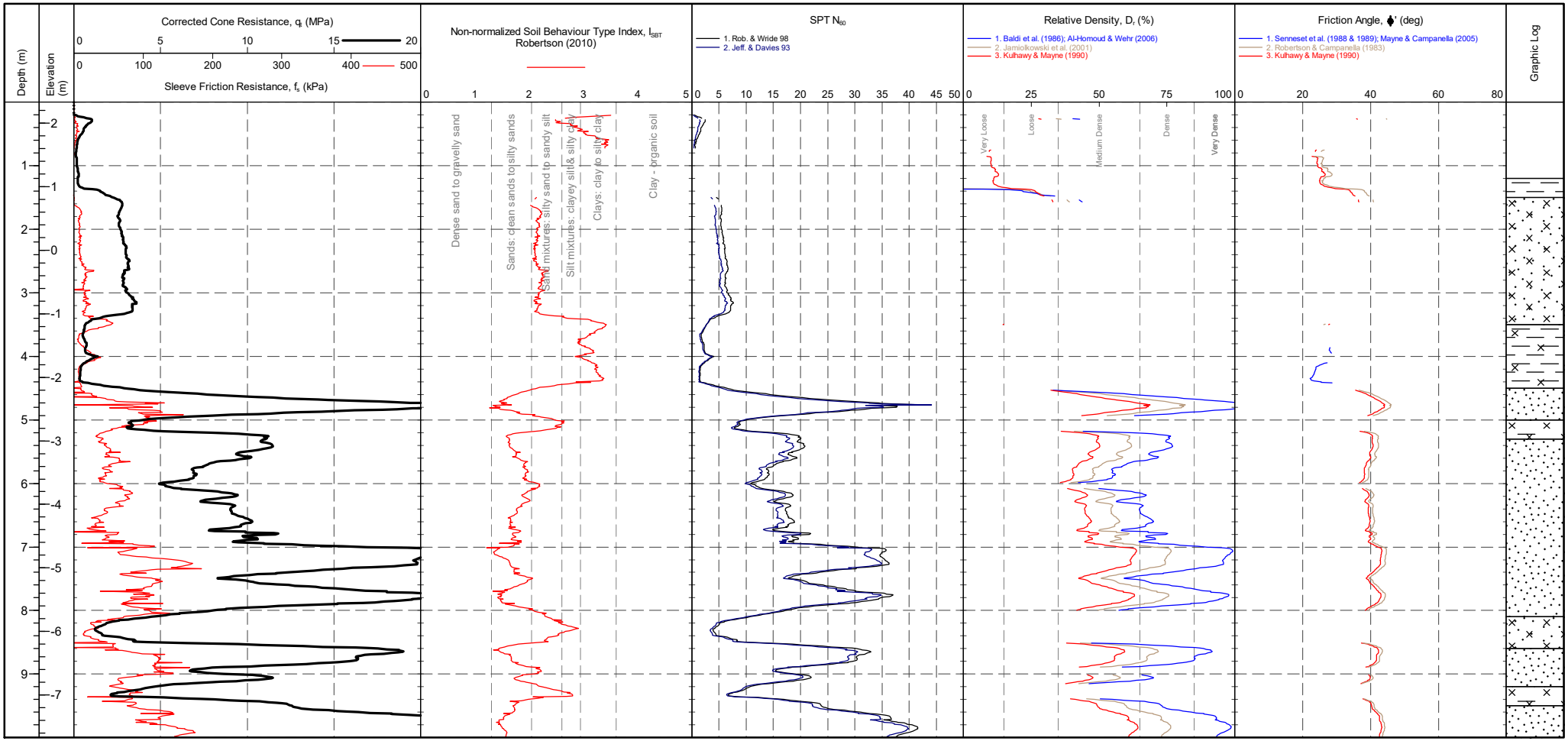
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-09

CLIENT : Geosphere Environmental	EASTING	: 653882.9 m	REMARK	SHEET	: 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292937.4 m	Test completed at target depth.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.33 m		TEST DATE	: 11/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Target depth		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV / 0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV / -0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV / 0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV

Groundwater Level

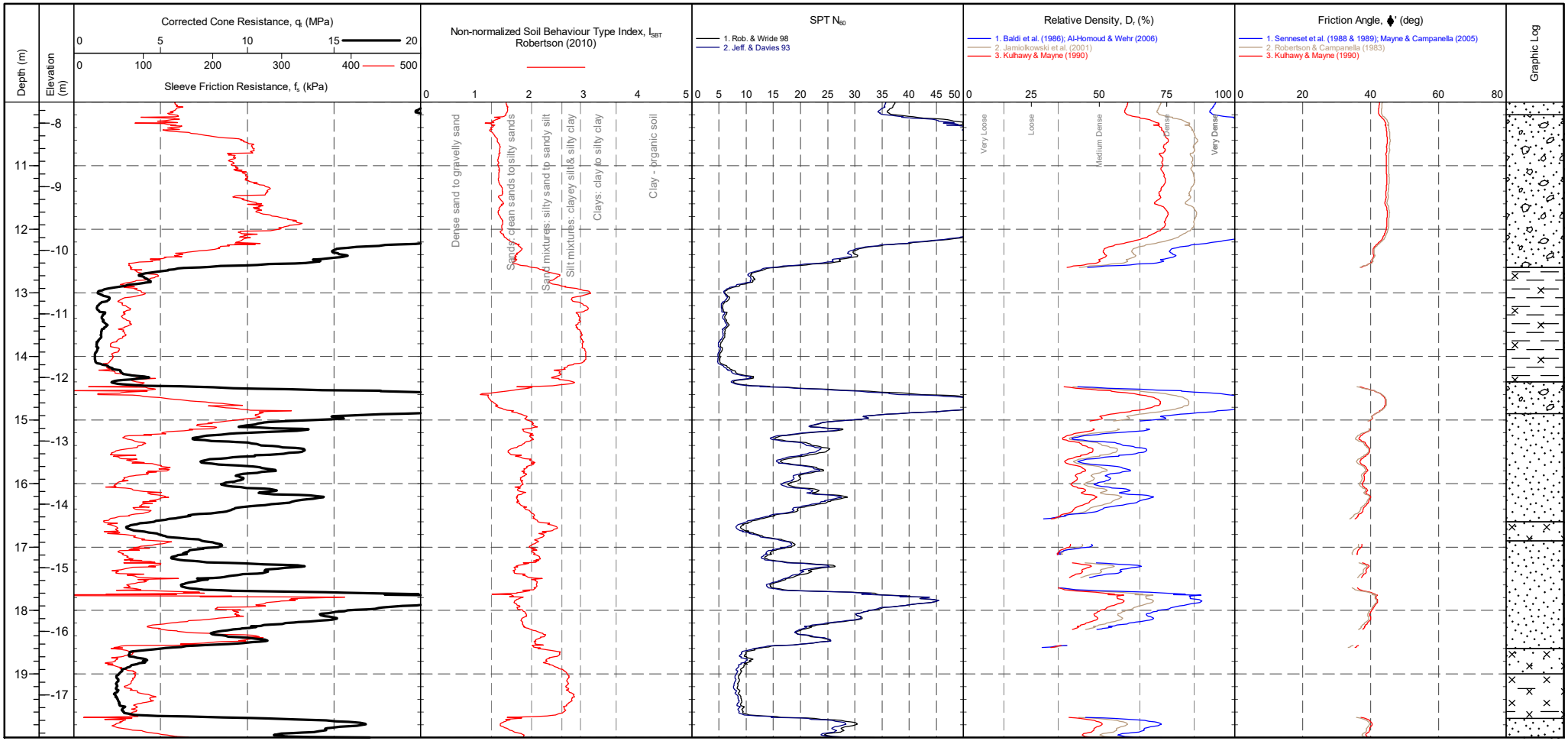
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV / 0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV / -0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV / 0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV

Groundwater Level

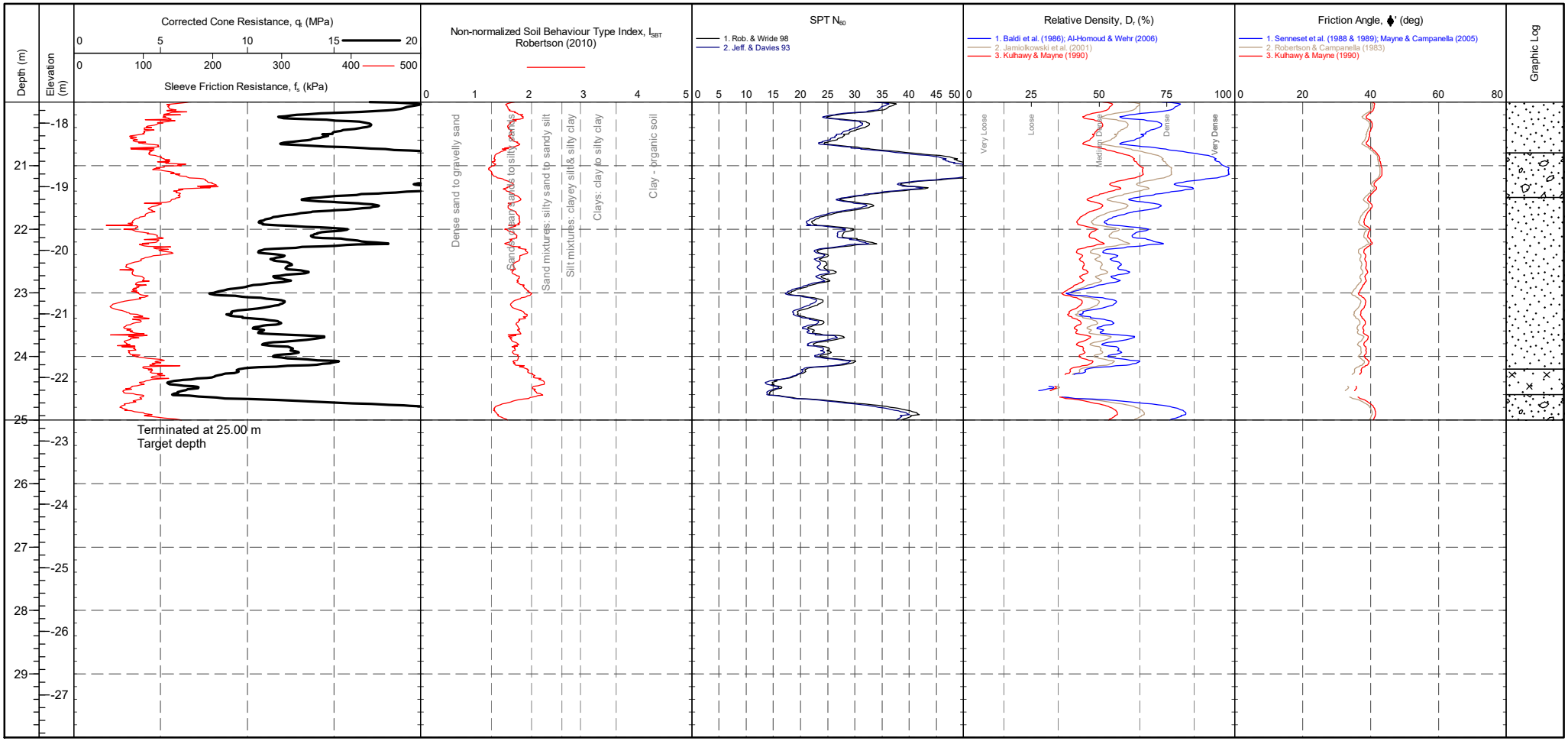
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	315 mV	318 mV	0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	X-Y Inclinometer	2492 mV	2490 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild				

Groundwater Level

Dissipation Test

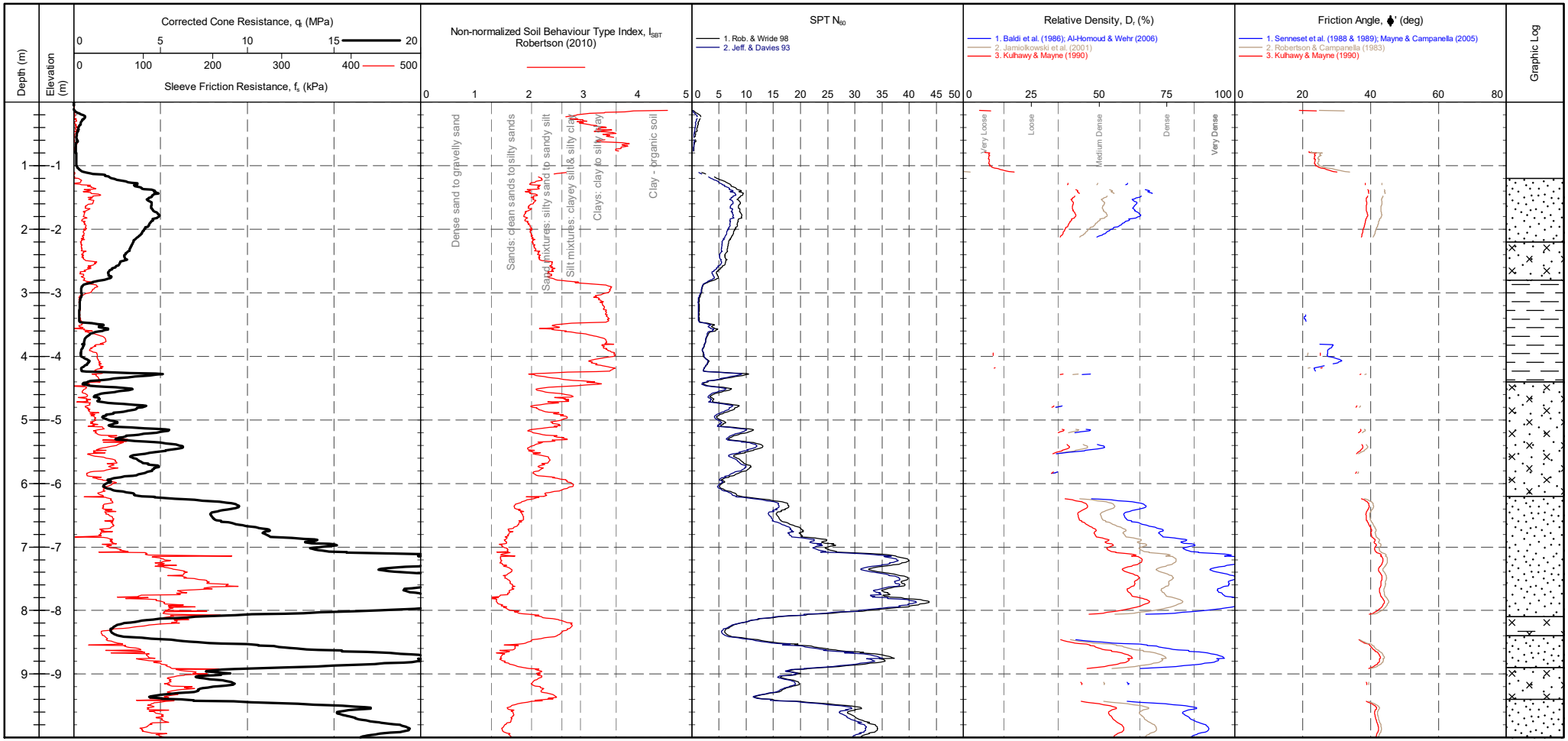
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

Groundwater Level

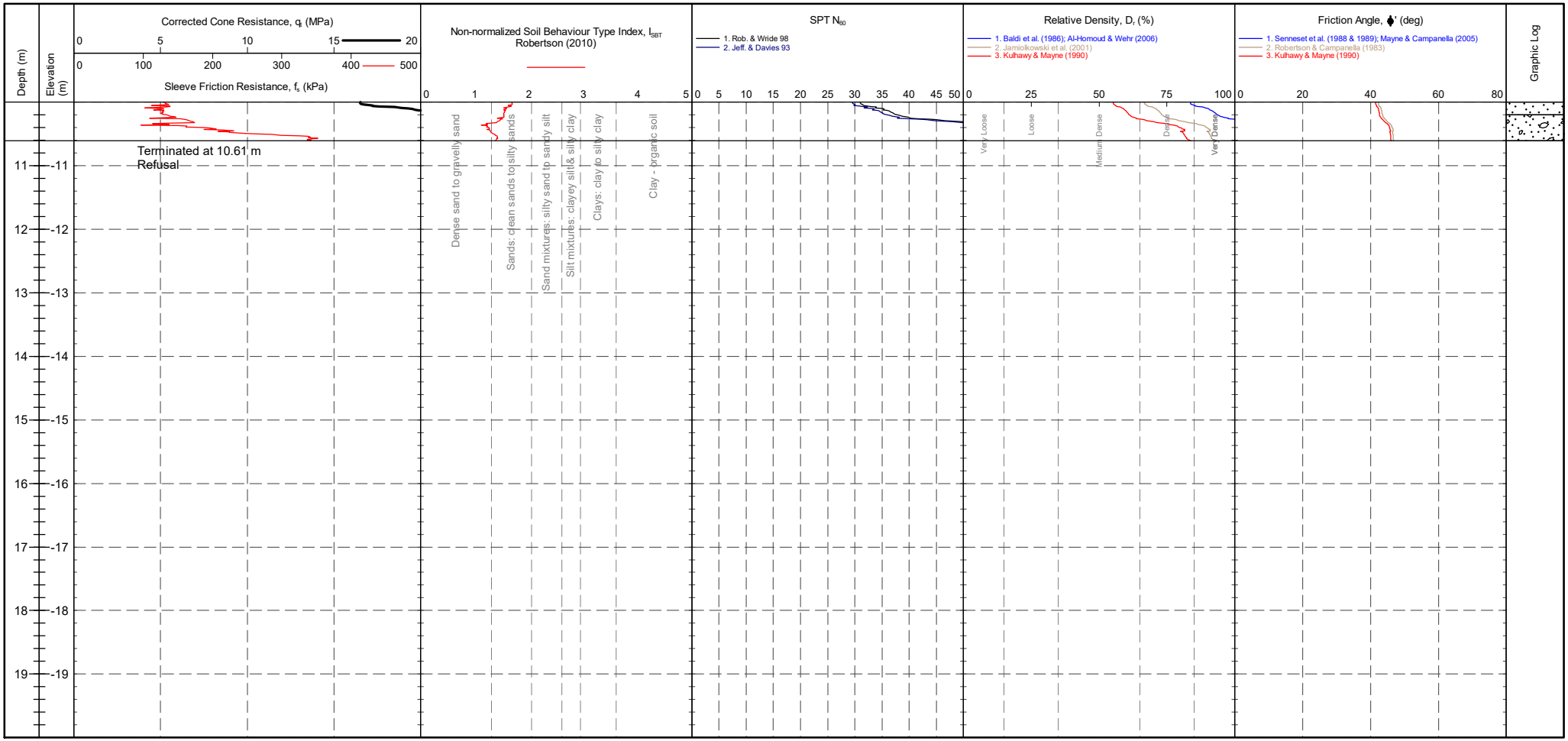
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV / 0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV / 0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV / -0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV

Groundwater Level

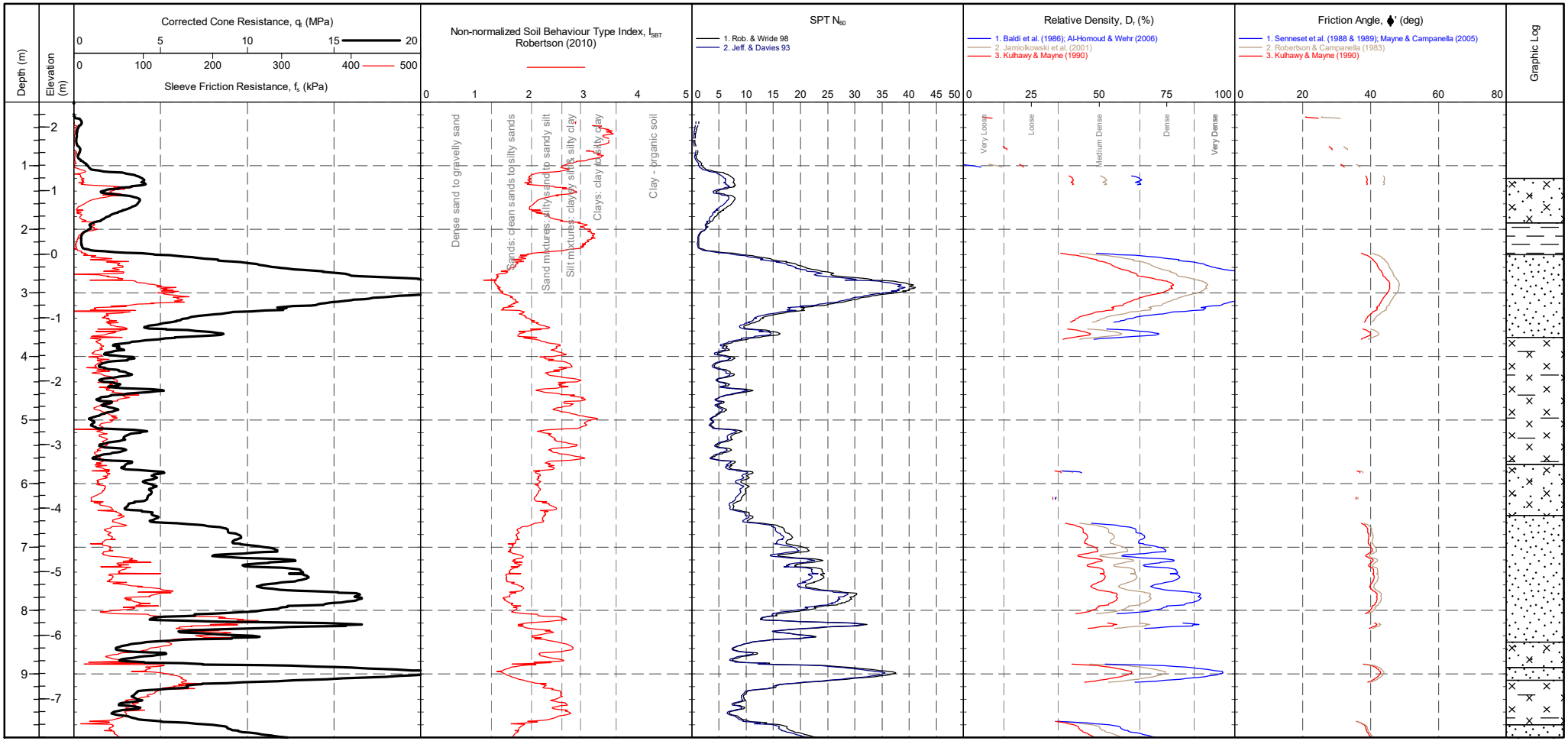
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

Groundwater Level

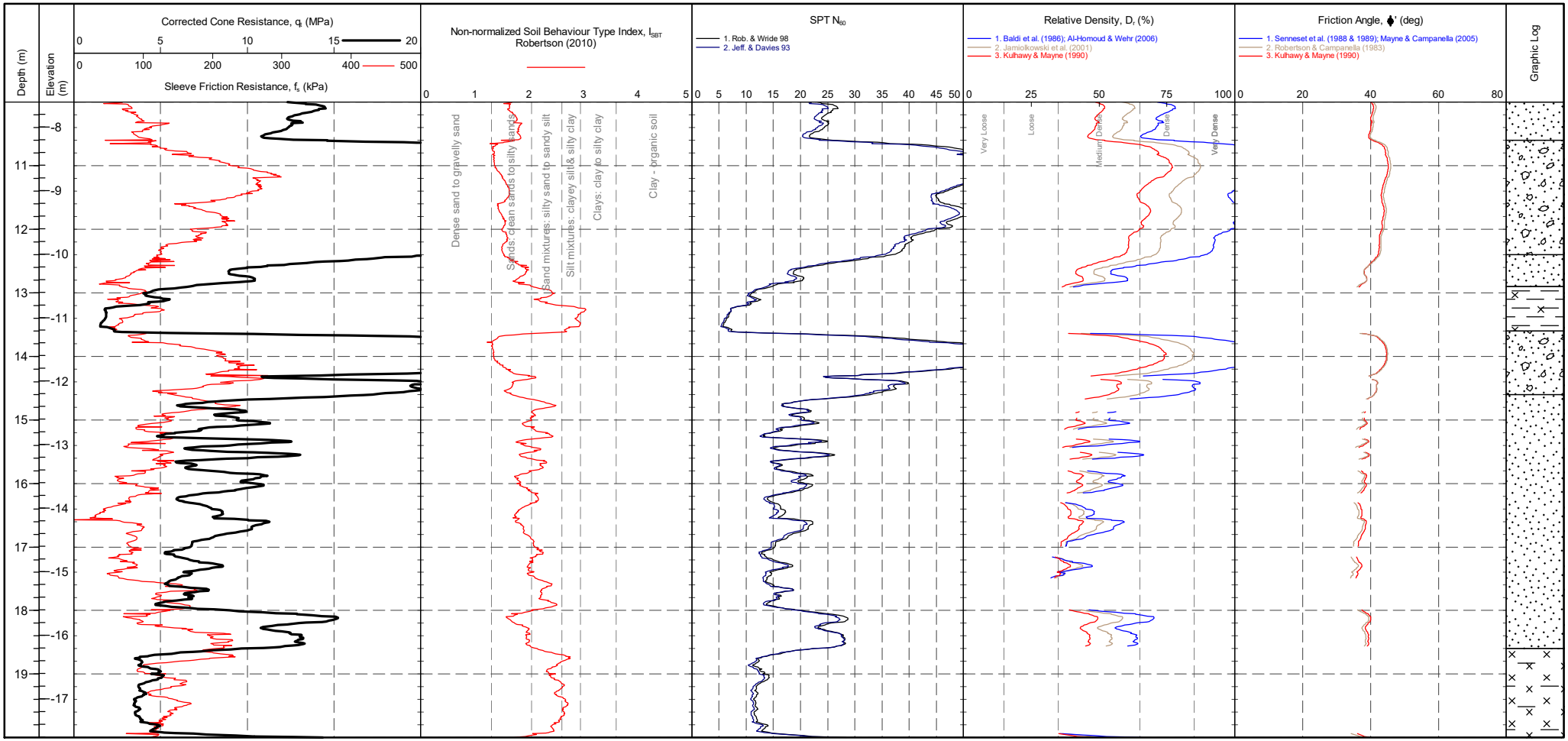
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-11**

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653918.2 m NORTHING : 29234.5 m ELEVATION : 2.39 m CHECKED BY : LD TERMINATION REASON : Refusal	REMARK Test refused on tip resistance.	SHEET : 2 OF 3 STATUS : Final TEST DATE : 10/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV / -0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV / 0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV

Groundwater Level

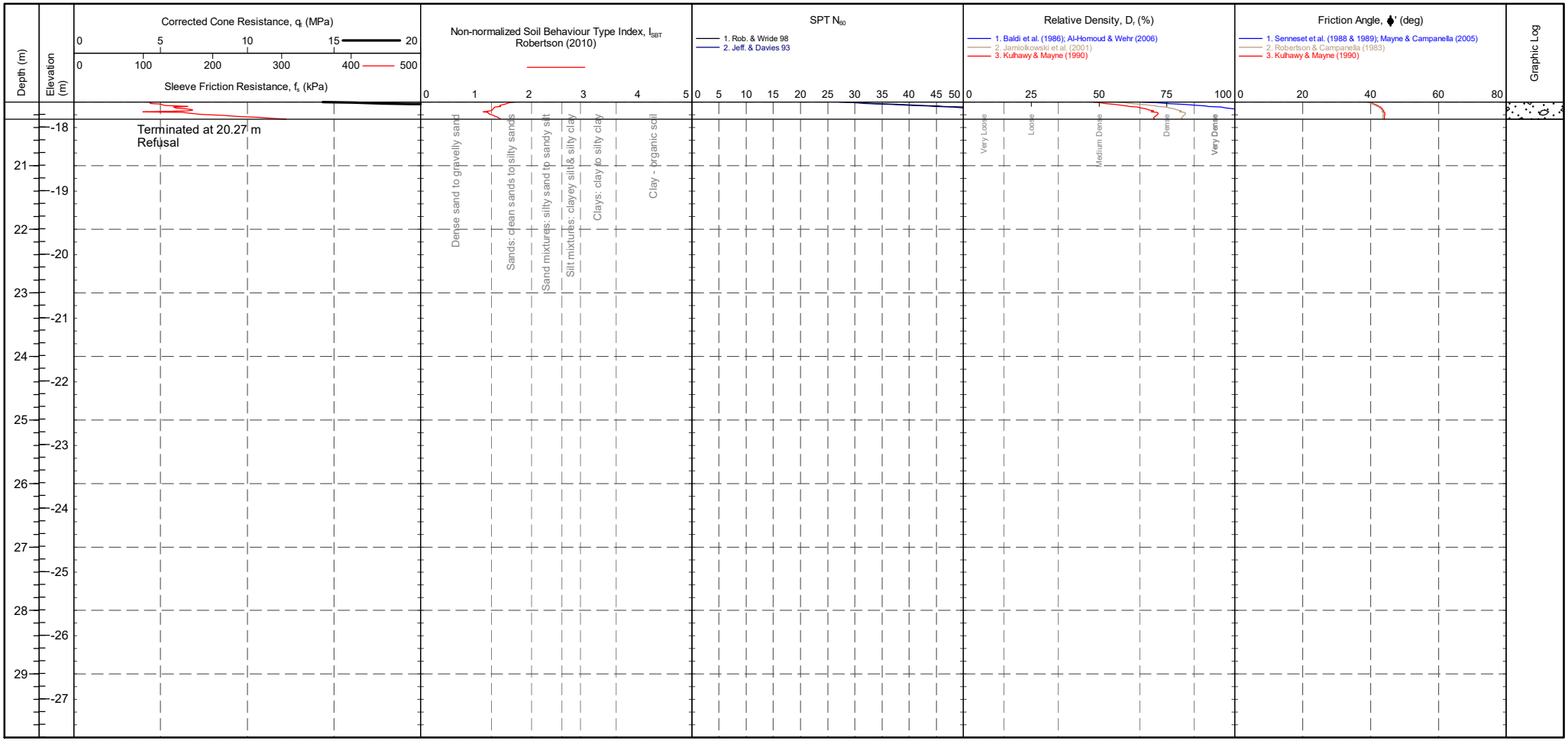
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	319 mV	318 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	X-Y Inclinometer	2479 mV	2436 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

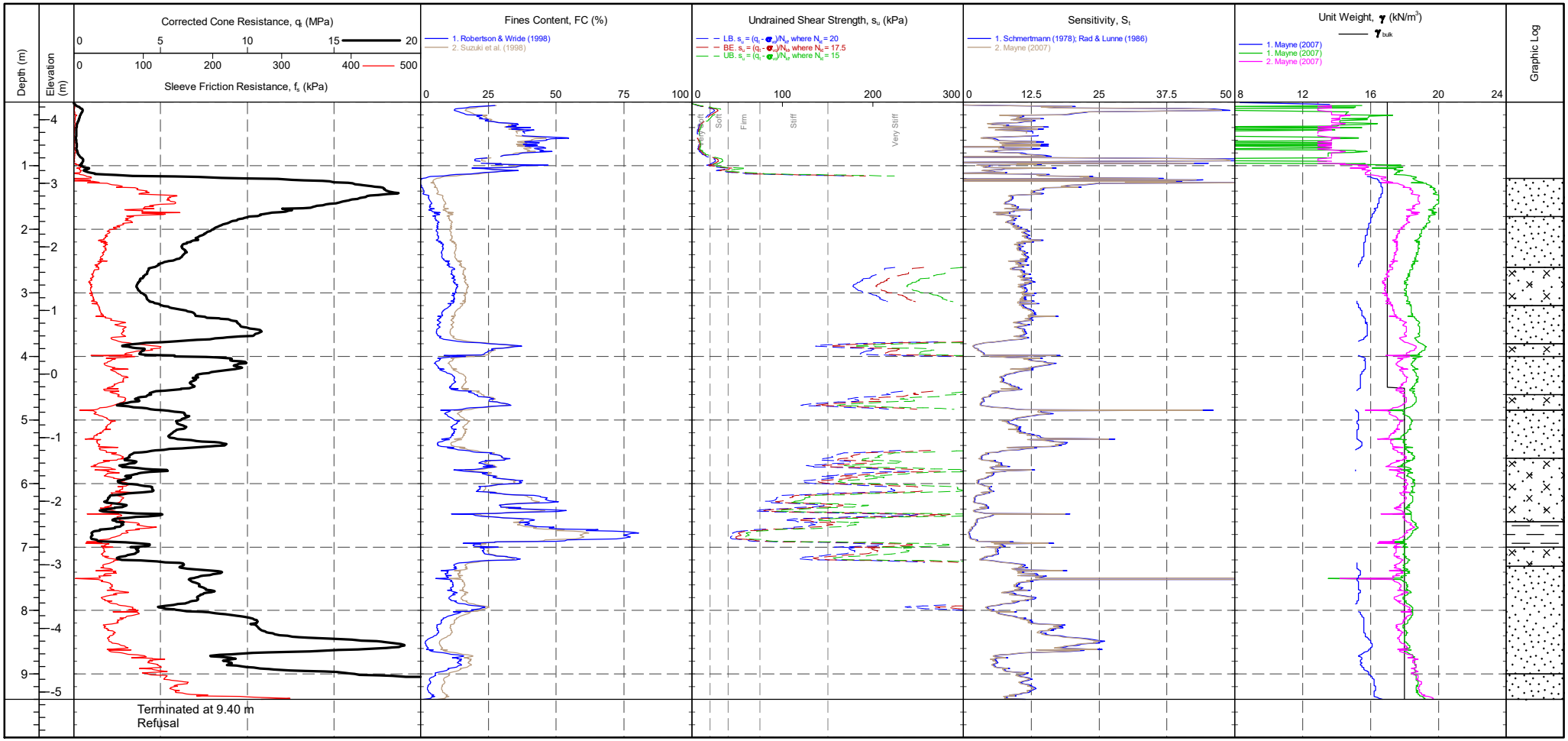
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-01A**

CLIENT : Geosphere Environmental	EASTING : 653755.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293037.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 4.28 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	324 mV	0.074 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	289 mV	306 mV	0.013 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-01A	Pore Pressure 2	216 mV	271 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2463 mV	2436 mV	

Groundwater Level

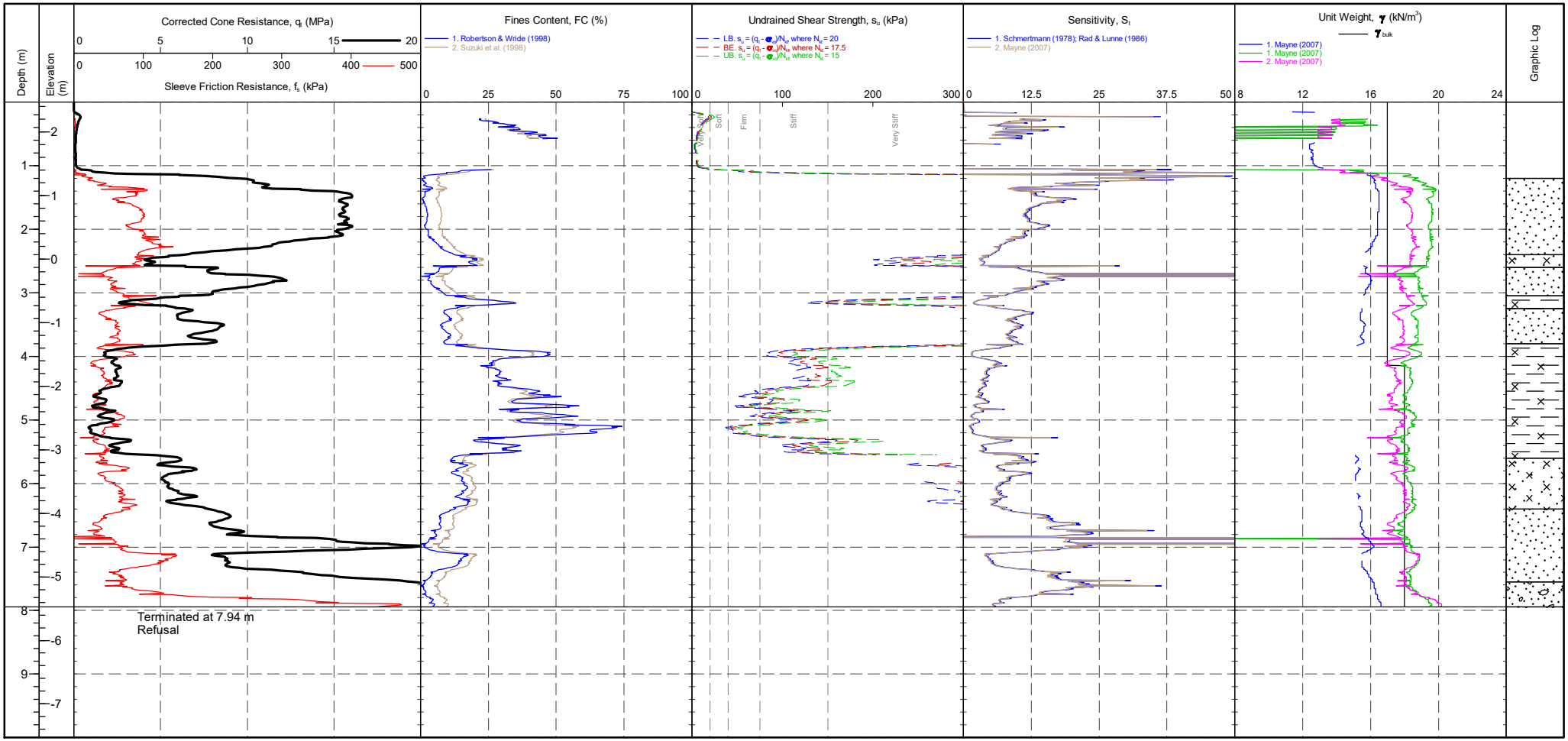
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-02**

CLIENT : Geosphere Environmental	EASTING : 653810.7 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292976.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.47 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	320 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	310 mV	0.006 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-02	Pore Pressure 2	250 mV	286 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2467 mV	2477 mV	

Groundwater Level

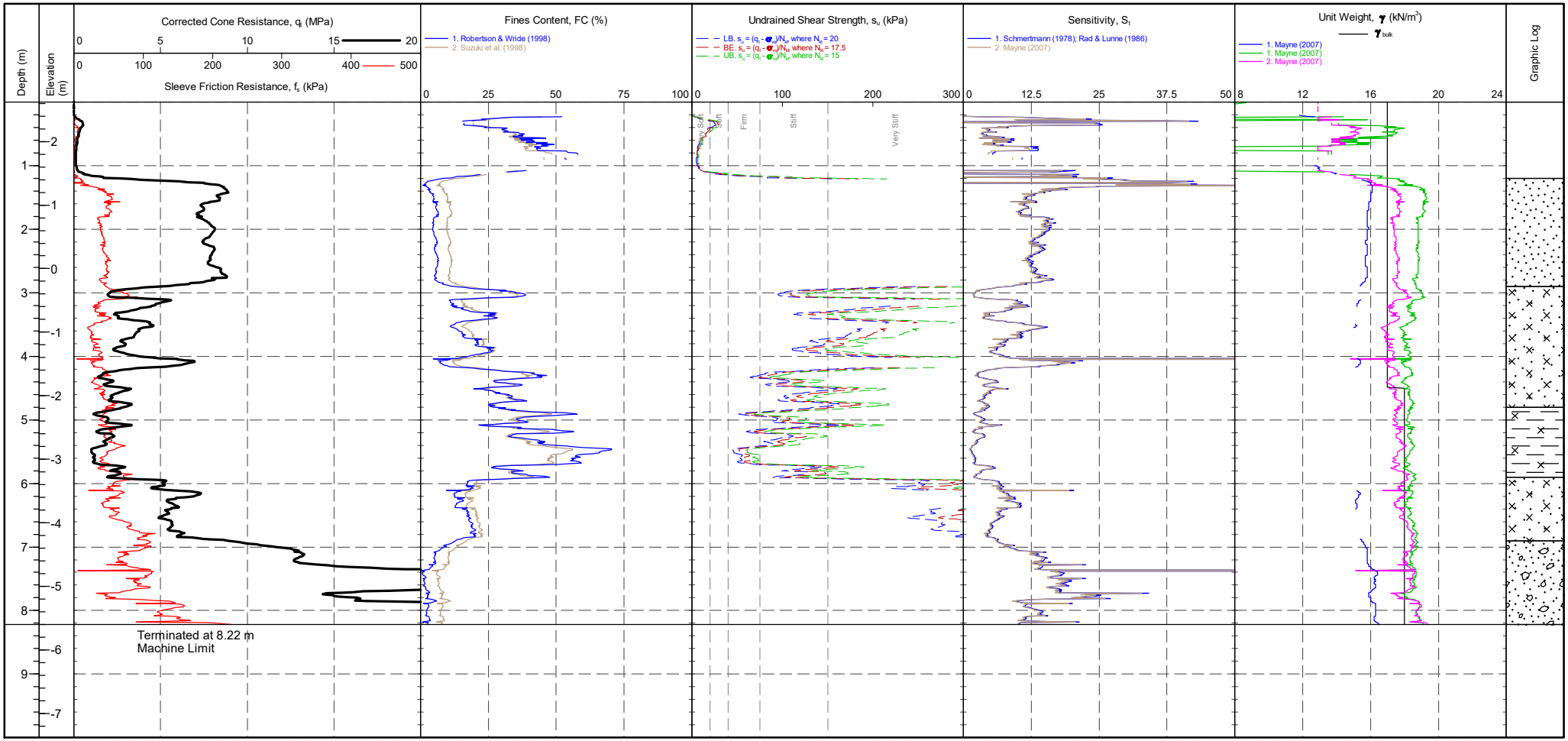
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-03**

CLIENT : Geosphere Environmental	EASTING : 653781.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292986.6 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.62 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-03	Pore Pressure 2	268 mV	284 mV	0.005 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2469 mV	2484 mV	

Groundwater Level

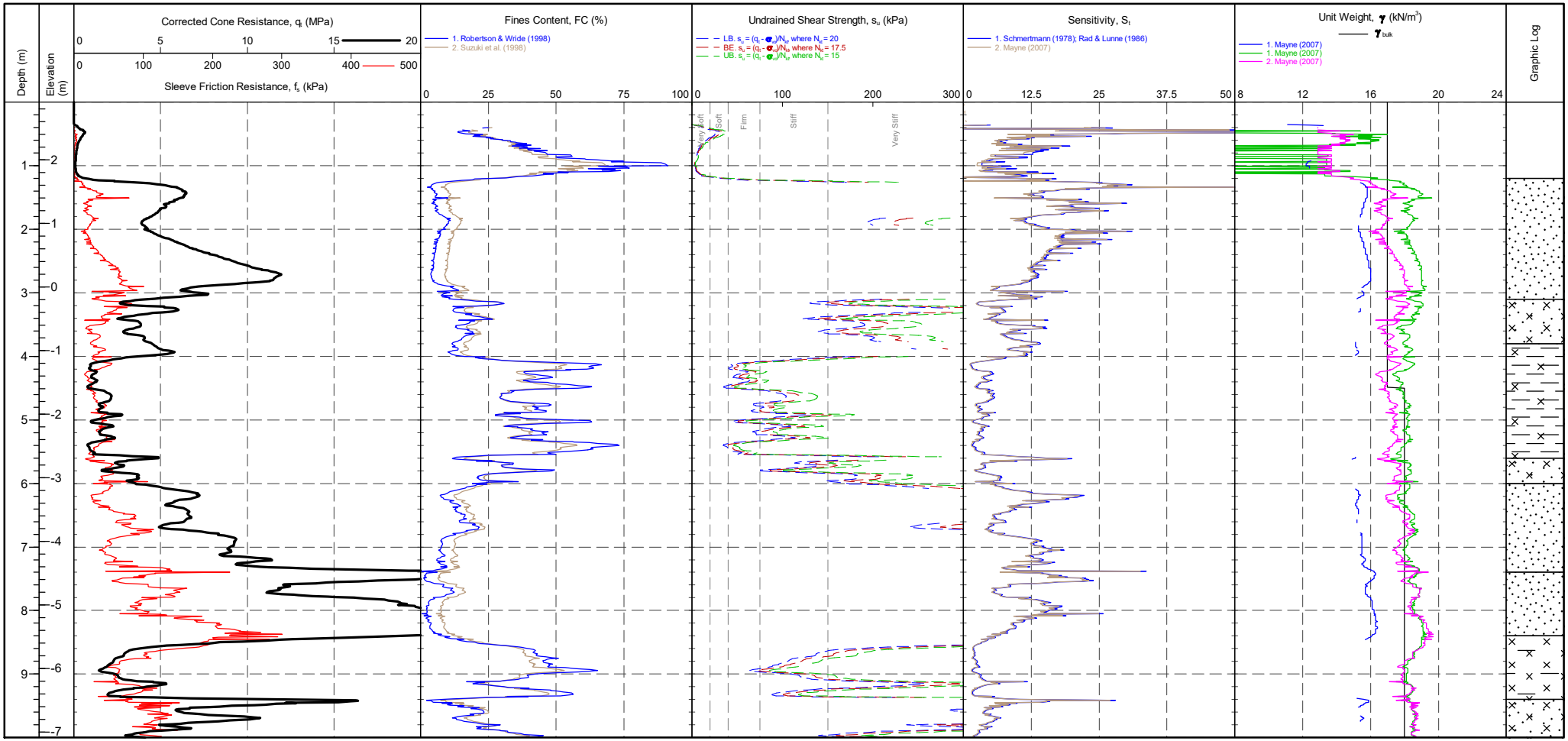
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

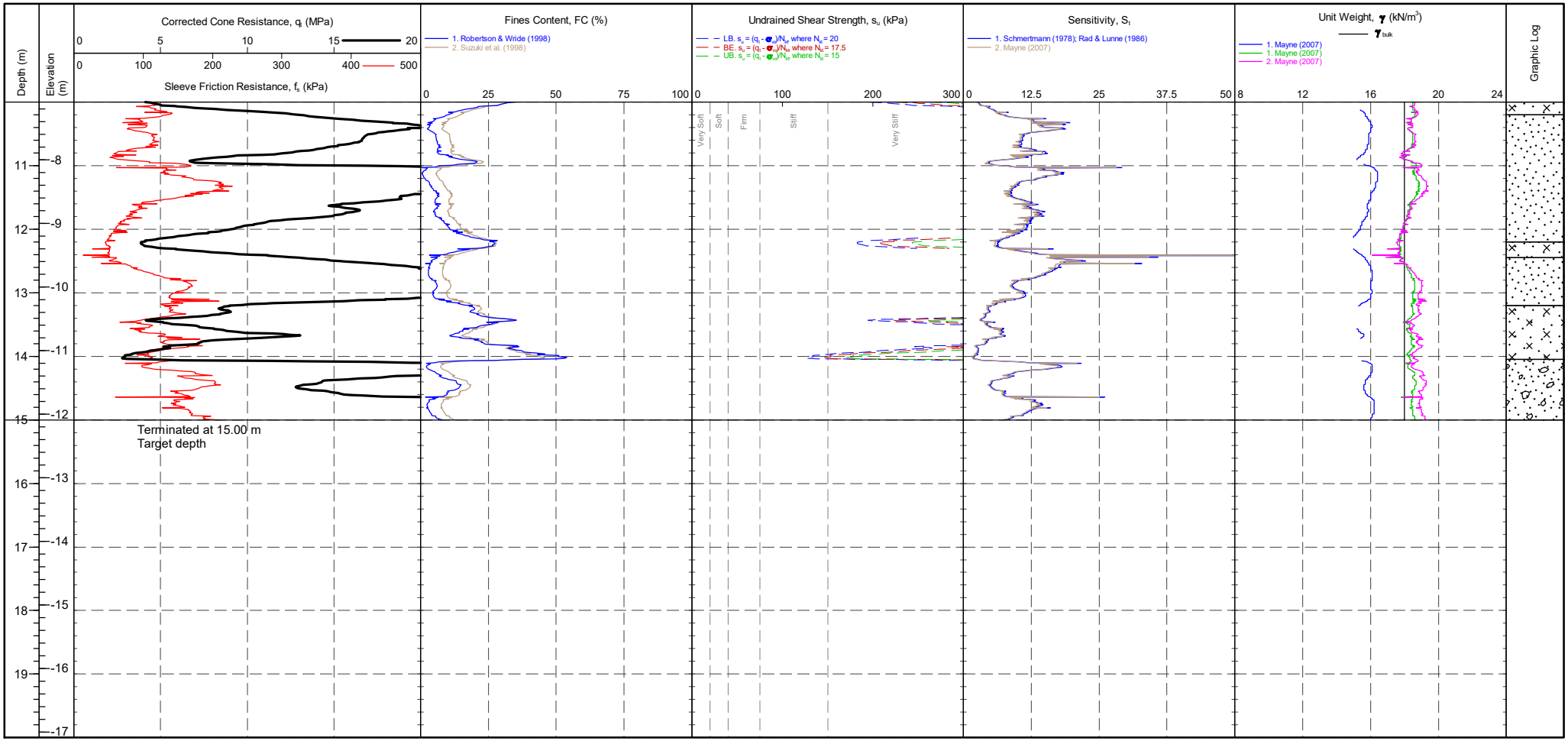
Working with: geosphere environmental ltd

CPT LOG 03

PointID

CPTC-04

CLIENT : Geosphere Environmental	EASTING	: 653809.4 m	REMARK	SHEET	: 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 293019.1 m	Test completed at target depth.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.91 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Target depth		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

Groundwater Level

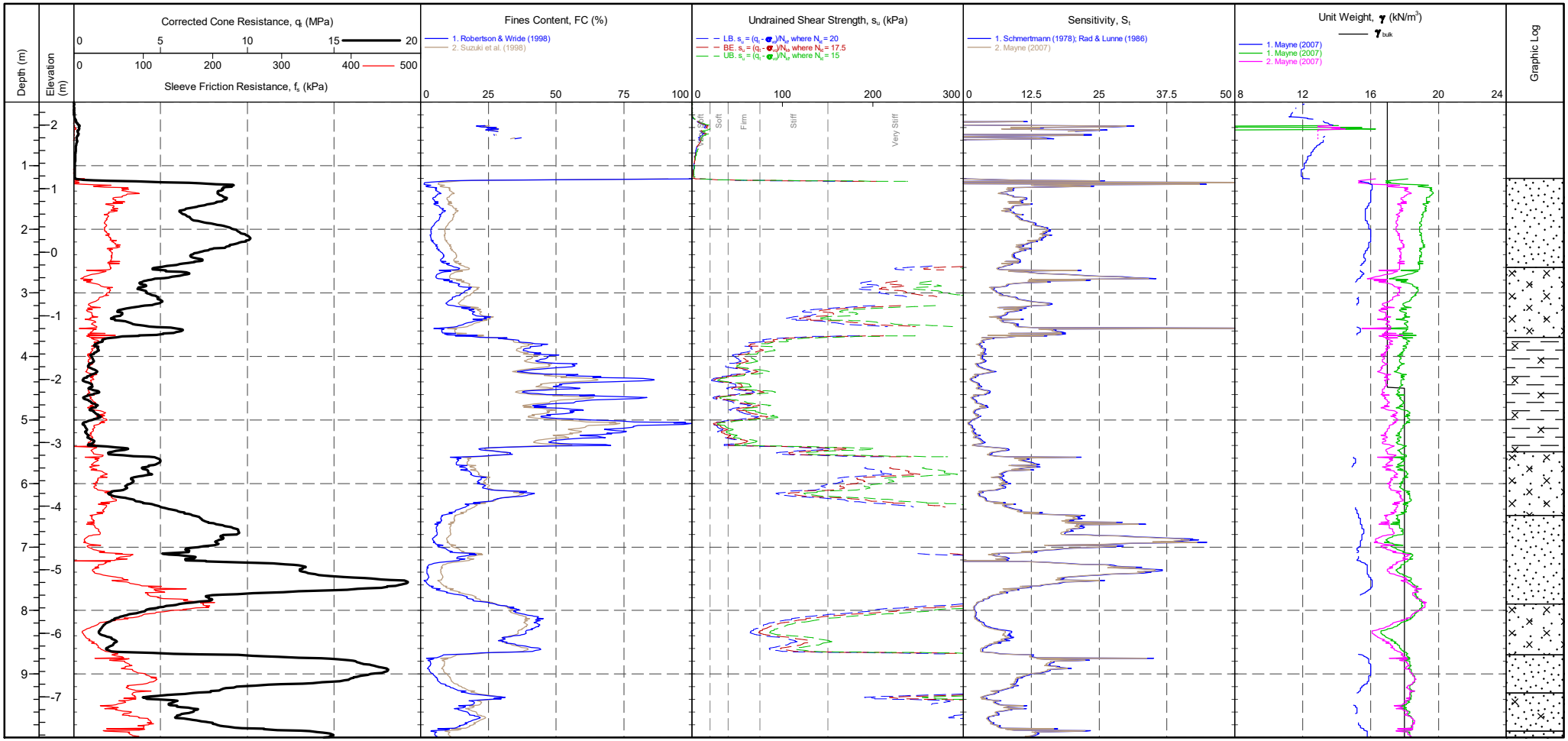
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV / 0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV / 0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV / 0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV

Groundwater Level

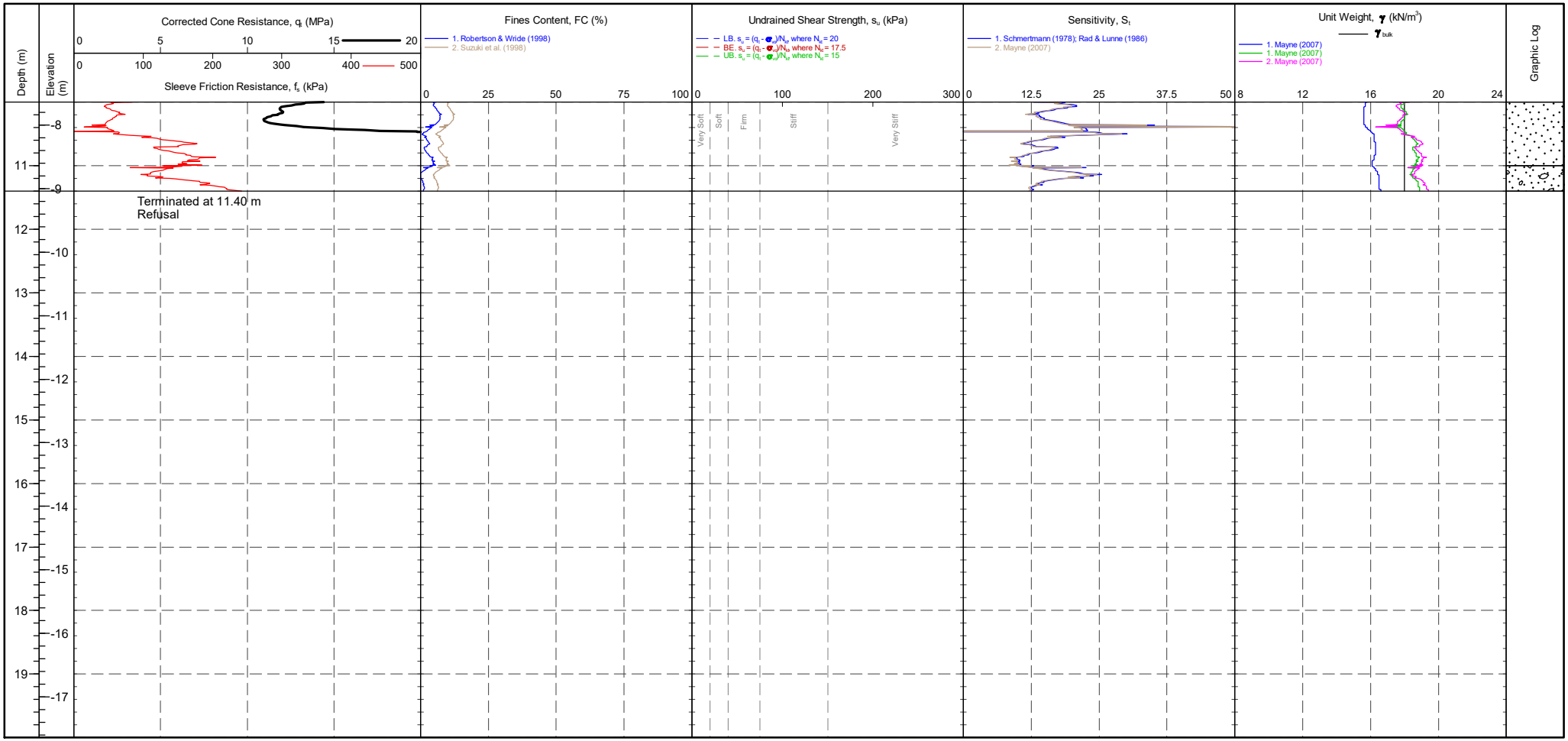
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV	0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV	

Groundwater Level

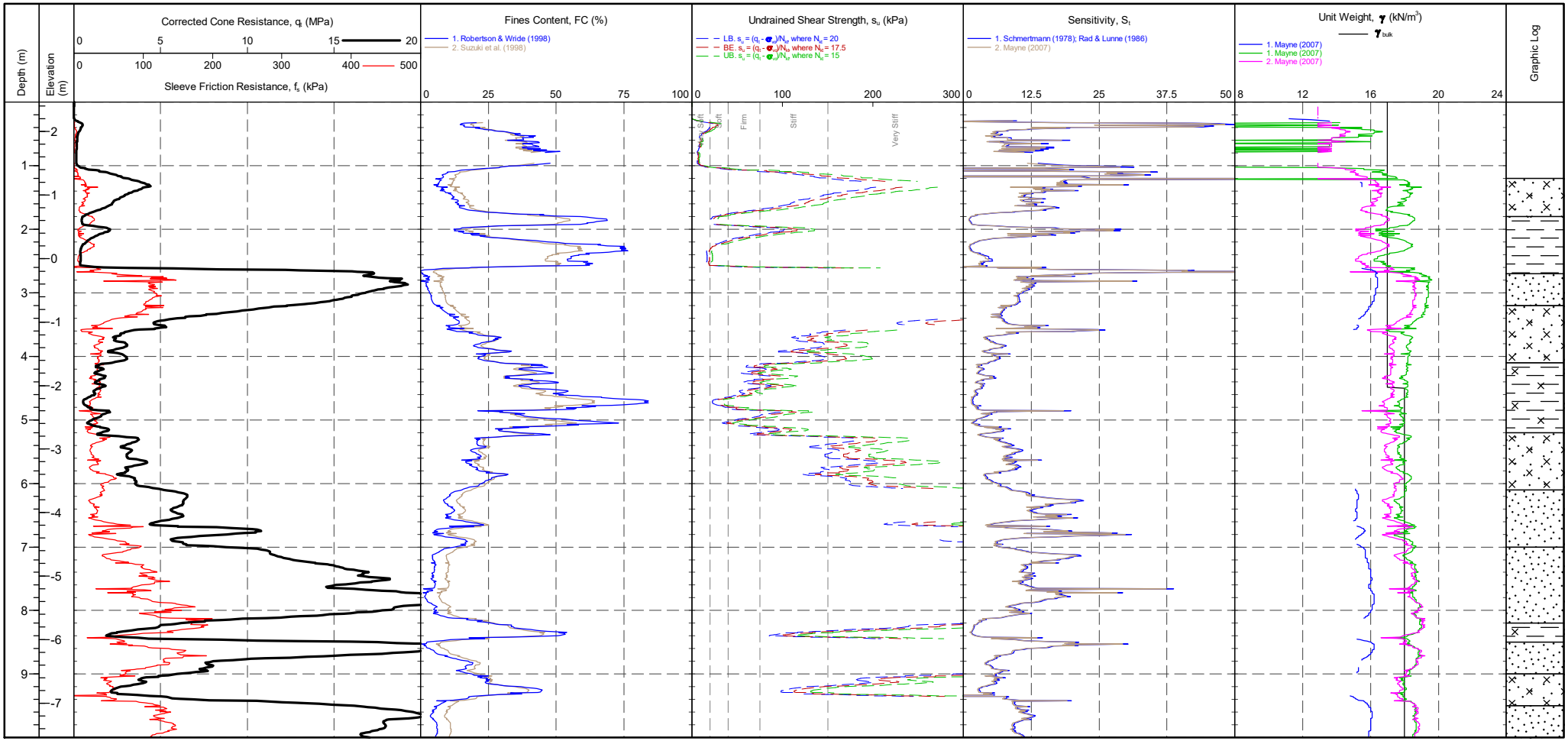
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

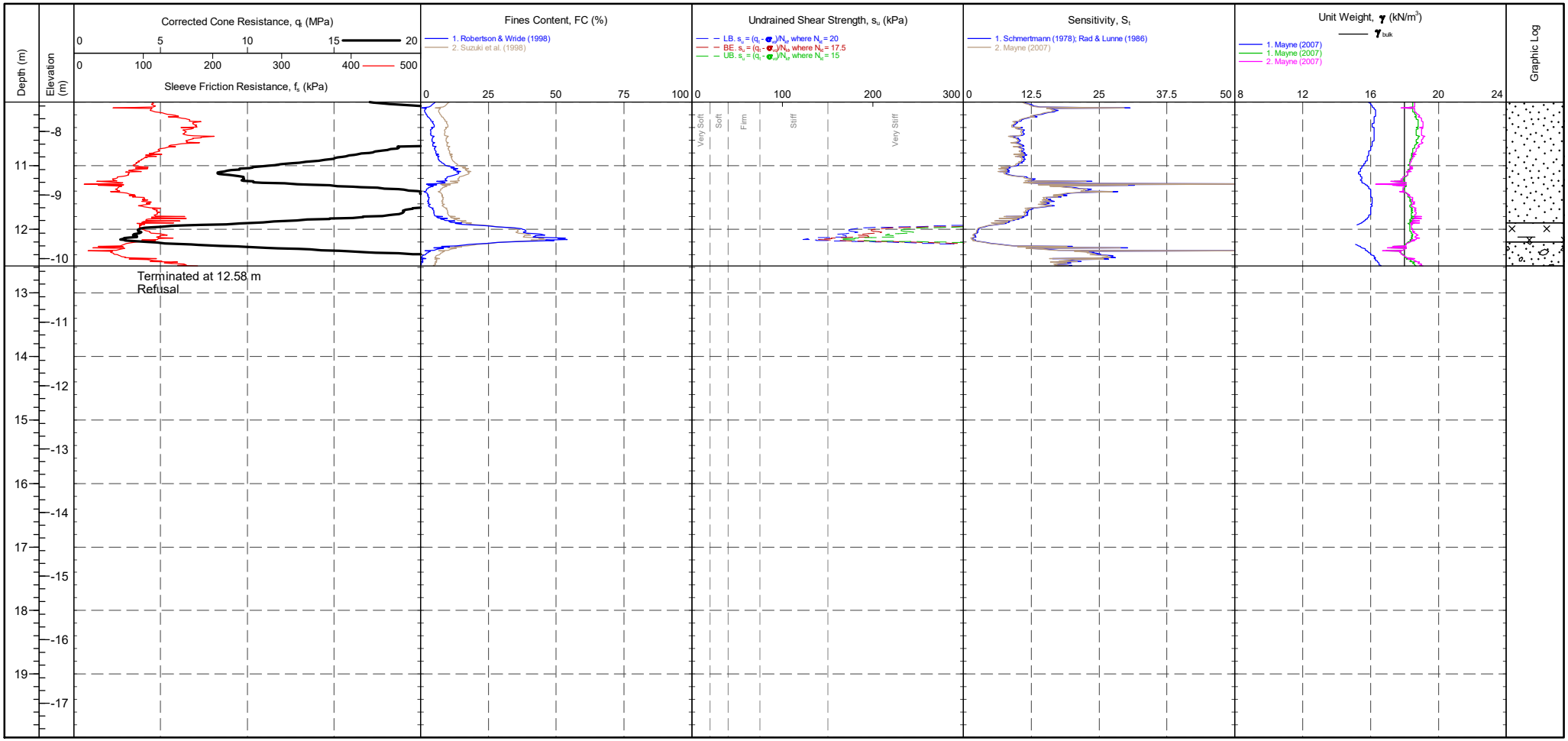
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

Dissipation Test

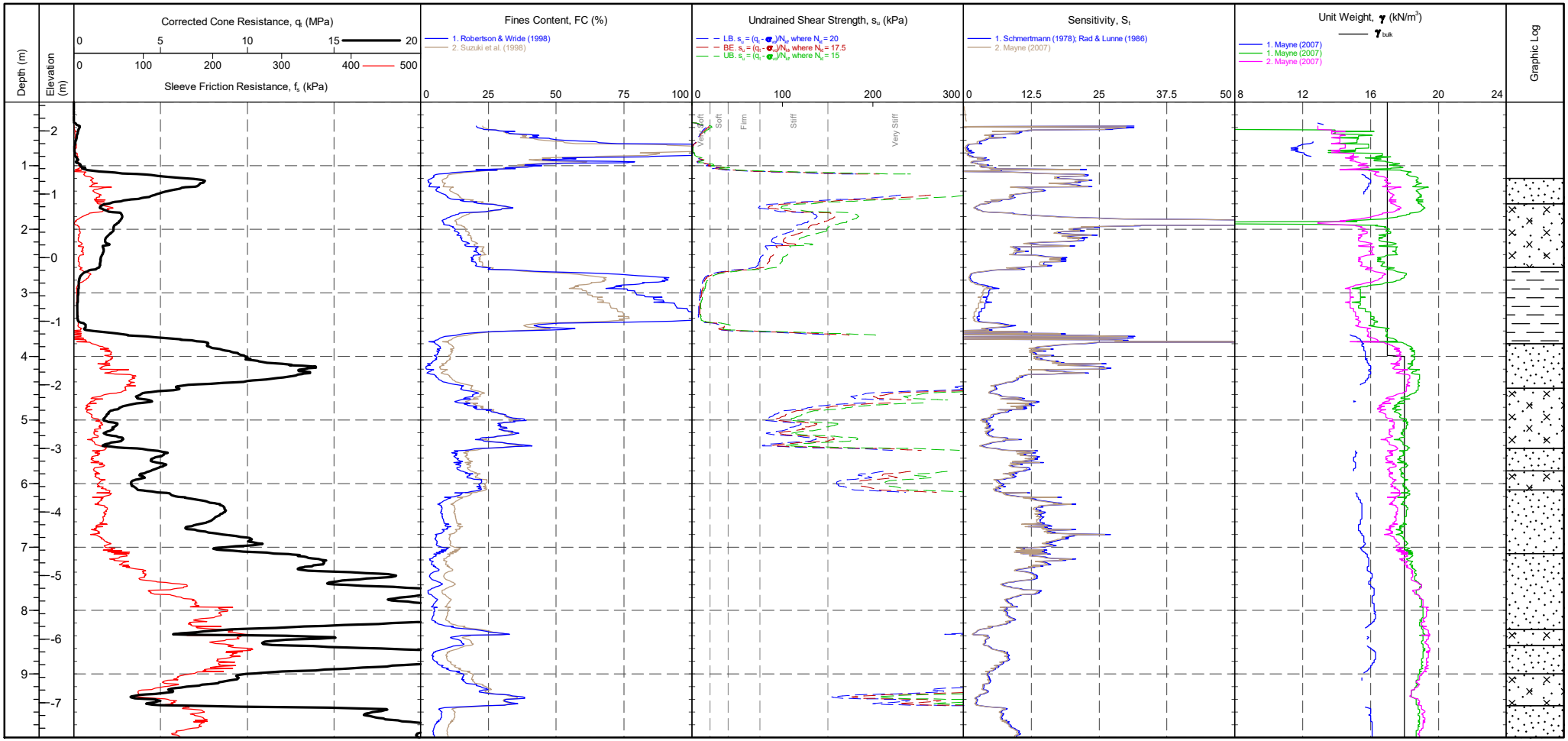
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-07**

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653858.5 m NORTHING : 292968.4 m ELEVATION : 2.45 m CHECKED BY : LD TERMINATION REASON : Machine Limit	REMARK Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 11/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV / -0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV / 0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV

Groundwater Level

Dissipation Test

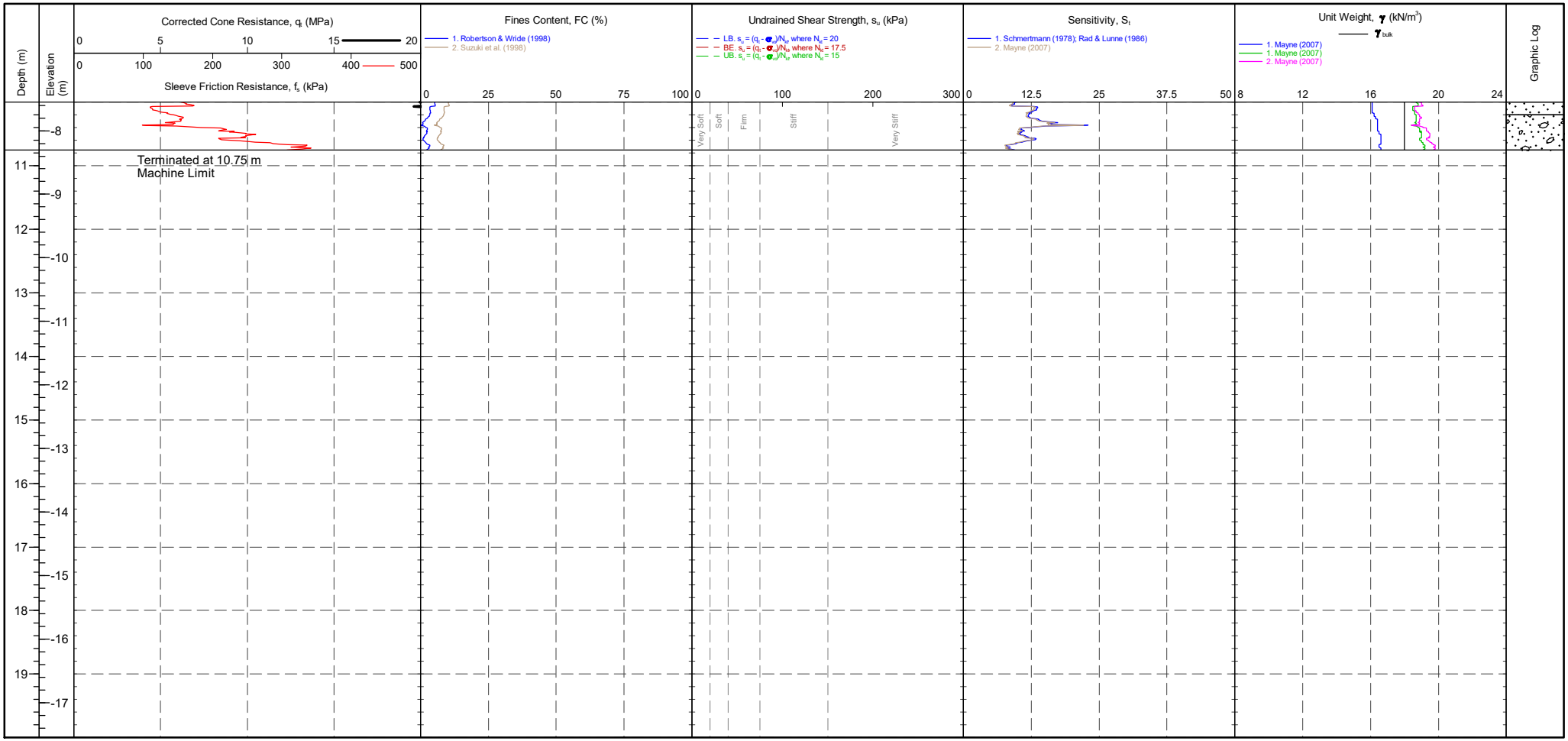
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

Groundwater Level

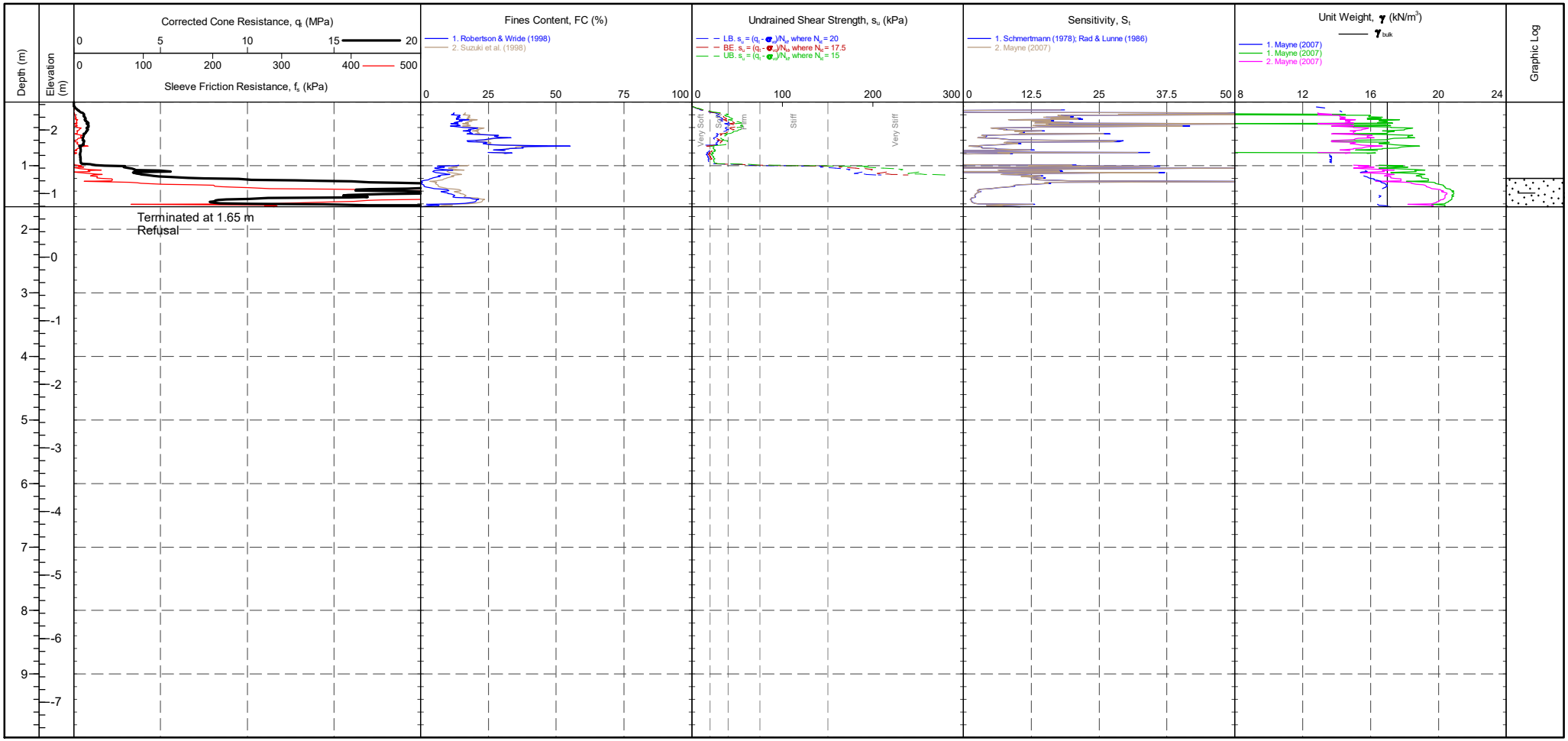
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-08**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	311 mV	-0.064 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	309 mV	0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08	Pore Pressure 2	238 mV	263 mV	0.007 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2484 mV	

Groundwater Level

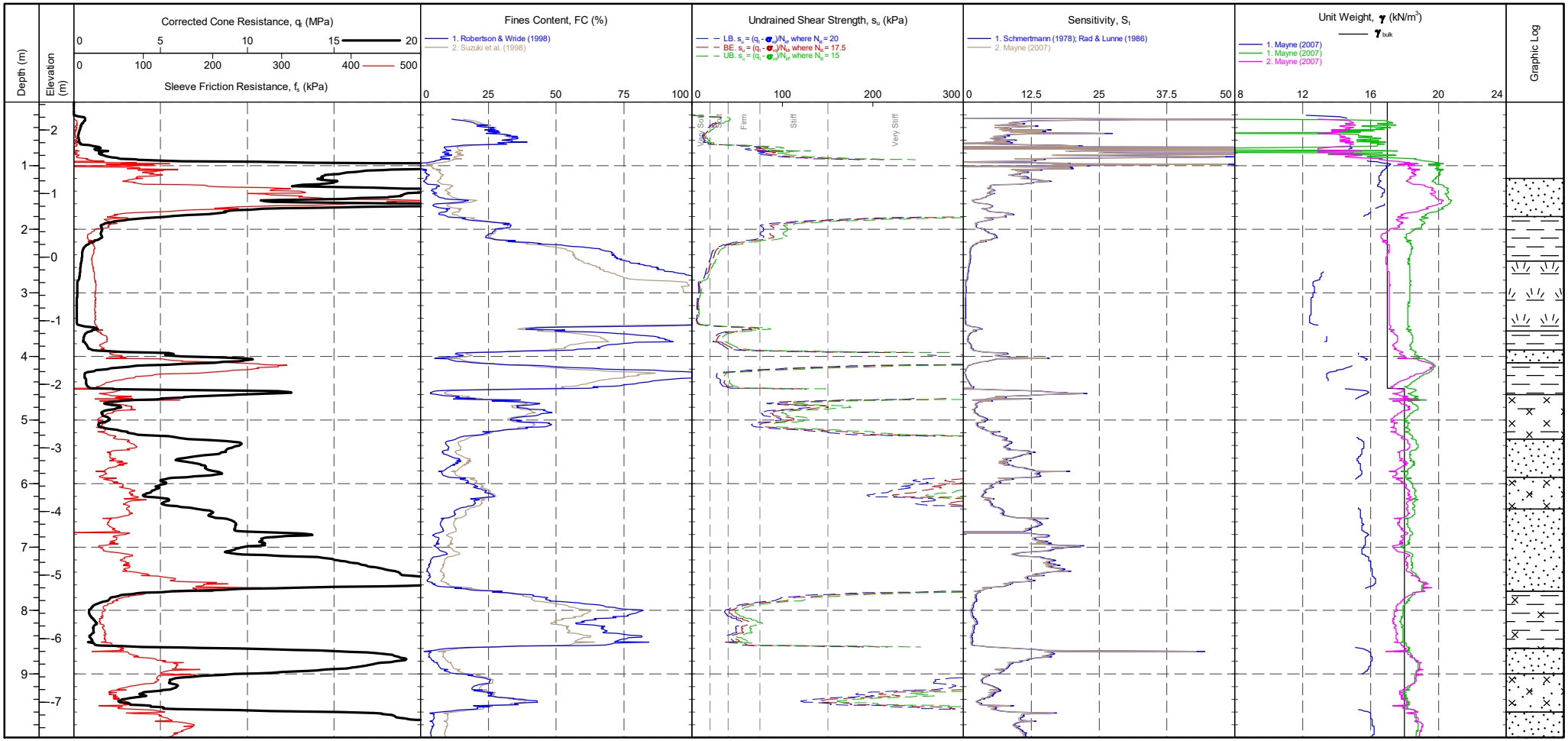
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV	

Groundwater Level

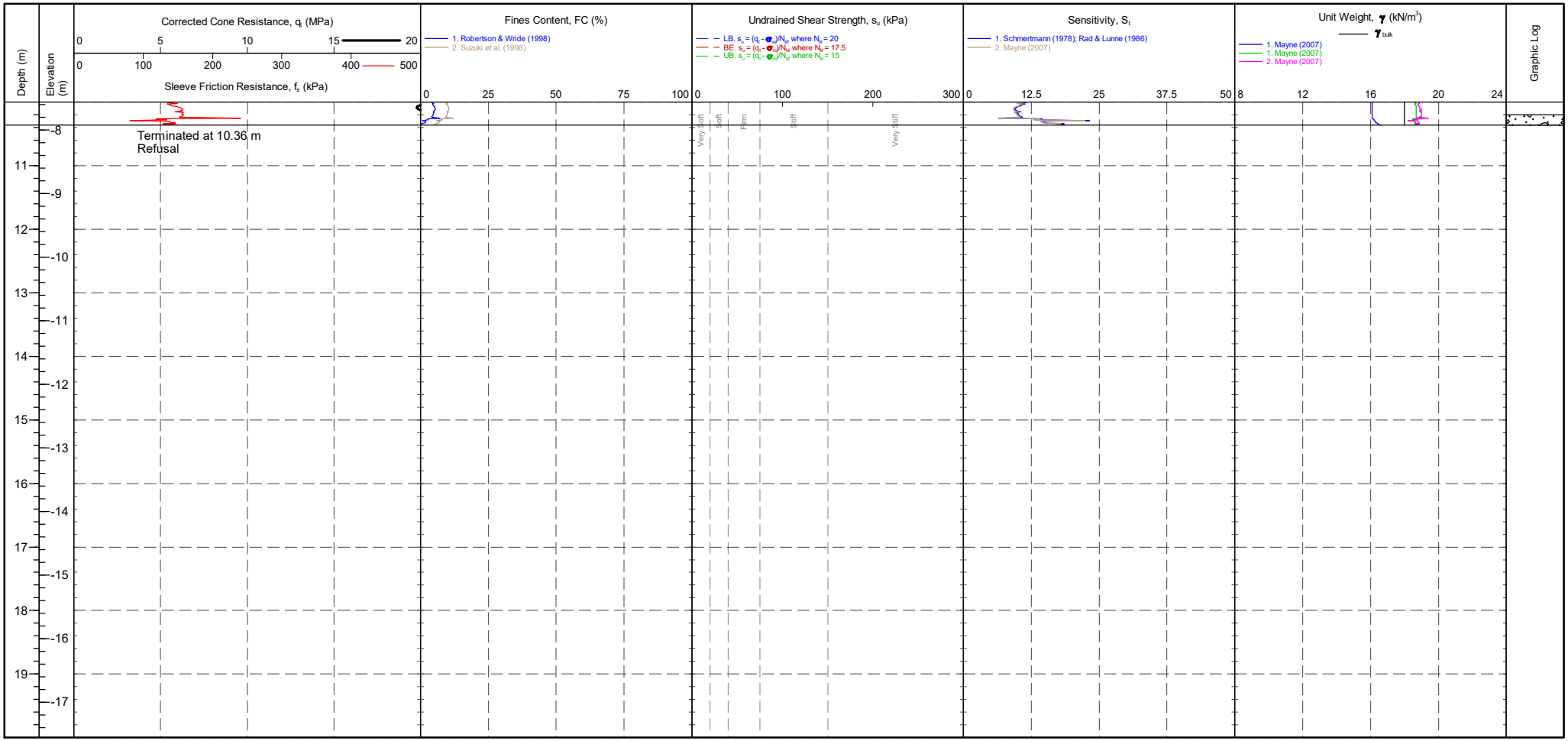
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV	

Groundwater Level

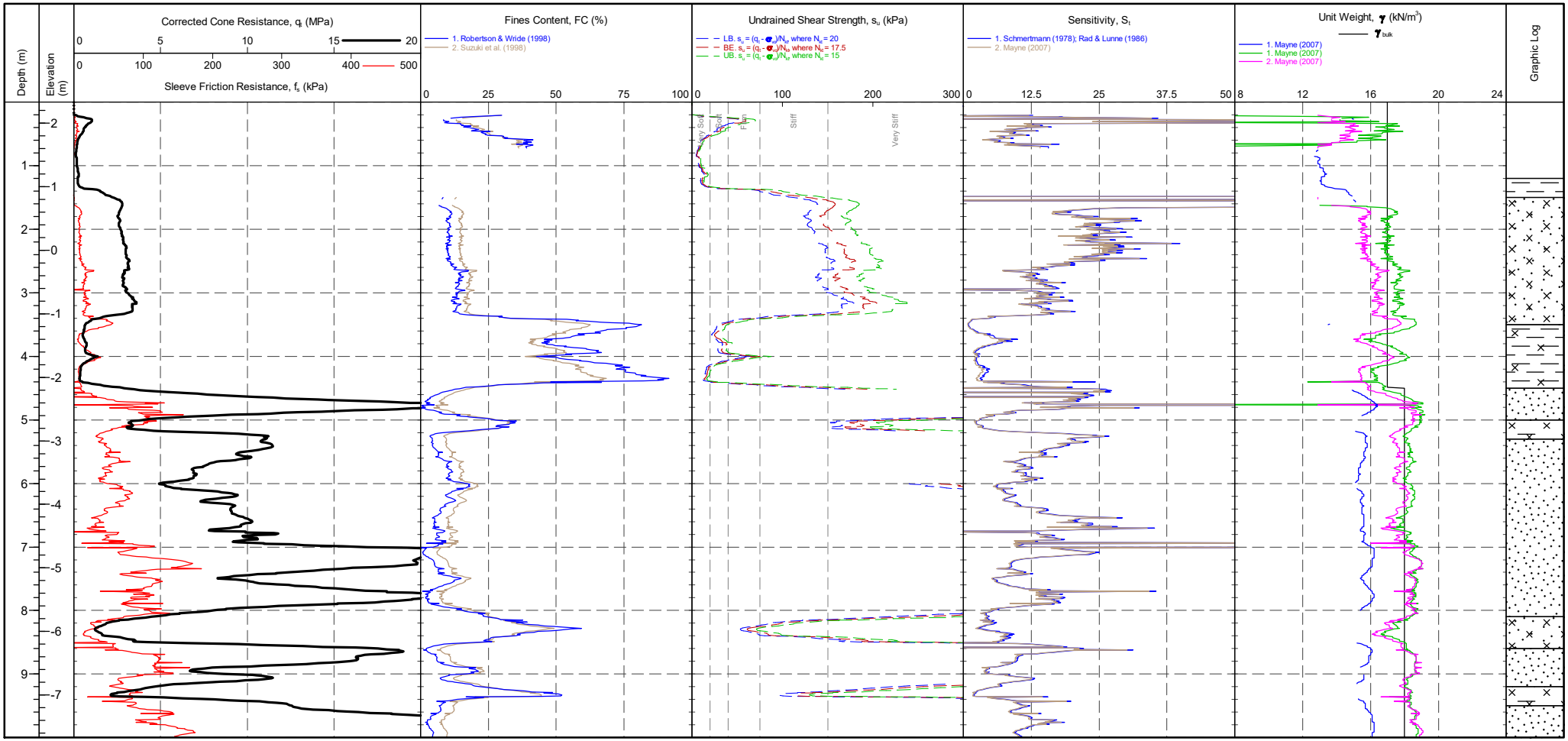
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

Groundwater Level

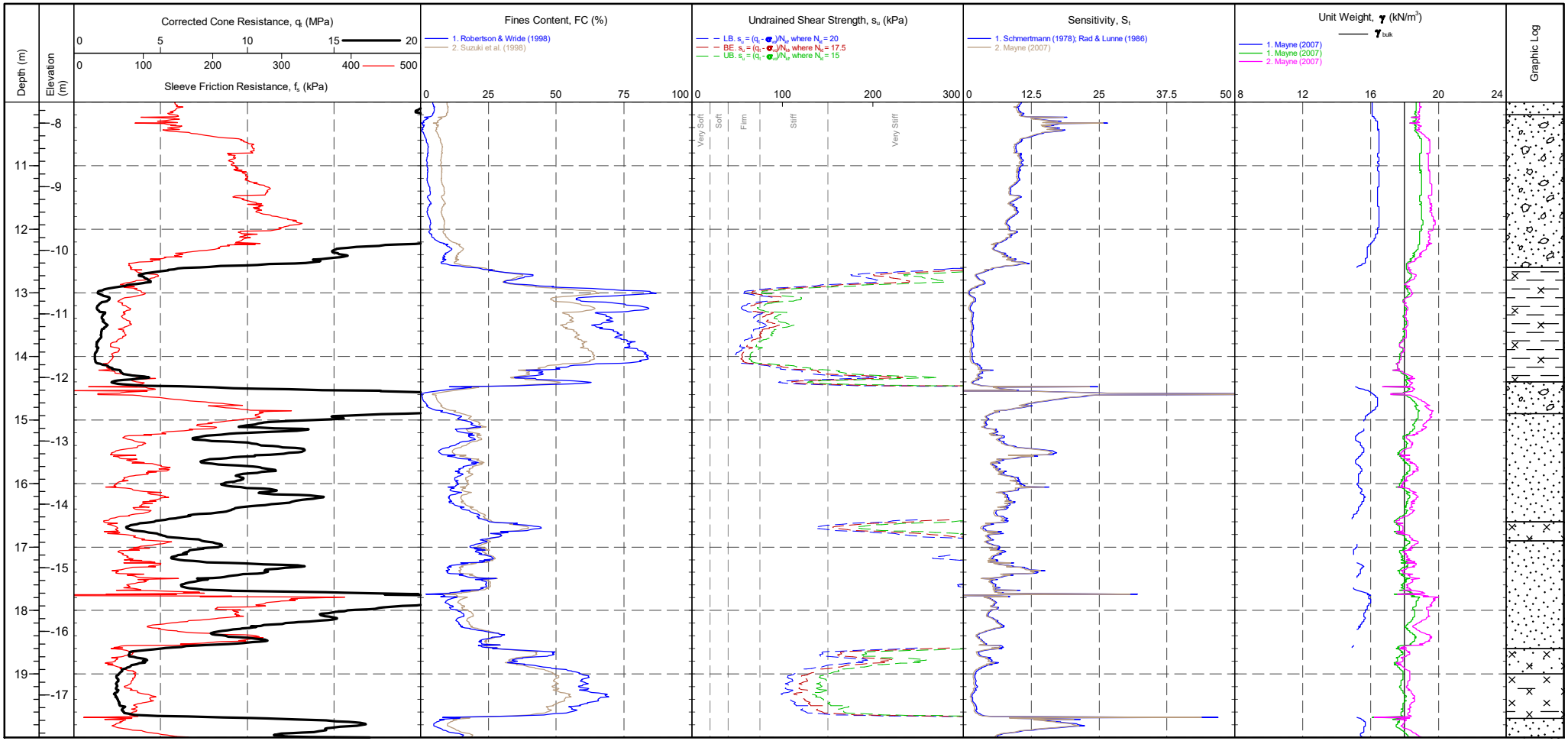
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

Groundwater Level

Dissipation Test

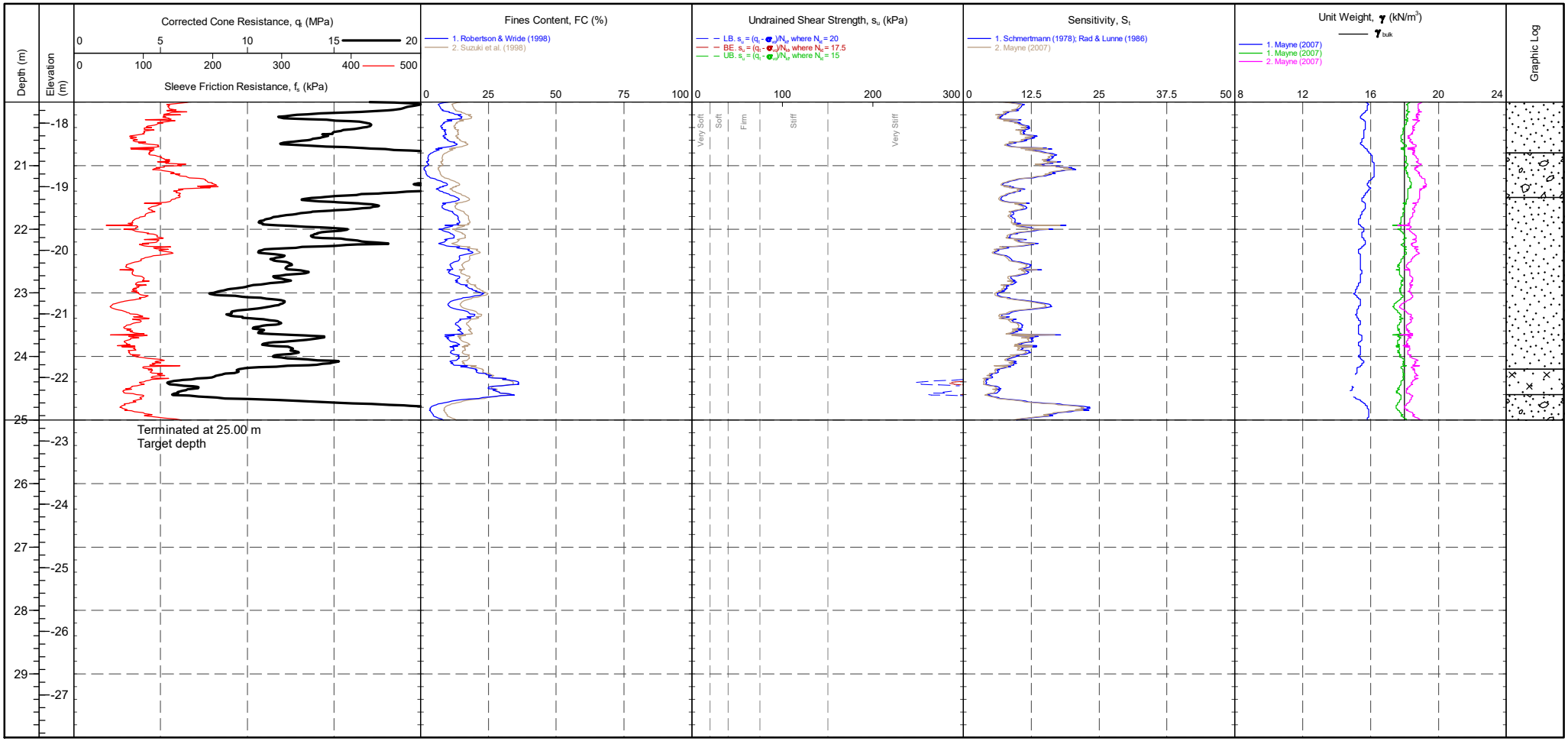
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-09**

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653882.9 m NORTHING : 292937.4 m ELEVATION : 2.33 m CHECKED BY : LD TERMINATION REASON : Target depth	REMARK Test completed at target depth.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 11/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

Groundwater Level

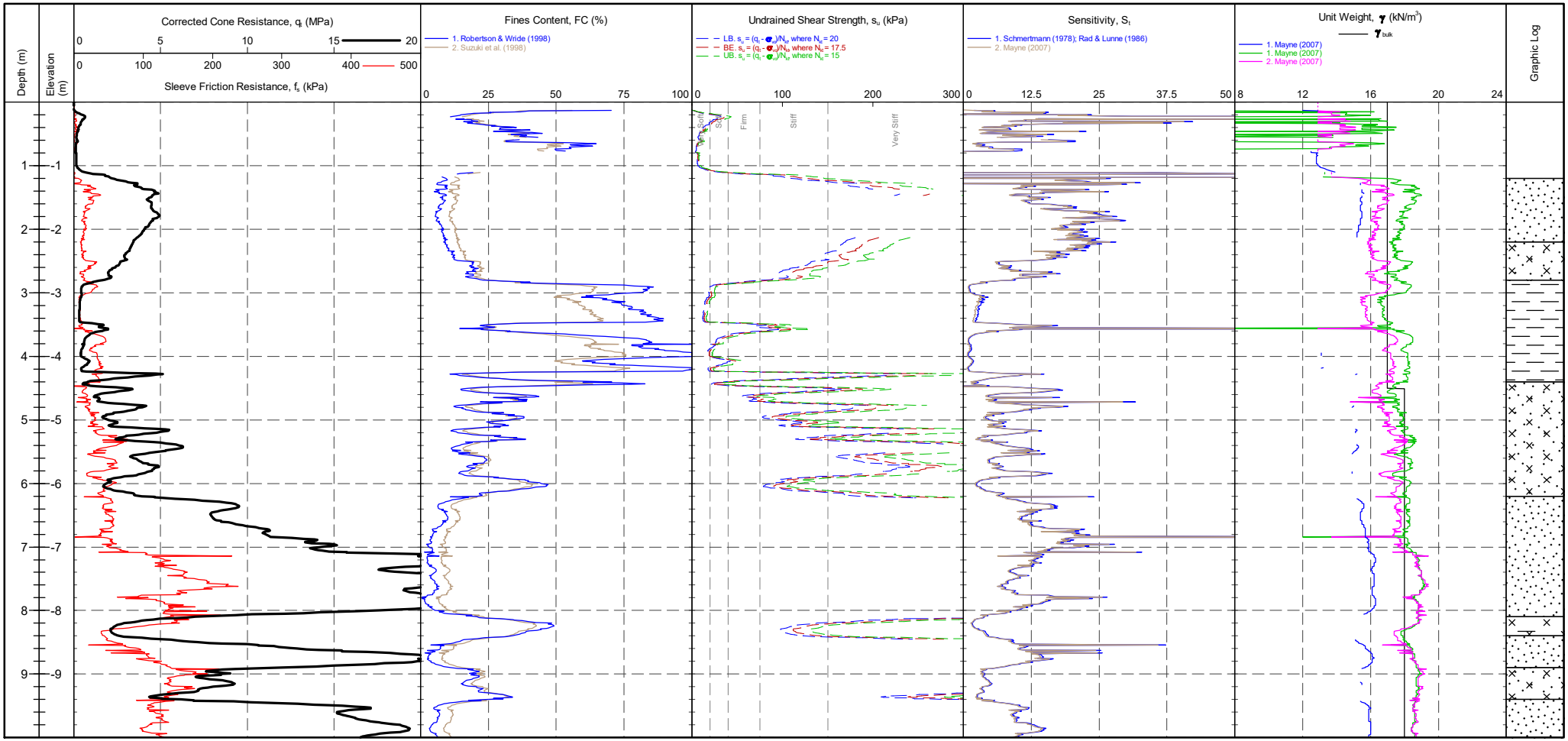
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

Groundwater Level

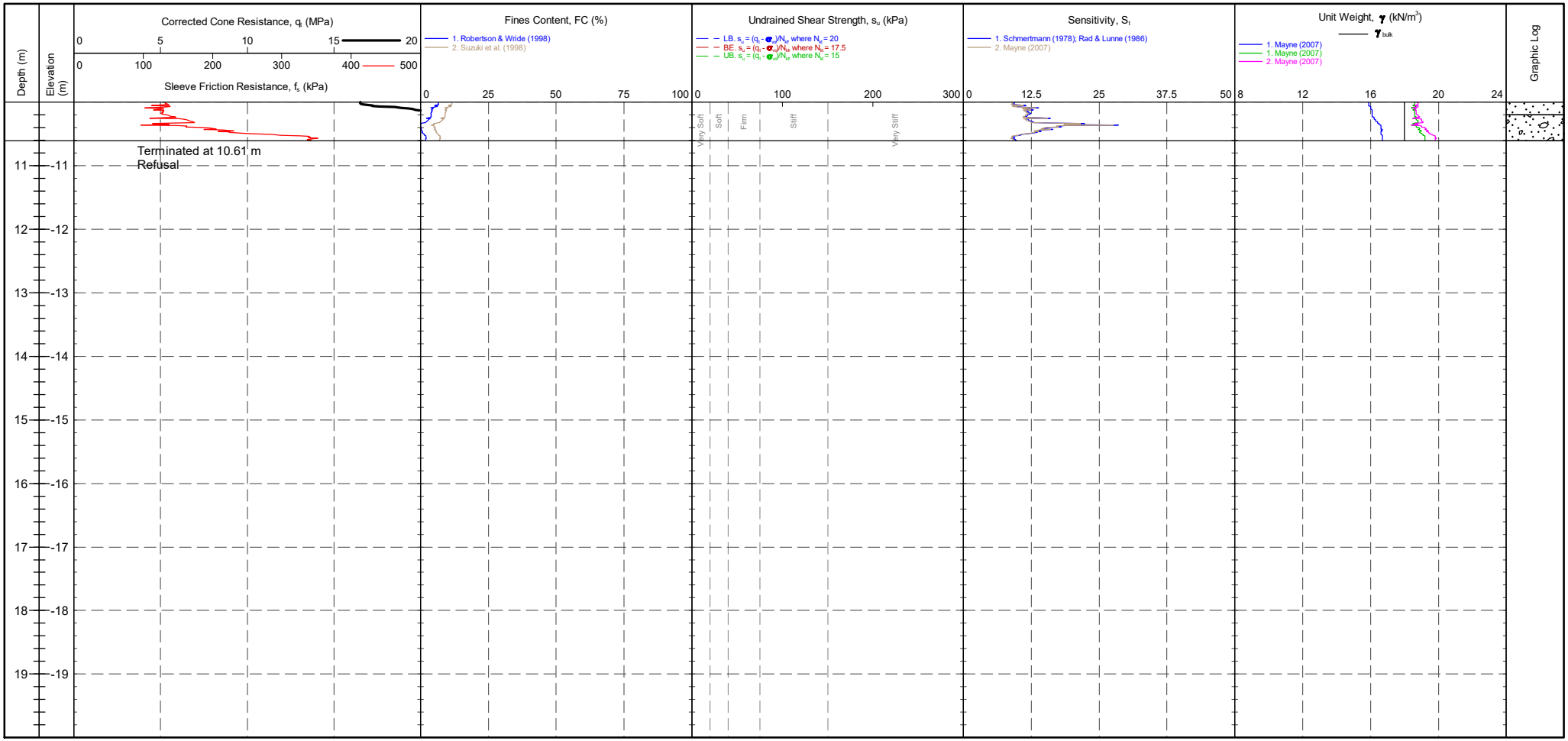
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

Groundwater Level

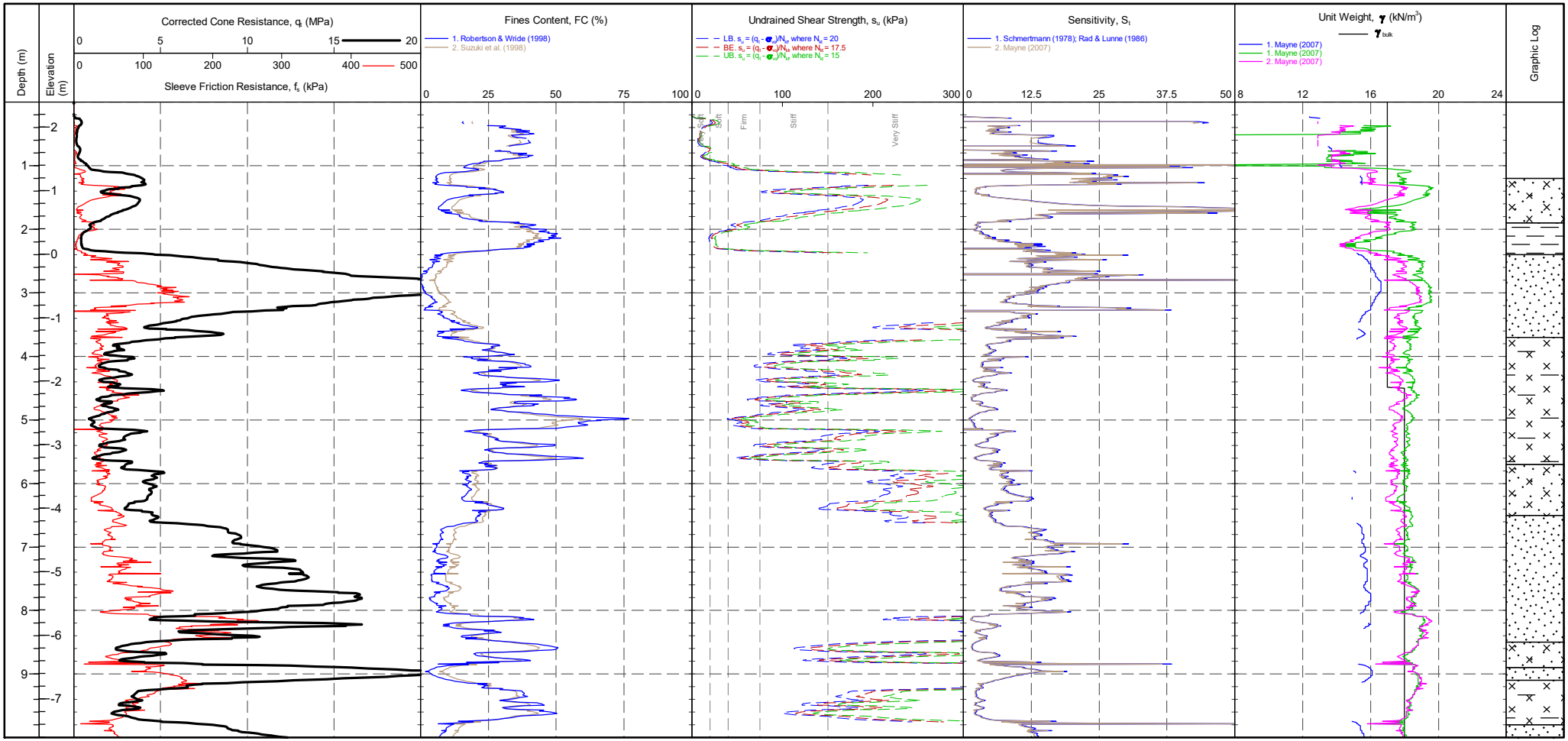
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV / -0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV / 0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV

Groundwater Level

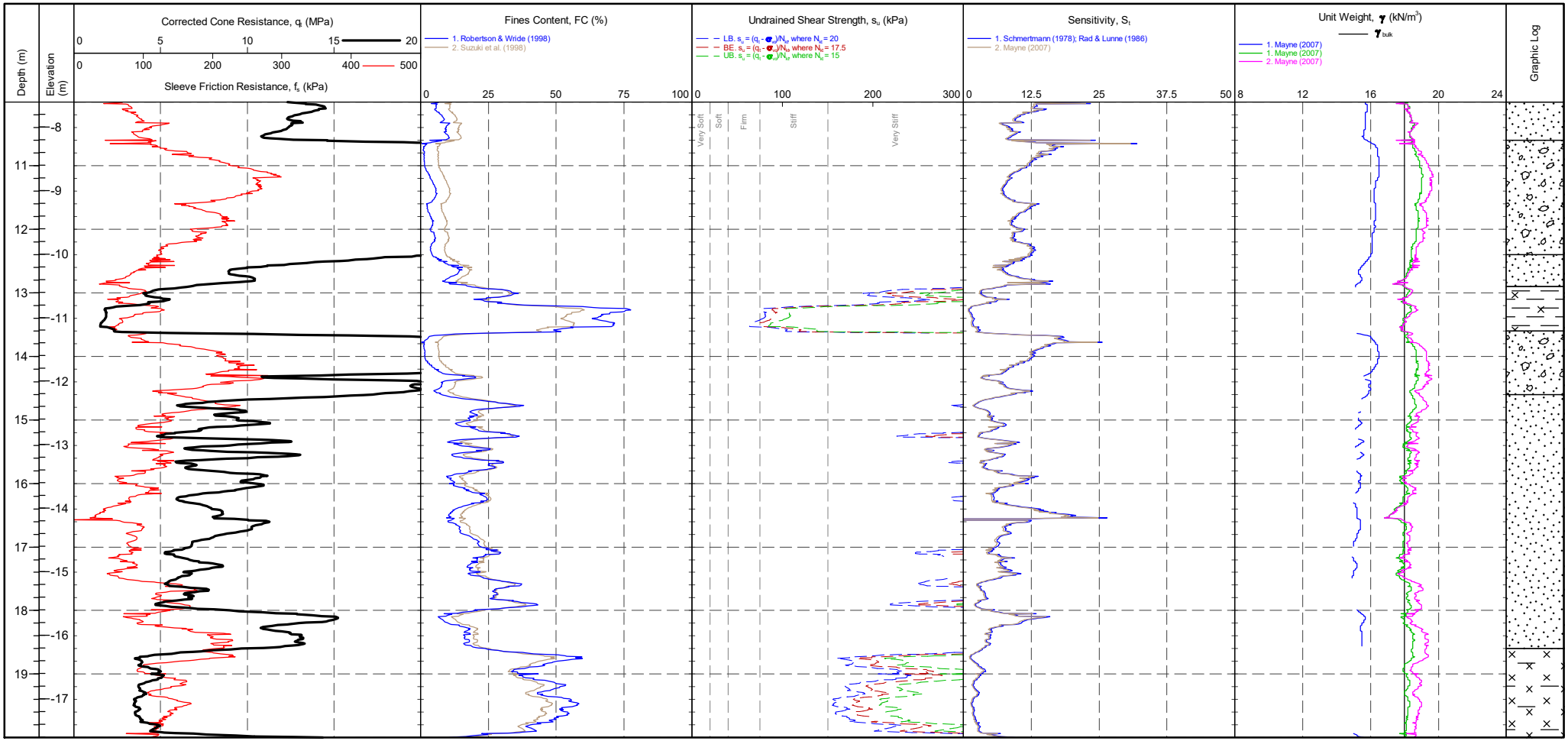
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

Groundwater Level

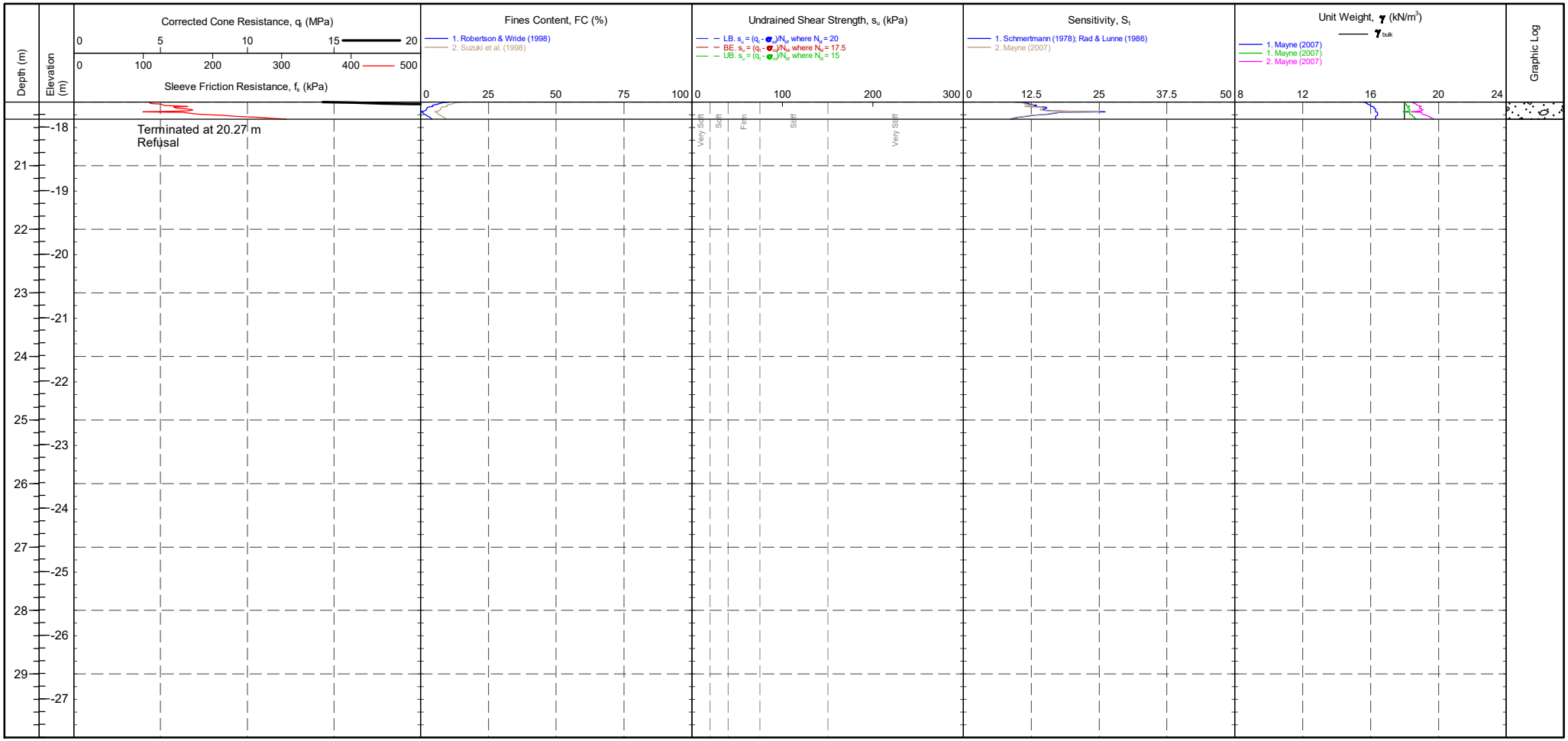
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

Groundwater Level

Dissipation Test



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

IN SITU
SITE INVESTIGATION



STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT GEOSPHERE ENVIRONMENTAL

PROJECT LOWESTOFT

Project	**Lowestoft**
Project No.	**1170456**
Client	**Geosphere Environmental**
Address	**Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ**

Attention: Mr Stephen Gilchrest

Dear Mr Stephen Gilchrest

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited

[redacted]

Darren Ward
Director

Report Issue

Issue	Date	Description	Prepared	Sign	Checked	Sign
02	03/10/2018	Final	Rachel Cleaver	[redacted]	Darren Ward	[redacted]

Table of Contents

1.0 INTRODUCTION 4

2.0 FIELDWORK 5

2.1 CONE PENETRATION TESTS 5

2.1.1 Rig Information 5

2.1.2 CPTU Cone 5

2.1.3 CPTU Cone Calibration 6

2.1.4 CPTU Cone Saturation 6

2.1.5 Test Procedure 6

2.1.6 In Situ Pore Pressure (u_0) 7

2.2 POSITIONING 7

3.0 CONE PENETRATION MEASURED PARAMETERS 8

3.1 DATA PROCESSING 8

3.1.1 Zero Measurements 8

3.2 MEASURED PARAMETERS 8

3.2.1 Cone Resistance (q_c) 8

3.2.2 Sleeve Friction (f_s) 8

3.2.3 Porewater pressure (u_2) 9

3.2.4 Inclination (I_x, I_y) 9

3.3 ESTIMATED SOIL BEHAVIOUR TYPE 9

3.3.1 Friction Ratio (R_f) 9

3.3.2 Estimated Soil Behaviour Type (SBT) 9

3.3.3 Pore Pressure Ratio (B_q) 10

3.4 APPLIED CORRECTIONS 11

3.4.1 Corrected Cone Resistance (q_t) 11

3.4.2 Depth Correction 11

4.0 GEOTECHNICAL DERIVED PARAMETERS 12

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c) 12

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60}) 14

4.3 RELATIVE DENSITY (D_r) 14

4.4 FRICTION ANGLE (φ') 16
4.5 FINES CONTENT (*FC*) 17
4.6 UNDRAINED SHEAR STRENGTH (s_u) 17
4.7 SENSITIVITY (S_t) 18
4.8 SOIL UNIT WEIGHT (γ) 18
5.0 REFERENCES 20
APPENDIX A 24
APPENDIX A1 – Site Map 25
APPENDIX A2 – Cone Datasheet 26
APPENDIX A3 – Cone Calibration Certificate 27
APPENDIX A4 – Project Summary Sheet 28
CPT Tests Summary Sheet 28
APPENDIX A5 – CPT Rig Datasheet 29
APPENDIX A6 – Symbol List 30
English 30
Greek 31
APPENDIX A7 – Abbreviations 32
APPENDIX A8 – Glossary 33
APPENDIX A9 – Soils Description Tables 35
APPENDIX B 36
Cone Penetration Measured and Geotechnical Derived Parameters 36

1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Lowestoft at the request of Geosphere Environmental (the client). The site investigation consisted of completing 6 *Static Piezocone Penetration Tests (CPTU)* to provide information on the soil conditions and derived geotechnical parameters at:

Riverside Road

Lowestoft

NR33 0TU

All test locations were provided by the client, as shown on the site map, in *Appendix A.1*. The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in *Appendix A.2* and on each CPTU log.

The fieldwork was carried out on 07/12/2017 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *BS EN ISO 22475-1:2012*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Darren Hughes
Date Started	07/12/2017
Date Finished	07/12/2017
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Joseph Glenwright

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.3*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT010	21 tonne Wheeled Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2012*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section area**	**Filter position**
S15-CFIIP.1214	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.4*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
6 CPTU to a maximum depth of 24.56m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters and AGS data.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2012* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site is presented in *Appendix A.5*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000 CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test (ISO 22476-1:2012)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.2*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 2cm/s ±10% except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B* and *C*.

2.1.6 *In Situ Pore Pressure (u_0)*

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. These values are presented on the pore pressure plot, *Form 01*, which is included in *Appendix B*. For this report, the values were estimated by our client.

2.2 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in *Appendix A.1*.



3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *Lunne et al. (1997)*, *Robertson (2015)* and *BS EN ISO 22475-1:2012.* Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B* and *C*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

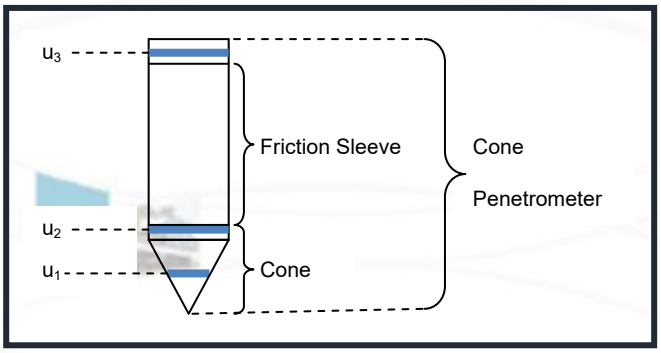


Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The

friction ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et. al. (1986)*, which is shown in Figure 3.2. The results are presented on *Log 01*, in *Appendix B*.

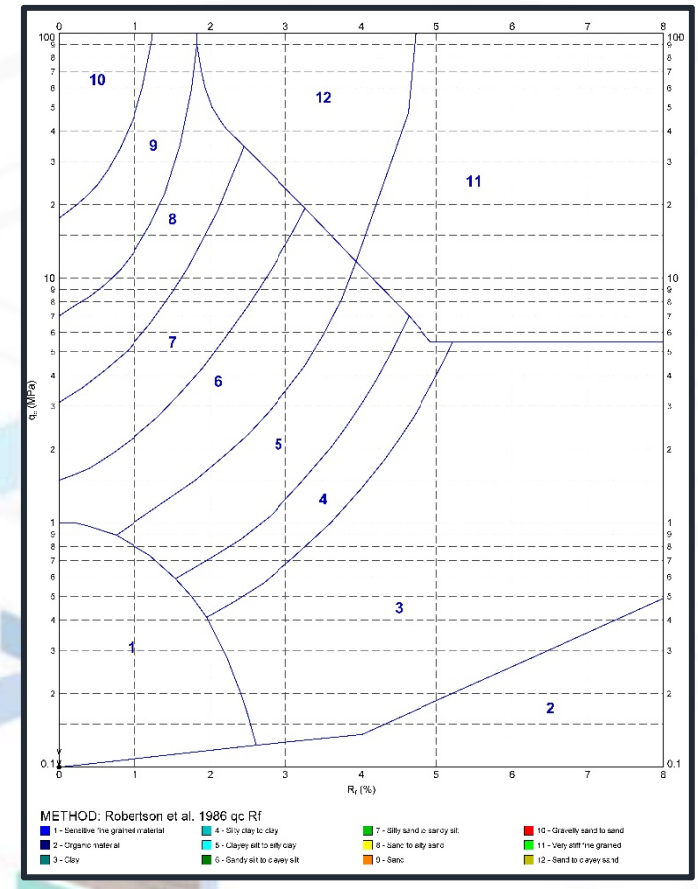


Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ''unequal area effect'' due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone used on this project has a cone area ratio of *0.79*. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2012*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*
l is penetration length, in *m*
C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *Log 02* and *Log 03* in *Appendix C*.

Please note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A6* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, `*(Lunne et al., 1997)*.

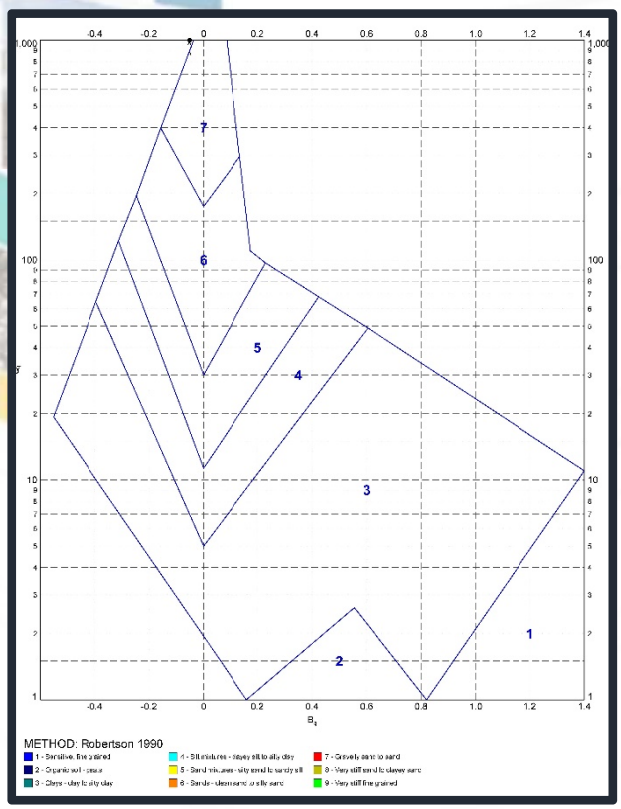


Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%*

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily overconsolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT, N_{60}*, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)* and *Jefferson and Davies (1998)*

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferson and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

where

q_c is the cone resistance
p_a is the atmospheric pressure equal to *100 kPa*
I_c is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that this method provides a better estimation of the *N* value than the actual *SPT* test, due to its poor repeatability. But in fine grained soil with high sensitivity these methods of estimating N_{60} may overestimate it *(Jefferies and Davies, 1991).*

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamilkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ'*, is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot [0.256 + 0.336 \cdot B_q + logQ_t]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Roberston and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily overconsolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies *0.1* < B_q < *1.0*. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$

$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75I_C^{3.25} - 3.7$$

$$3.5 < I_C: \ FC = 100\%$$

2) Suzuki et al (1998)

$$FC(\%) = 2.8I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)
σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear direction of lading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}}\left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays , $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

1) Mayne (2007)

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log(f_s) + 18.5$

G_s is the specific gravity of solids, typically between *2.40* and *2.90*



5.0 REFERENCES

ASTM D7400-14 (2015), "Standard and ISSMGE TC10 guideline", by *Butcher, A. P. et al.*

Baldi et al. (1986) / Al-Hamoud and Wehr (2006), "Interpretation of CPTs and CPTUs; 2nd part: drained penetration of sands / Experience of vibrocompaction in calcareous sand of UAE"

Been at al (1987), "Cone Penetration Test Calibration For Erksak (Beaufort Sea) Sand", Canadian Geotechnical Journal, 24, 4, pp. 601-610

Been and Jefferies (1992), "Towards Systematic CPT Interpretation", Proceedings Wroth Memorial Symposium, Thomas Telford, London, pp. 121–134

Boulanger and Idriss (2014), "CPT and SPT Based Liquefaction Triggering Procedures", Report No. UCD/CGM-14/01, Center of Geotechnical Modelling, Department of Civil and Environmental Engineering, College of Engineering, University of California at Davis

British Standard BS5930:1999, "Code of practice for site investigations". BSI, 1999

British Standard BS EN ISO 22475-1:2012

Burns and Mayne (2002), "Analytical Cavity Expansion Critical State Model for Piezocone Dissipation in Fine Grained Soils, Soils and Foundations", Vol. 42, No. 2, 2002

Houlsby, G.T. and Teh, C. I. (1998), "Analysis of the piezocone in clay". Proceedings of the International Symposium on Penetration Testing, ISOPT-1, Orlando, 2, 777-83, Balkema Pub., Rotterdam

Idriss and Boulanger (2008), "Soil liquefaction during earthquakes", Earthquake Engineering Research Institute, MNO-12

International Standard for Electrical Cone and Piezocone Penetration Test, ISO 22476-1:2012

International Standard, "Geotechnical Investigation and testing- field testing – part 1: electrical cone and piezocone penetration test", ISO/ FDIS 22476-1.

Jamiolkowski et al. (2001), Evaluation of relative density in shear strength of sands from cone peonetration tests (CPT) and flat dilatometer (DMT), Soil Behaviour and Soft Ground Construction (GSP 119), American Society of Civil Engineers, Reston, Va., 2001, pp. 201-238

Jefferies, M.G. and Davies, M.P. (1991), "Soil classification by the cone penetration test": Discussion. Canadian Geotechnical Journal, 28(1), 173-6

Jefferis and Been (2006), "Soil liquefaction: a critical state approach", Taylor and Frencis.

Jones, G.A. and Rust, E. (1995), "Piezocone settlement prediction parameters for embankments on alluvium". Proceedings of the International Symposium on Cone Penetration Testing, CPT '95, Linköping, Sweden, 2, 501-8, Swedish Geotechnical Society

Kulhawy, F.H. and Mayne, P.H. (1990) "Manual on estimating soil properties for foundation design". Electric Power Research Institute, EPRI, August, 1990.

Keaveny and Mitchel (1986), "Strength of Fine-Grained Soils Using the Piezocone," Use of In-Situ Tests in Geotechnical Engineering (GSP 6), American Society of Civil Engineers, Reston, Va., 1986, pp. 668–699

Lord, J.A., Clayton, C.R.I., and Mortimore, R.N. (2002), "Engineering in chalk". Ciria Guide C574.

Lunne, T. And Kleven, A. (1981), "Role of CPT in North Sea foundation engineering". Session at the ASCE National Convention: Cone Penetration Testing and Materials, St. Louis, 76-107, American Society of Engineers (ASCE).

Lunne, T. And Christophersen, H.P. (1983), "Interpretation of cone penetrometer data for offshore sands". Proceedings of the Offshore Technology conference, Richardson, Texas, Paper No. 4464.

Lunne, T., Robertson, P. K. And Powell, J. J. M. (1997), "Cone Penetration testing in Geotechnical Practice". Blackie.

Mayne and Rix (1995) / Lune et al. (1997), "Gmax-qc relationships for clays", Geotechnical Testing Journal, ASTM, 16 (1), pp. 54-60/ CPT in Geotechnical Practice (1997)

Mayne (2001), "Stress-Strain-Strength-Flow Parameters from Enhanced In-Situ Tests", International Conference on In-Situ Measurement of Soil Properties and Case Histories, Indonesia, 2001, pp. 27–48

Mayne and Campanella (2005), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mayne (2007), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mitchell, J.K. and Gardner, W.S. (1975), "In situ measurement of volume change characteristics". Proceedings of the ASCE Specialty Conference on In Situ

Measurements os Soil Properties, Raleigh, North Carolina, 2, 279-345, American Society of Engineers (ASCE)

Rix, G.J. and Stokoe, K.H. (1992), "Correlation of Initial Tangent Modulus and Cone Resistance", Proceedings of the International Symposium on Calibration Chamber Testing, Potsdam, New York, 1991, pp. 351-362, Elsevier

Robertson, P.K. and Campanella, R.G. (1983) "Interpretation of cone penetrometer test: Part 1: Sand". Canadian Geotechnical Journal, 20(4), 718-33

Robertson, P.K., Campanella, R.G., Gillespie, D. And Greig, J (1986), "Use of piezometer cone data". Proceedings of the ASCE Specialty Conference In Situ '86: Use of In Situ Tests in Geotechnical Engineering, Blacksburg, 1263-80, American Society of Engineers (ACE)

Robertson, P.K. (1990), "Soil classification using the cone penetration test". Canadian Geotechnical Journal, 27(1), 151

Robertson, P.K. and Fear, C.E. (1995), "Liquefaction of sands and its evaluation. IS TOKYO '95". First International Conference on Earthquake Geotechnical Engineering, Keynote Lecture, November, 1995

Robertson, P.K. and Wride (Fear), C.E. (1998), "Evaluating cyclic liquefaction potential using the cone penetration test". Can. Geotech. J. Vol. 35

Robertson (2010), "Soil behaviour type from the CPT: an update", Gregg Drilling and Testing Inc. Signal Hill, California, USA, CPT 10, paper 2-56

Robertson (2015), "Guide to Cone Penetration Testing", 6th Edition (2015)

Senneset K. And Janbu, N. (1985), "Shear strength parameters obtained from static cone penetration tests. Strength Testing of Marine Sediments; Laboratory and In Situ Measurements". Symposium, San Diego, 1984, ASTM Special technical publication, STP 883, 41-54

Senneset, K., Sandven, R. And Janbu, N. (1989), "The evaluation of soil parameters from piezocone tests". Transportation Research Record, No. 1235, 24-37

Schmertmann, J.H (1978), "Guidelines for cone penetration test, performance and design", US Federal Highway Administration, Washington, DC, Report, FHWA-TS-78-209, 145

Shuttle and Jefferies (1998), "Dimensionless and unbiased CPT interpretation in sand", International Journal for Numerical and Analythical Methods in Geomechanics, 22, pp. 351-391.

Suzuki, Y., Tokimatsu, K., Taya, Y. And Kubota, Y. (1995), "Correlation between CPT data and dynamc properties of in situ frozen samples". Proceedings of the Third

International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, St. Louis, 1, 249-52, University of Missouri Rolla.

Topp, G.C., Davis, J.L. and Anna, A.P. (1980),. “Electromagnetic determination of soil water content: Measurements in coaxial transmission lines”. Water Resiur. Res., 16, 574-582.





APPENDIX A

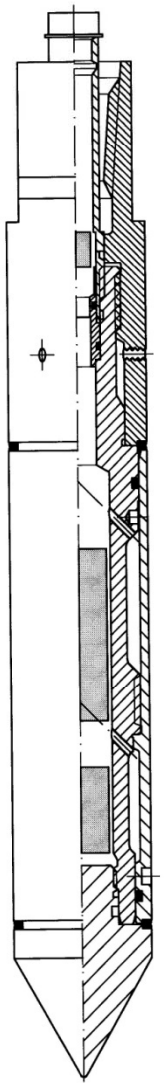
APPENDIX A1 – Site Map

Not provided



APPENDIX A2 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A3 – Cone Calibration Certificate

Sondeerapparatuur Waterspanningsmeters Hellingmeters Veldmeet-apparatuur

GeoPoint Systems bv

Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
BTW : NL814690178.B01
IBAN : NL28 INGB0682301396
BIC : INGBNL2A

Cone Calibration Certificate

Certificate:	**GS-1214-005**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	1214	
Calibration date:	20-04-2016	
Client:	Soil Mechanics	
Calibrated by:	M. van Es	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
HBM certificate no. :	49046	
Calibration conditions		
Ambient temperature:	19.8	°C
Atmospheric pressure:	1033	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	50	kN
Friction sleeve area:	20000	mm2
Load tip + local friction (nom.):	50	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0270		0250		0261			
	0	0	0	0	0	0	0	2393	2601
	5	0307	5	0320	0.4	1286	-20	0311	0559
	10	0615	10	0643	0.8	2567	20	4408	4571
	15	0926	15	0964	1.2	3844			
	20	1235	20	1285	1.6	5116			
	25	1544	25	1608	2.0	6385			
	30	1853	30	1932					
	35	2163	35	2256					
	40	2474	40	2580					
	45	2783	45	2904					
	50	3091	50	3226					

Max. eror, abs. qc: 35 kPa
Max. error, abs. fs: 2 kPa
Max. error, abs. u2: 10 kPa
Max. error, abs. I: 1 °

This calibration is compliant with GeoPoint Systems internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (inter-) National Standards.

Approved by: B. van [redacted]
Date: 20-04-

www.geopoint.nl
www.geopoint.eu

Ingeschreven in het handels[redacted]er nummer 28106251.

APPENDIX A4 – Project Summary Sheet

CPT Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPTC-12	12.56	07/12/2017	S15CFIIP.1214	Test stopped due to buckling rods.
CPTC-13	2.07	07/12/2017	S15CFIIP.1214	Test refused on tip resistance.
CPTC-14	13.72	07/12/2017	S15CFIIP.1214	Test refused on tip resistance.
CPTC-15	5.80	07/12/2017	S15CFIIP.1214	Test refused on tip resistance.
CPTC-18	11.36	07/12/2017	S15CFIIP.1214	Test stopped due to buckling rods.
CPTC-20	24.56	07/12/2017	S15CFIIP.1214	Test refused on total pressure.



APPENDIX A5 – CPT Rig Datasheet

RIGS

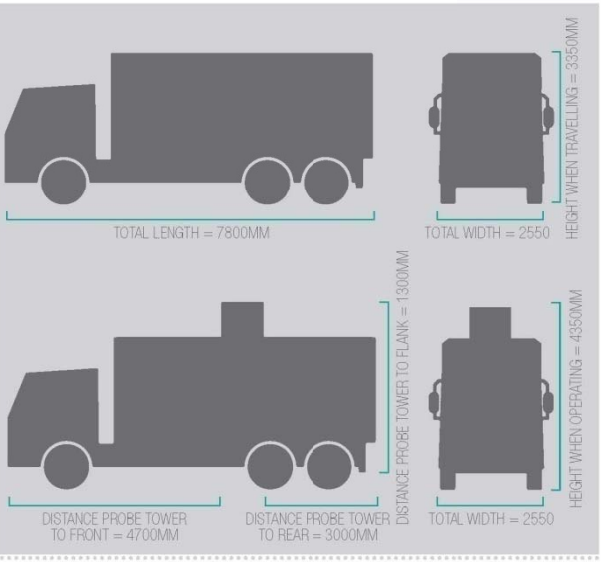
21 TONNE WHEELED RIG (CPT010)

This rig is ideal for geotechnical testing on hardstanding sites such as car parks, motorways and docks. Fitted with reflective yellow and red chevrons, these high visibility rear markings meet the 'Chapter 8' requirements for vehicles working on highways. In addition, there are beacons fitted to the front and strobes to the back corners to ensure further safety and visibility for night work on the motorways. This efficient truck is capable of pushing to a depth of 30 to 40 metres depending on the ground conditions of the site. Furthermore, the interior is large enough to house our MiHpt equipment for environmental testing.

CPT RIG DETAILS

DRIVE SYSTEM	6 X 2 WHEELED DRIVE
TOTAL WEIGHT	21 TONNES
GROUND BEARING PRESSURE	75KPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M CF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	HARDSTANDING SITES E.G. ROADS INCLUDING MOTORWAYS, CAR PARKS, DOCKS. DRY NON HARDSTANDING SITES.

CPT RIG DIMENSIONS









IN SITU SITE INVESTIGATION INSITUSI.COM

APPENDIX A6 – Symbol List

English

a	is area ratio of the cone ($= {}^{A_n}/_{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {}^{(u_2 - u_0)}/_{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {}^{f_s}/_{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {}^{G}/_{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {}^{\sigma'_{h0}}/_{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	measured cone resistance
q_e	effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)

q_t	is corrected cone resistance ($= q_c - (1-a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= {q_t - \sigma_{v0}}/{\sigma'_{v0}}$)
R_f	is friction ratio ($= \left({f_t}/{q_t}\right) x100\%$ or alternatively $= \left({f_t}/{q_t}\right) x100\%$)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at $U = 50\ \%$
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure ($= u - u_0$)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ_h'	is horizontal stress (total, effective)
σ_v, σ_v'	is horizontal stress (total, effective)
σ_{v0},σ_{v0}'	is overburden stress (total, effective)
τ_{av}	average cyclic shear stress
τ_{cy}	cyclic shear stress
φ'	effective friction angle

APPENDIX A7 – Abbreviations

ASTM	is American Society for Testing and Materials
CPTU	Cone Pentration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Overconsolidated
OCR	Overconsolidation Ratio
PL	Limit Pressure
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee



APPENDIX A8 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected cone resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, u
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {}^{F_s}/_{A_s}$

APPENDIX A9 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300



APPENDIX B

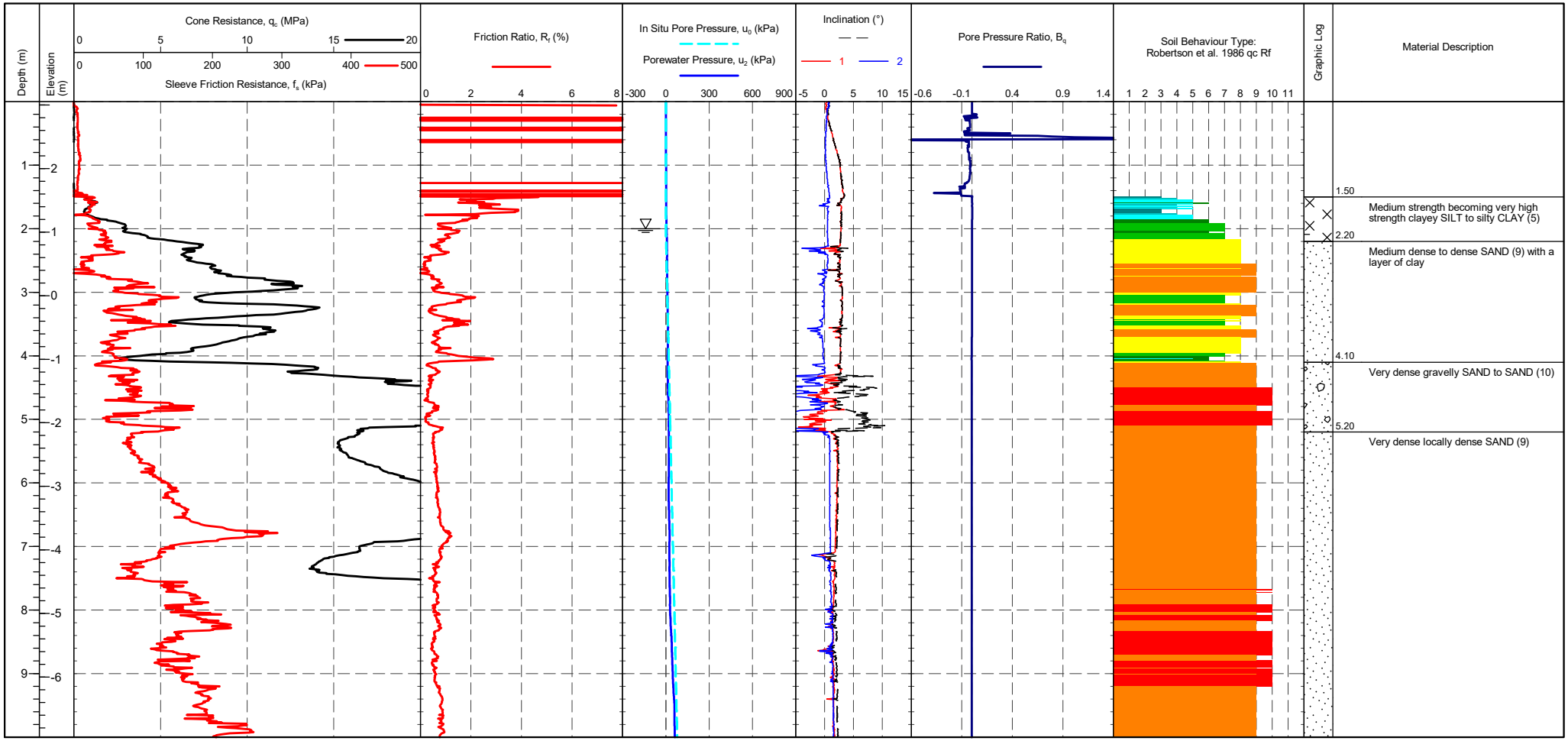
Cone Penetration Measured and Geotechnical Derived Parameters

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-12**

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

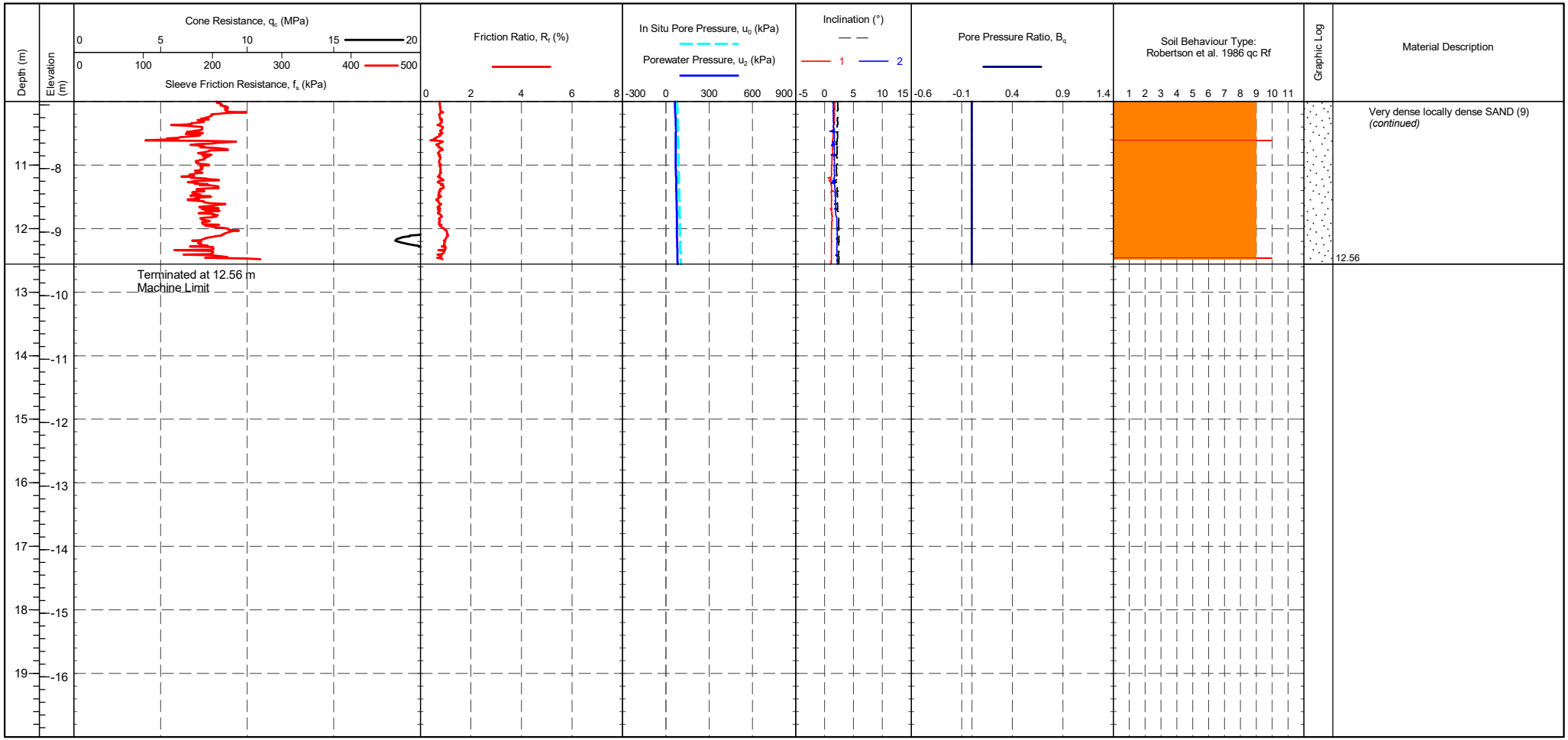
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-12**

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

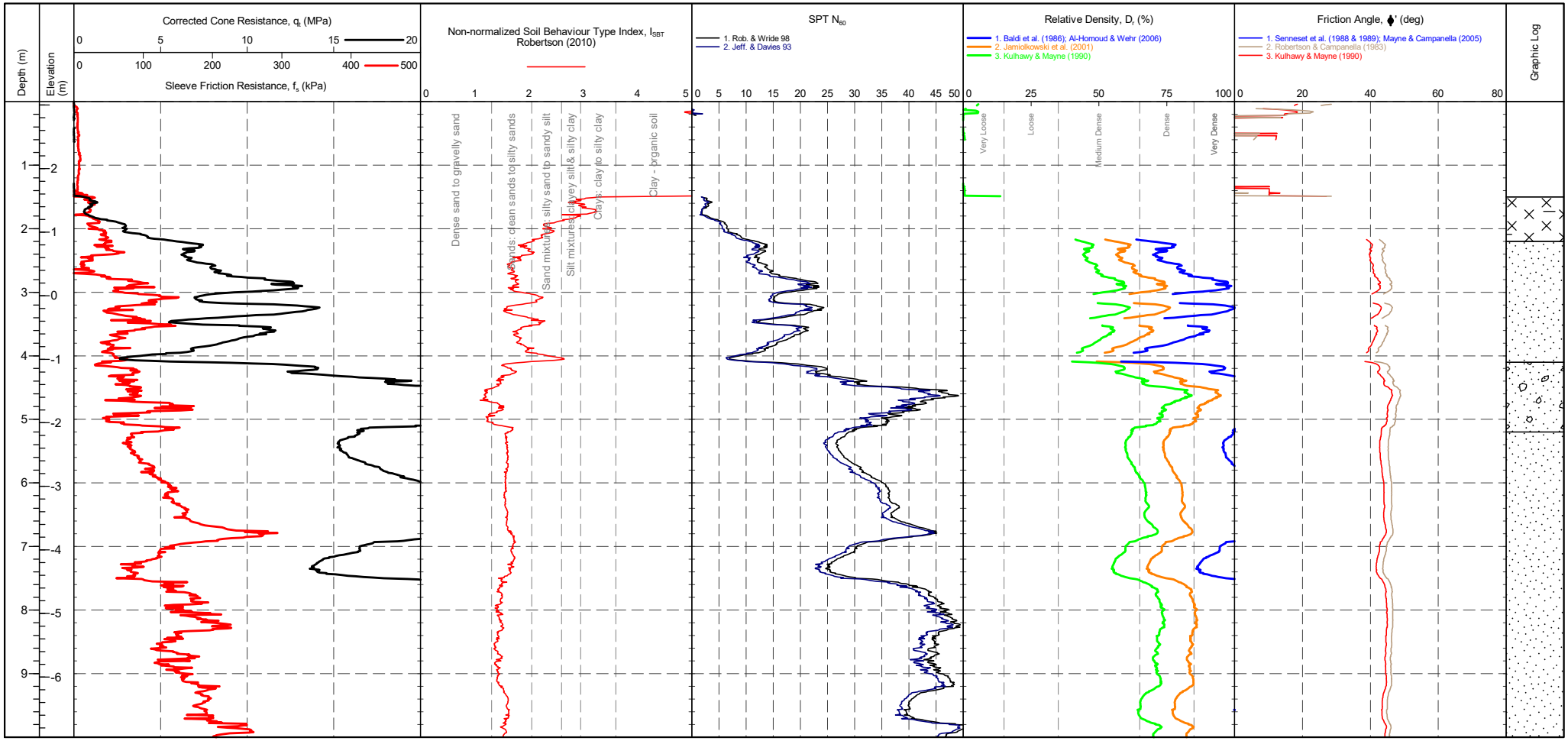
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-12

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level

Dissipation Test

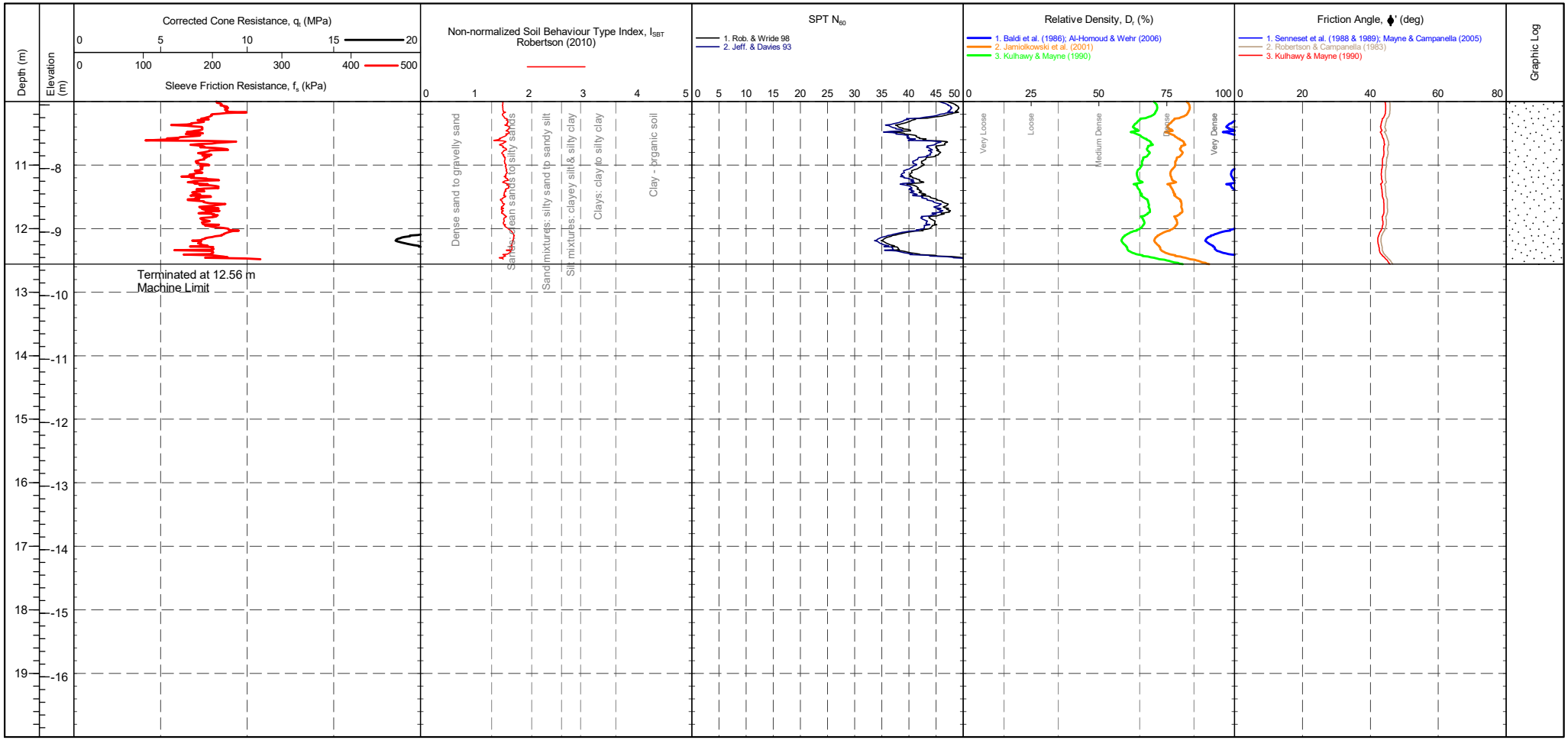
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-12

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level

Dissipation Test

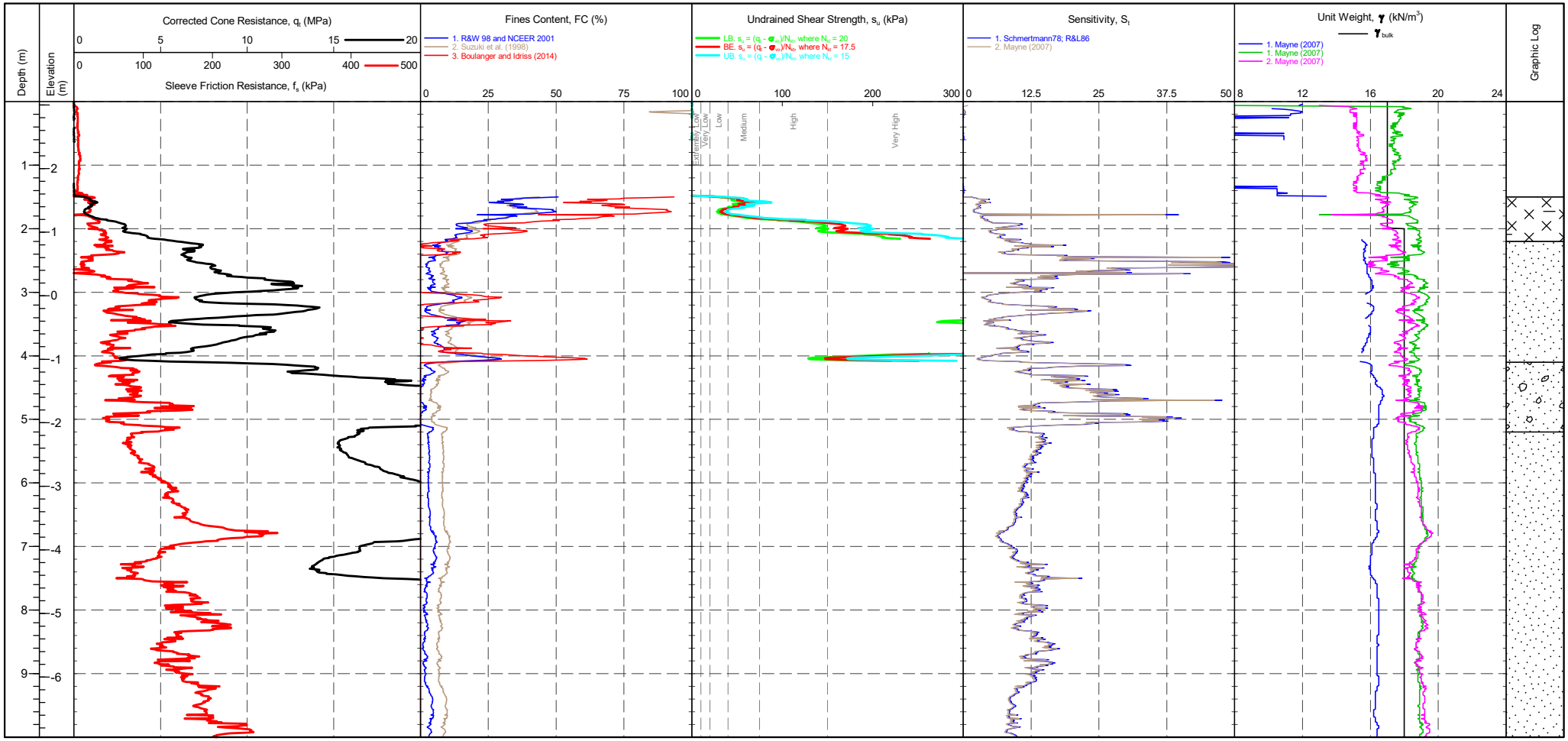
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID

CPTC-12

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	206 mV	209 mV	0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	X-Y Inclinometer	2466 mV	2364 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

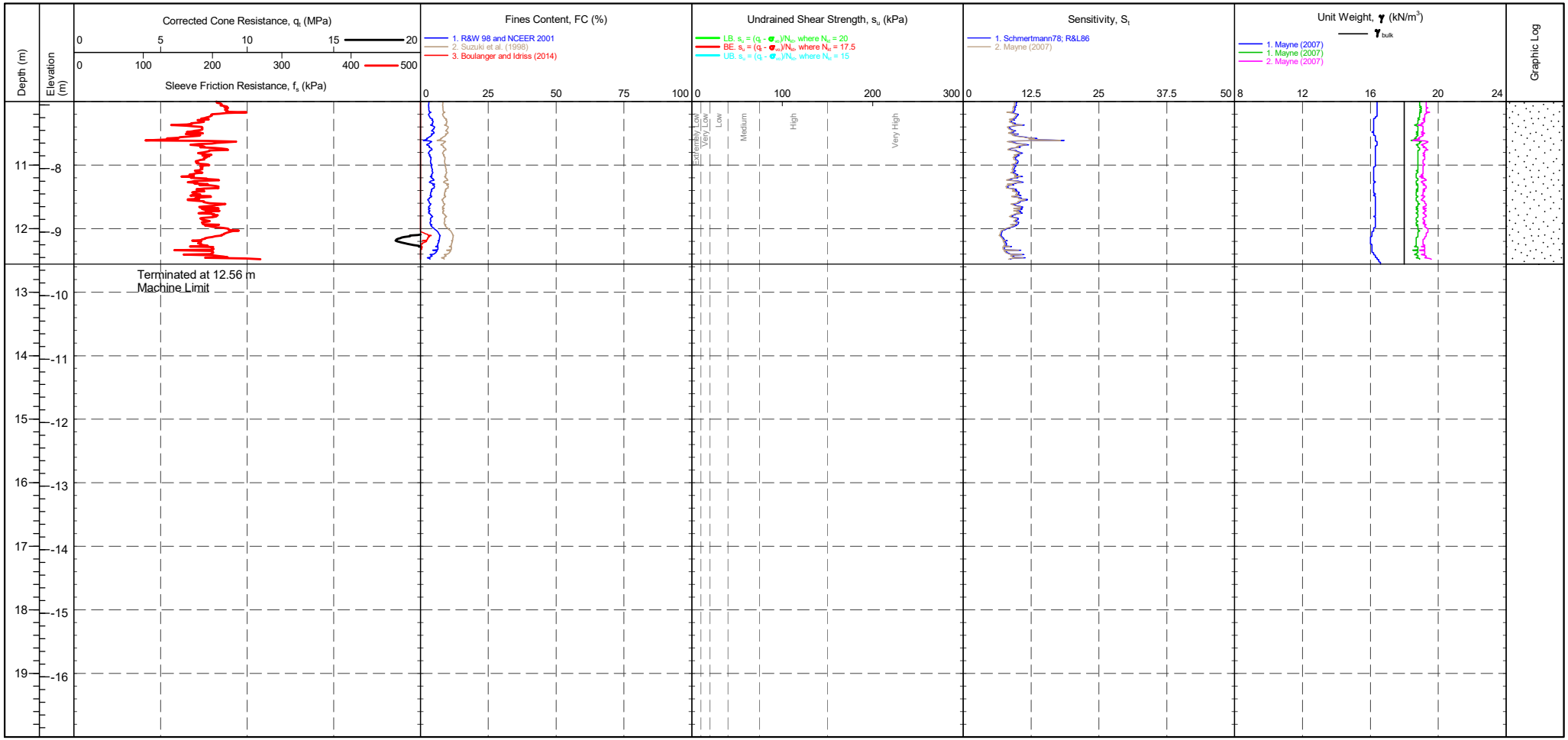
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-12**

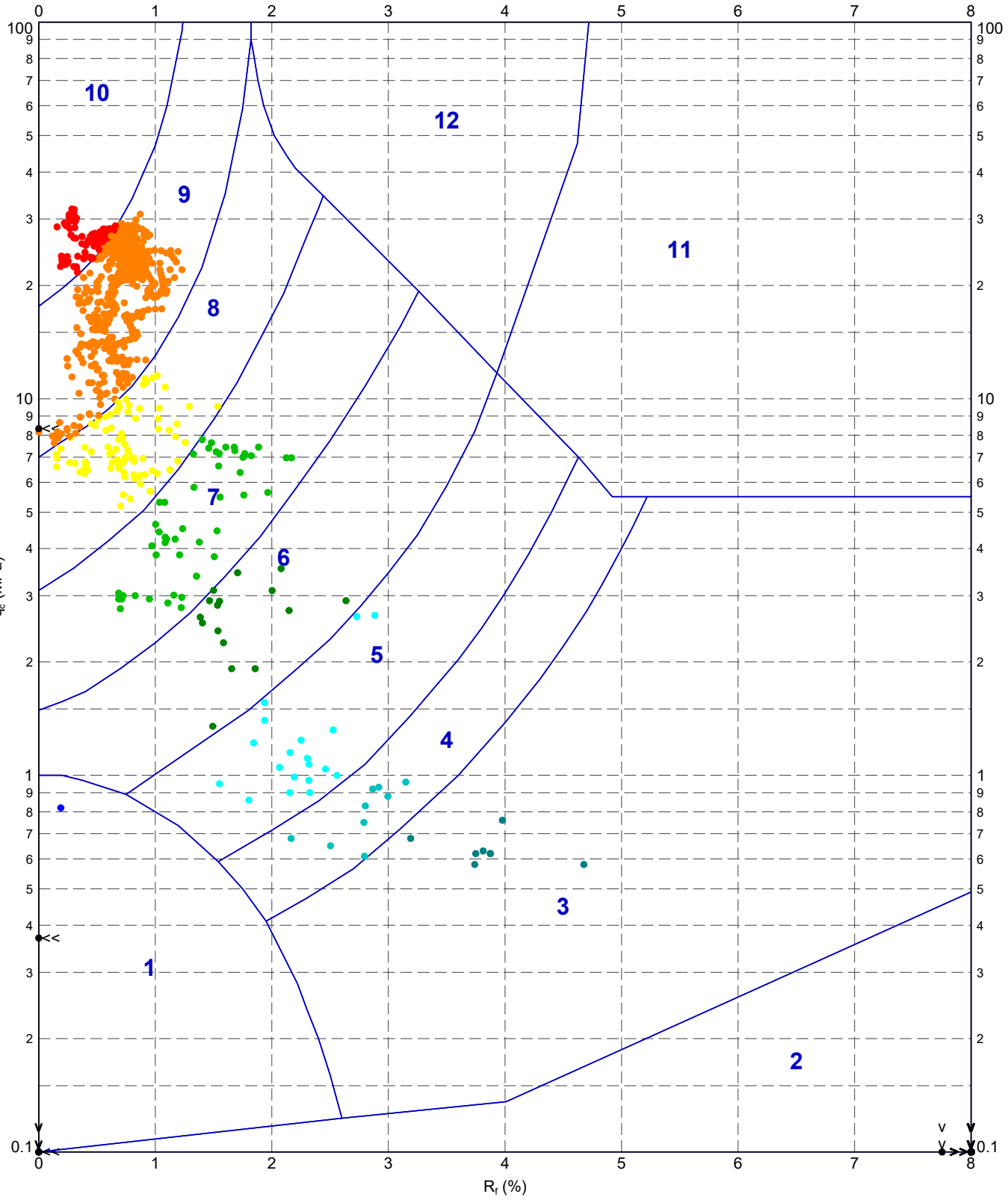
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.9 m NORTHING : 292683.9 m ELEVATION : 3.05 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-12

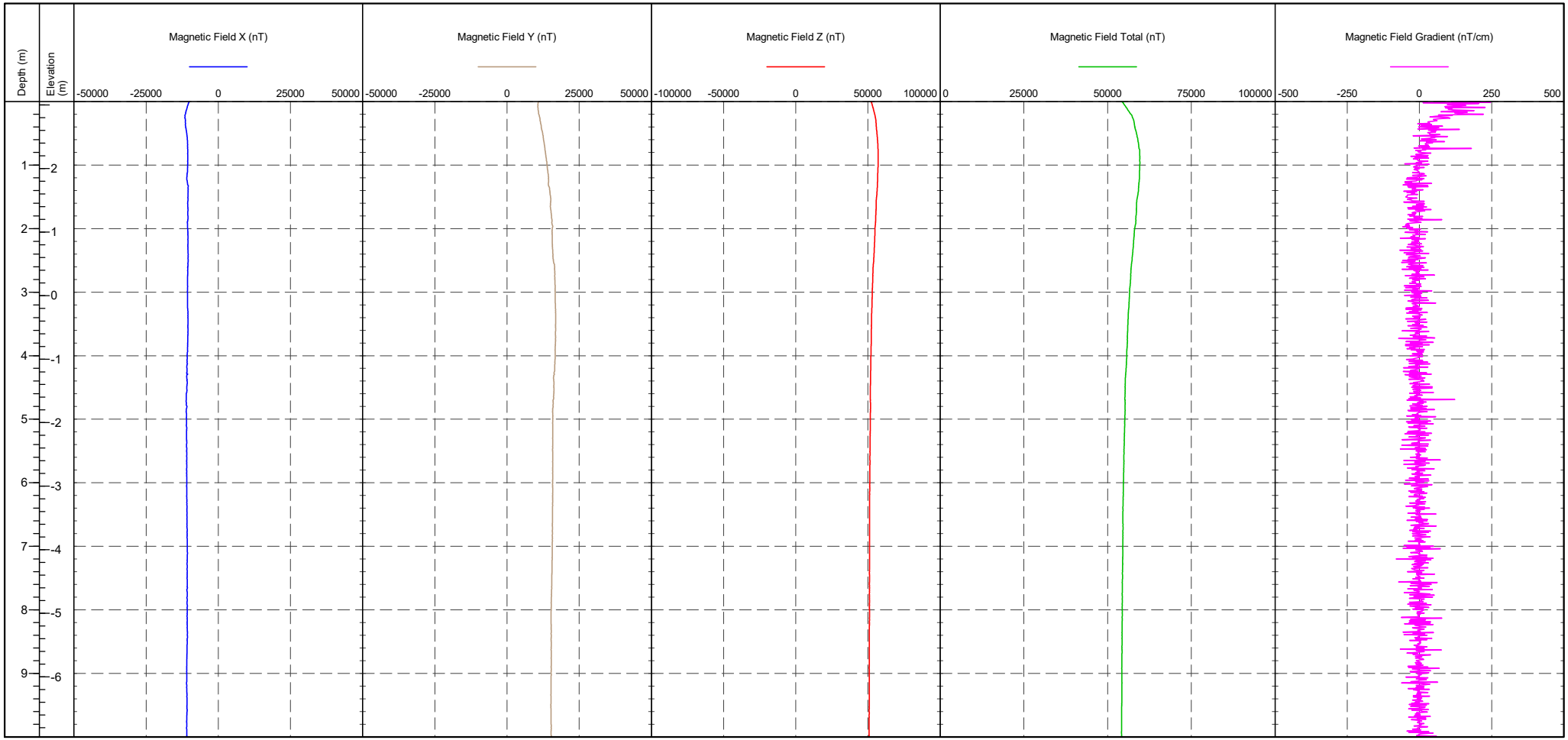
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:30 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-12**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.9 m NORTHING : 292683.9 m ELEVATION : 3.05 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

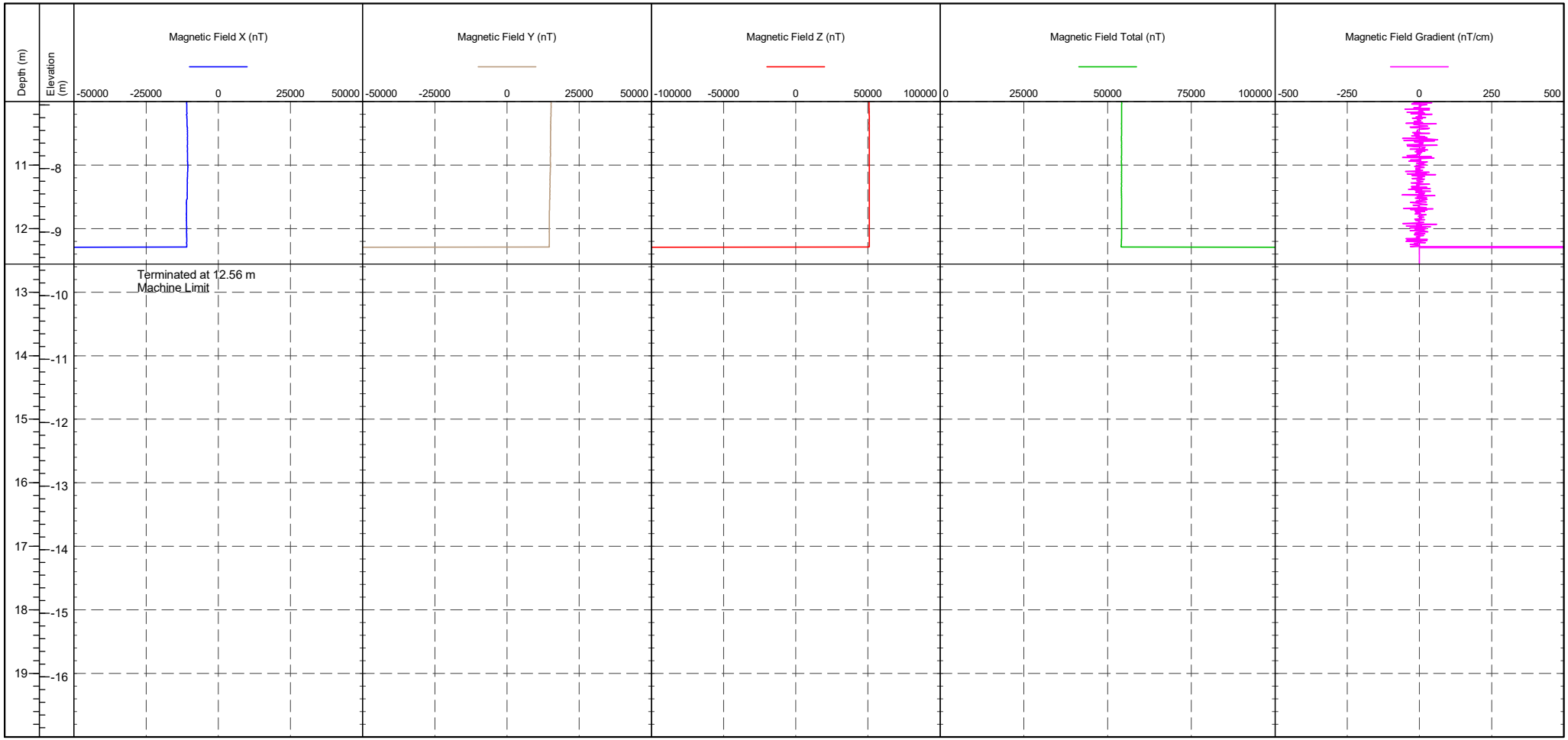


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV / 0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV / -0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV / 0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-12**

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



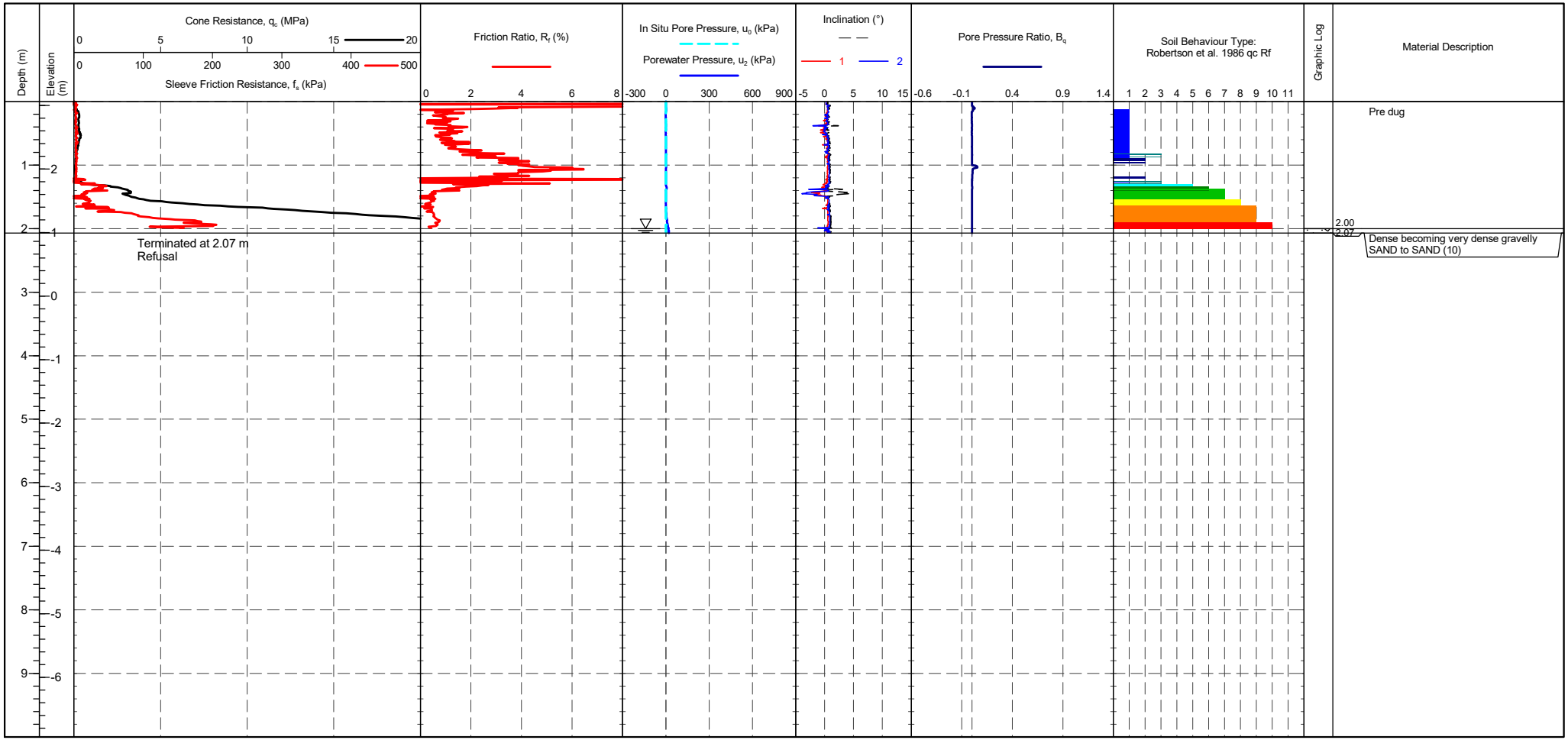
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-13**

CLIENT : Geosphere Environmental	EASTING : 653880.2 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292664.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.06 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

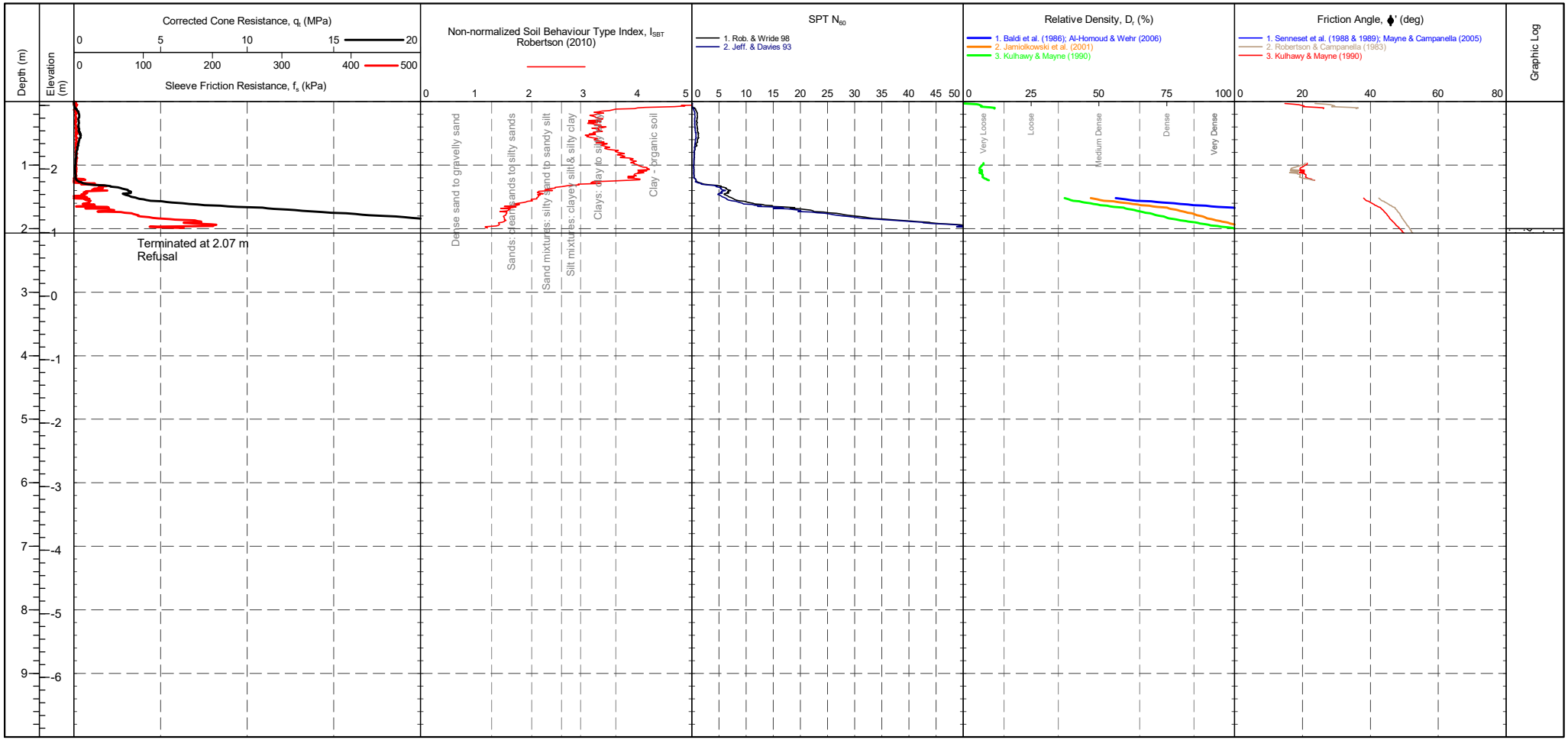
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-13

CLIENT : Geosphere Environmental	EASTING : 653880.2 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292664.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.06 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV	

Groundwater Level

Dissipation Test

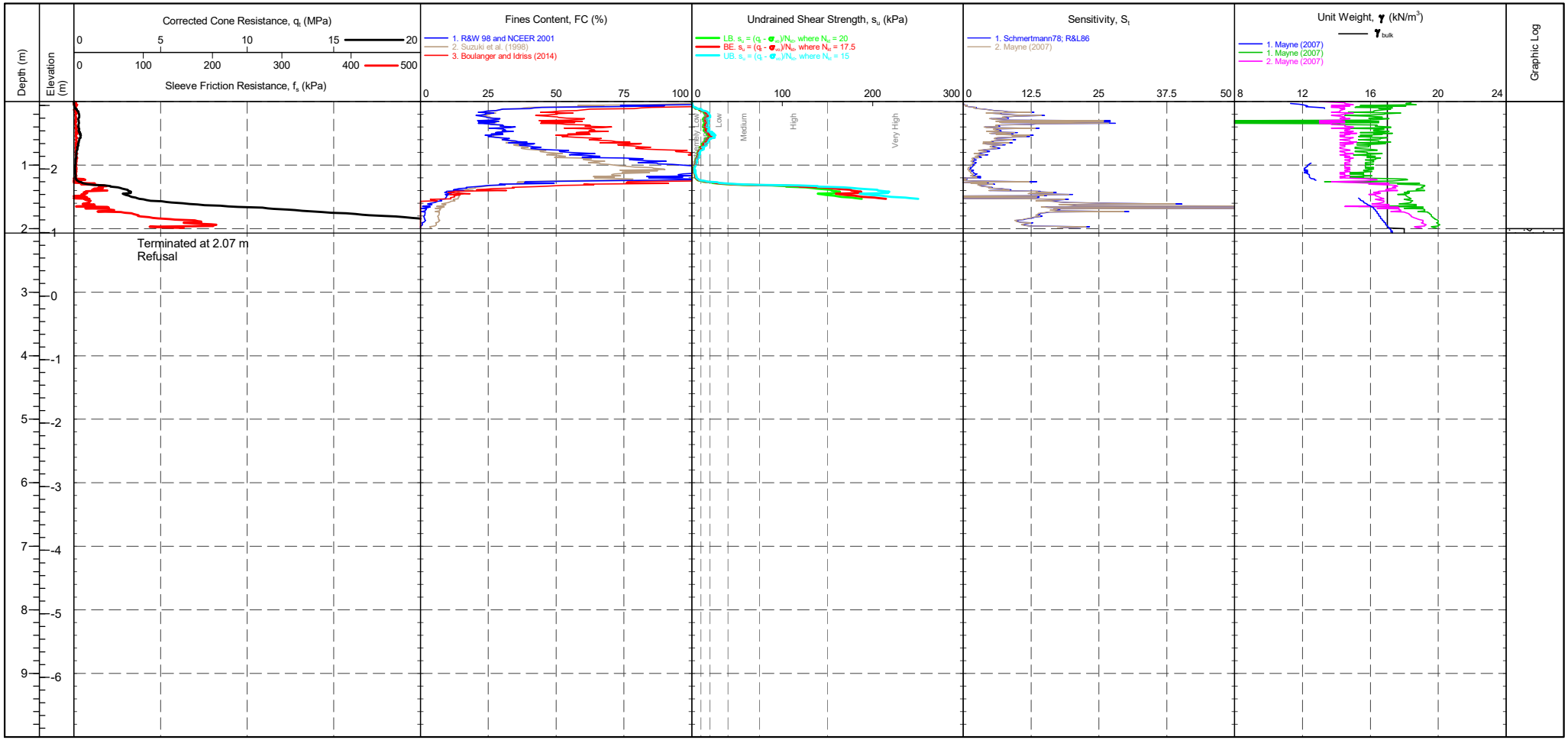
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID

CPTC-13

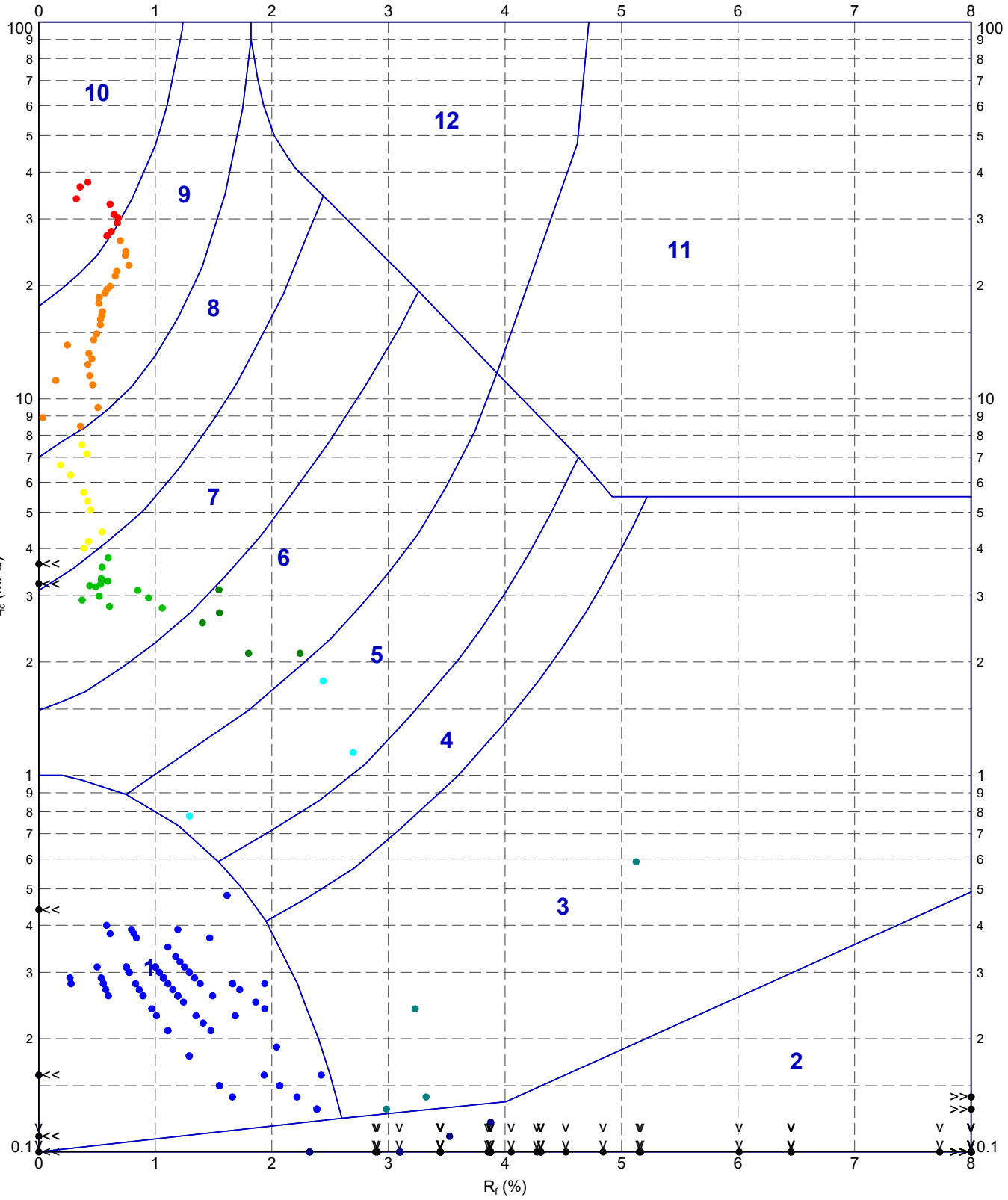
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.2 m NORTHING : 292664.6 m ELEVATION : 3.06 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-13

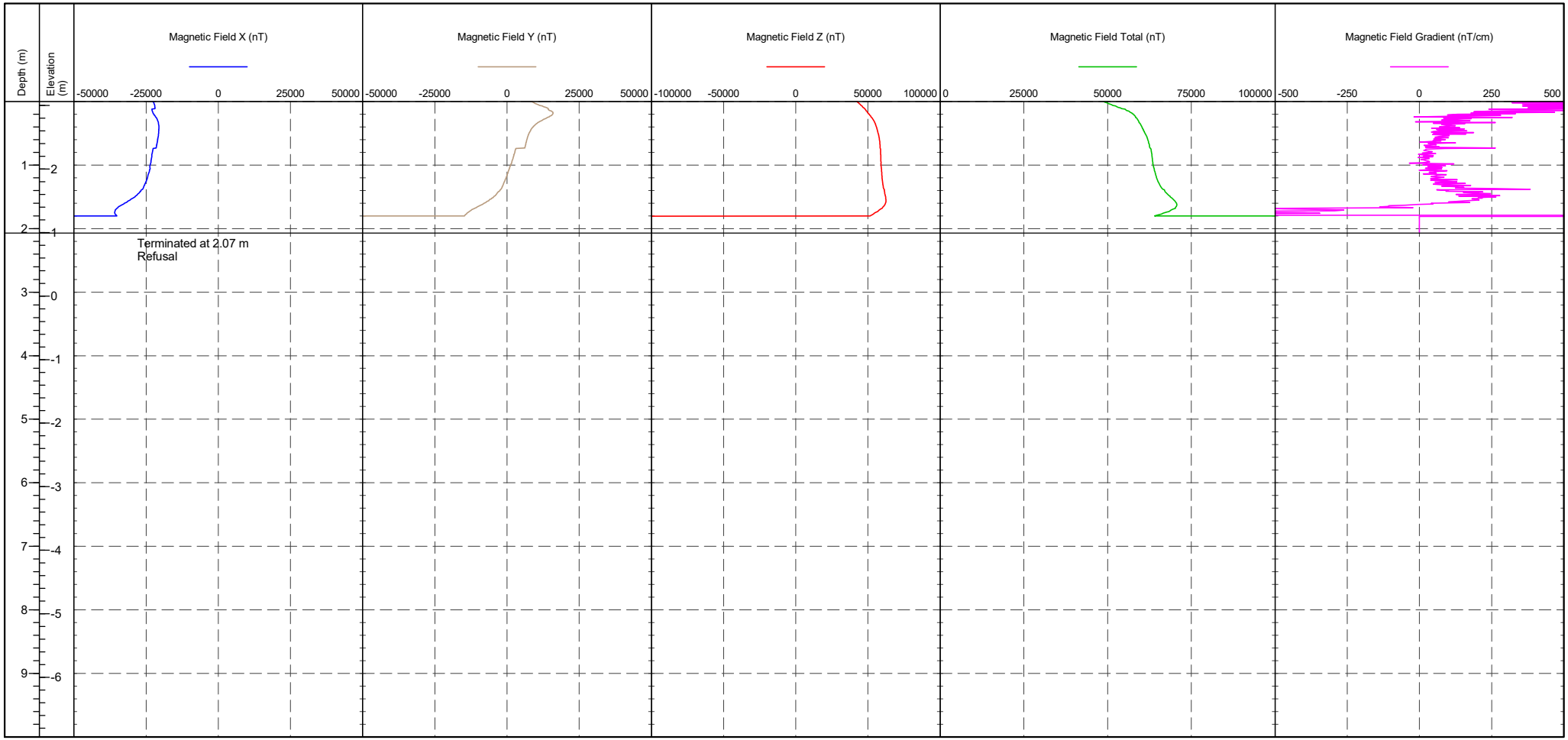
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:31 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-13**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.2 m NORTHING : 292664.6 m ELEVATION : 3.06 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV	

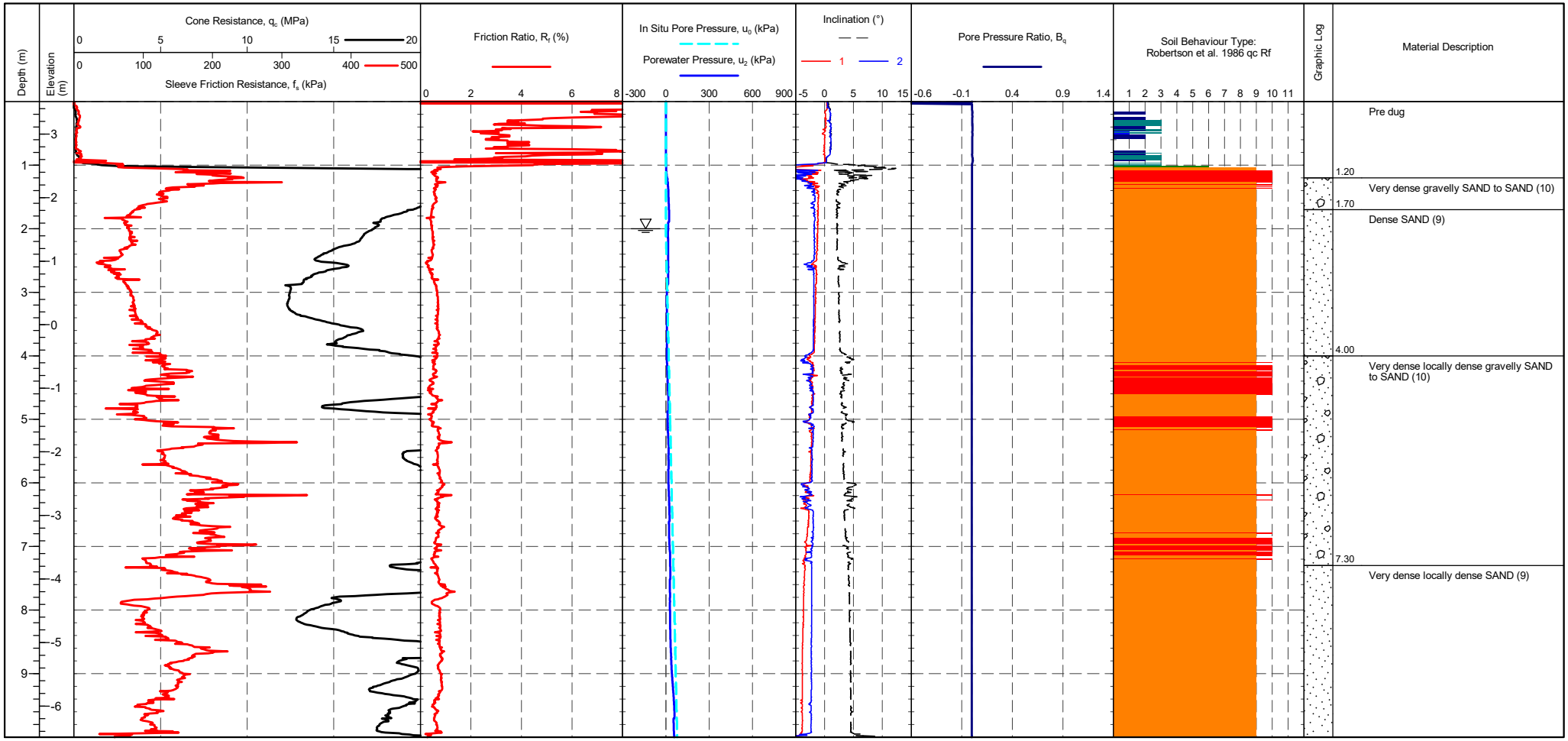
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID

CPTC-14

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Transducer	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

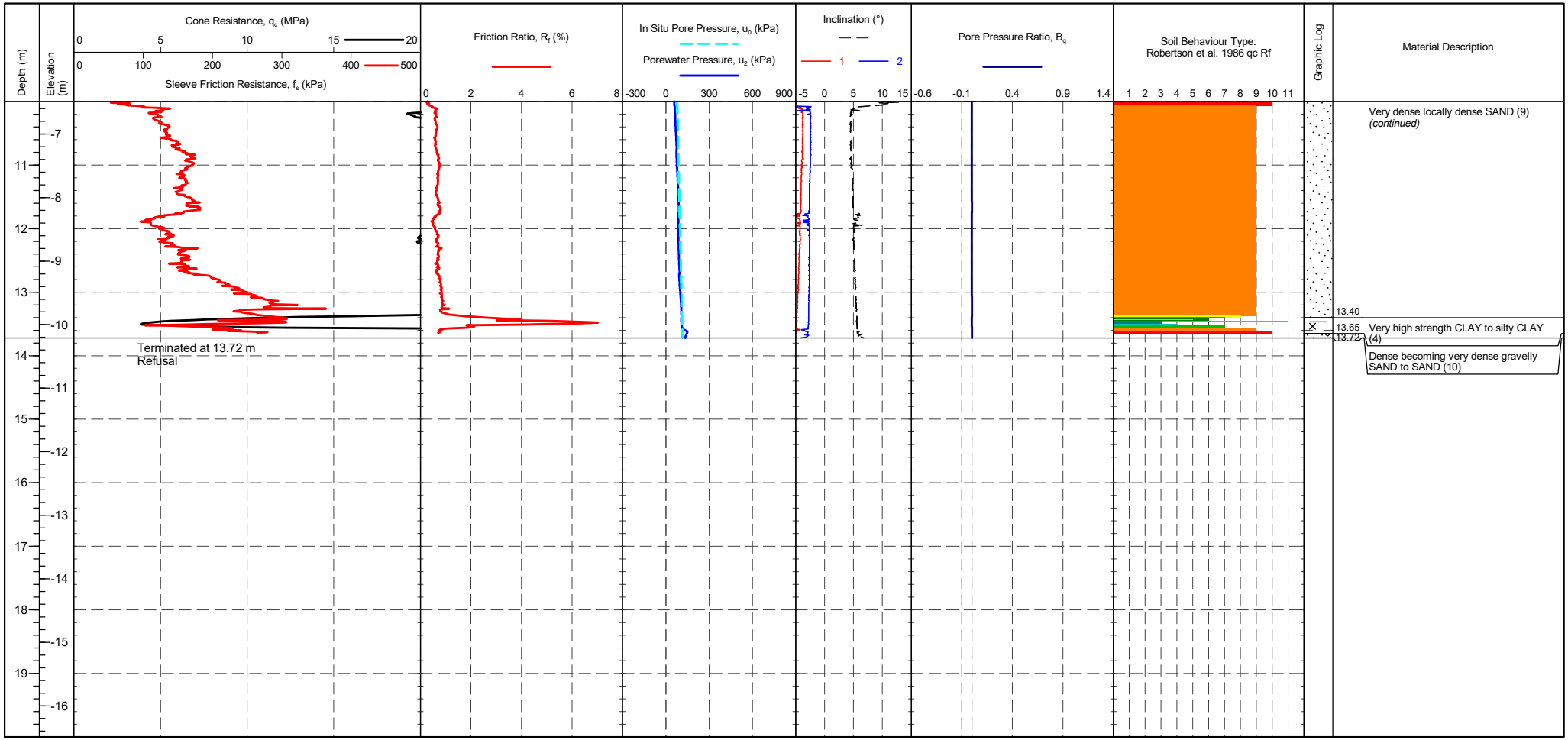
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-14**

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

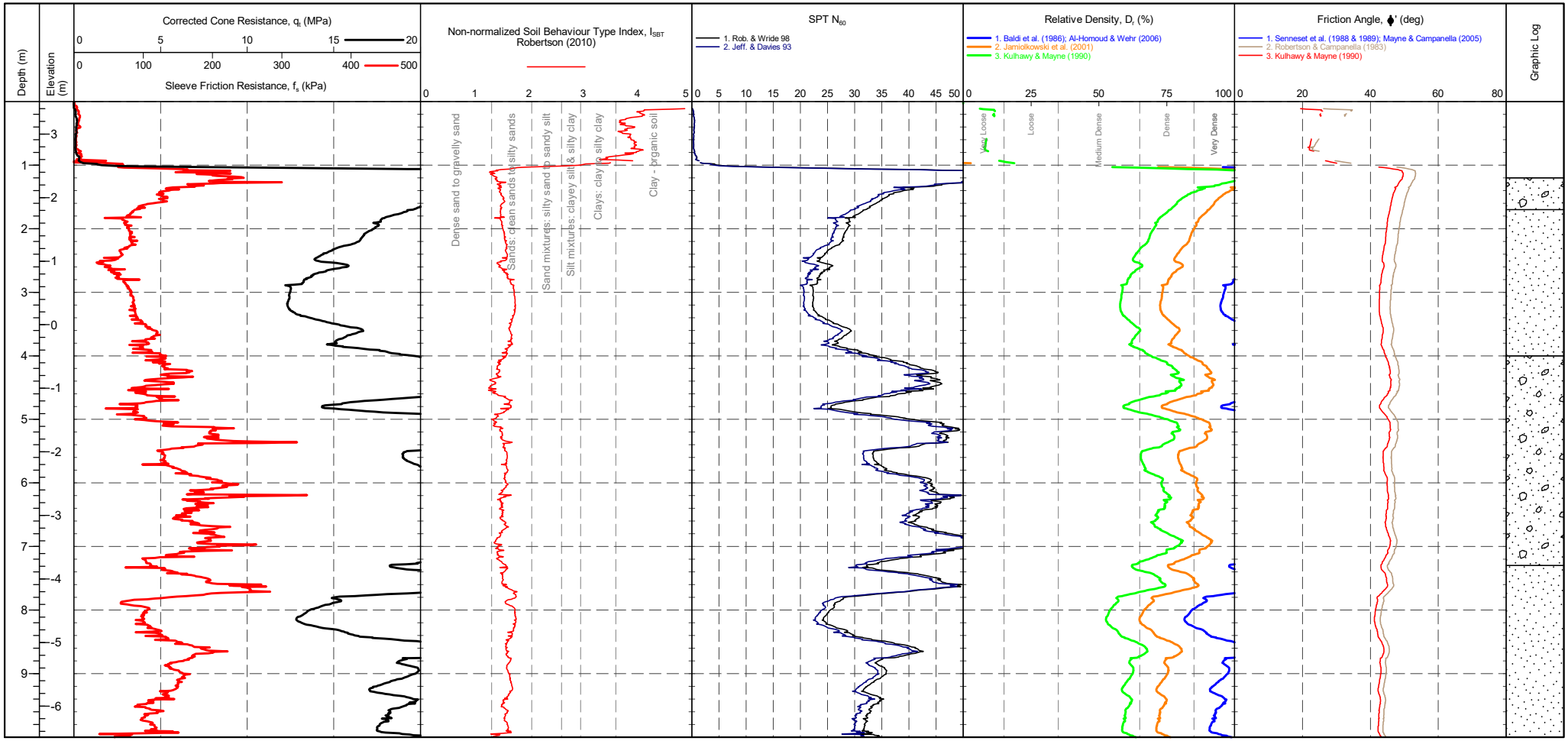
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-14

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV / -0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV / 0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV / 0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV

Groundwater Level

Dissipation Test

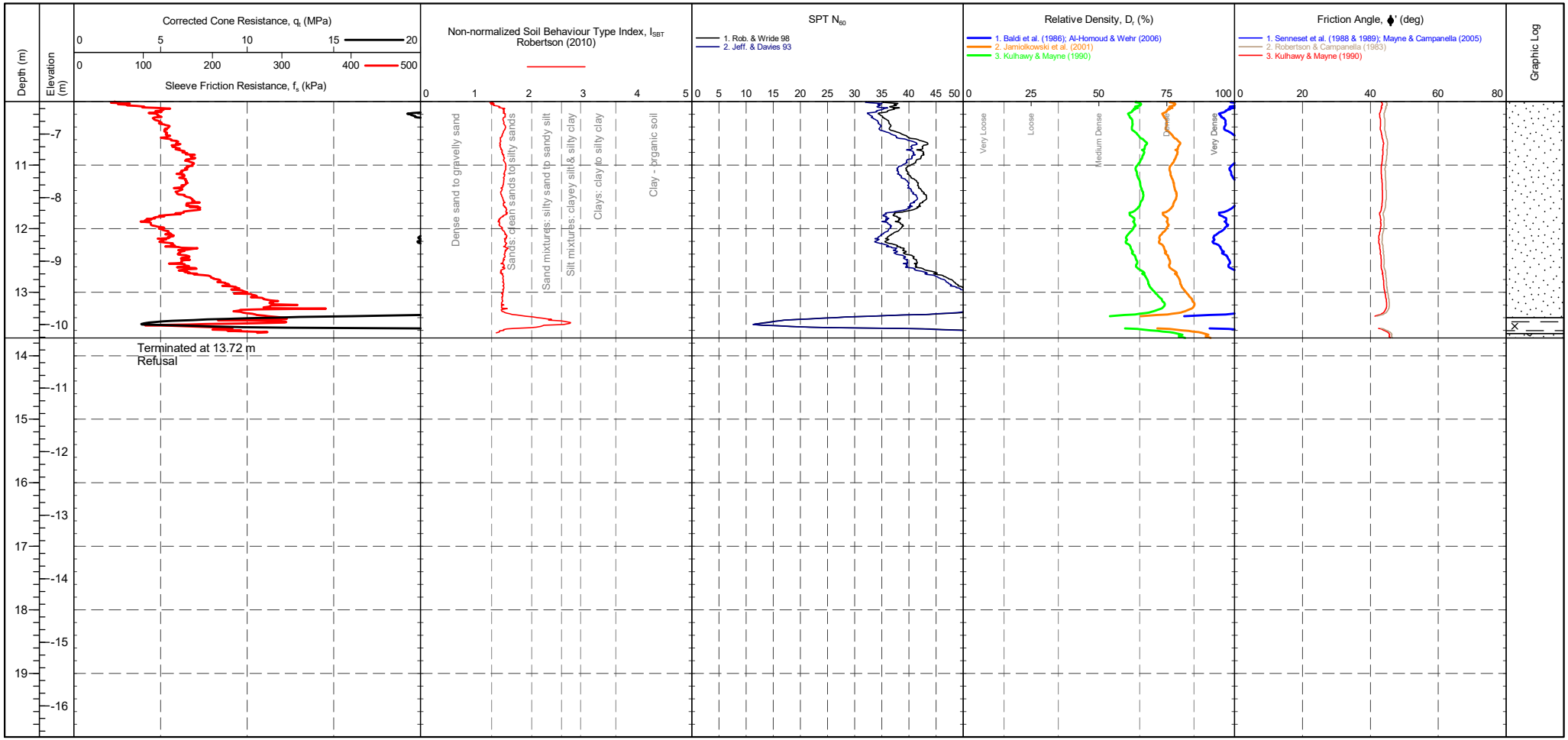
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-14

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	205 mV	202 mV	-0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	316 mV	319 mV	0.002 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	X-Y Inclinometer	2462 mV	2415 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

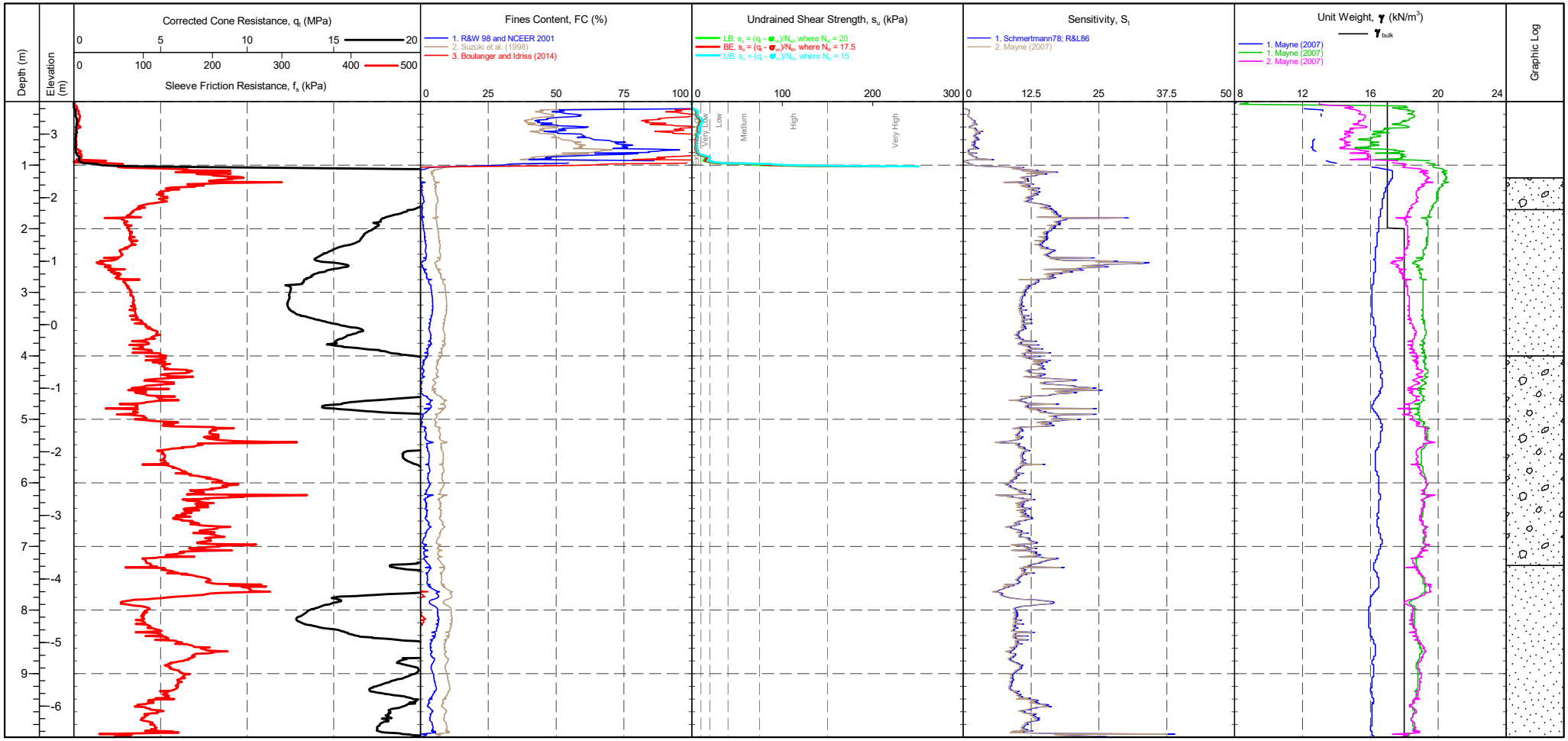
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-14**

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

Groundwater Level

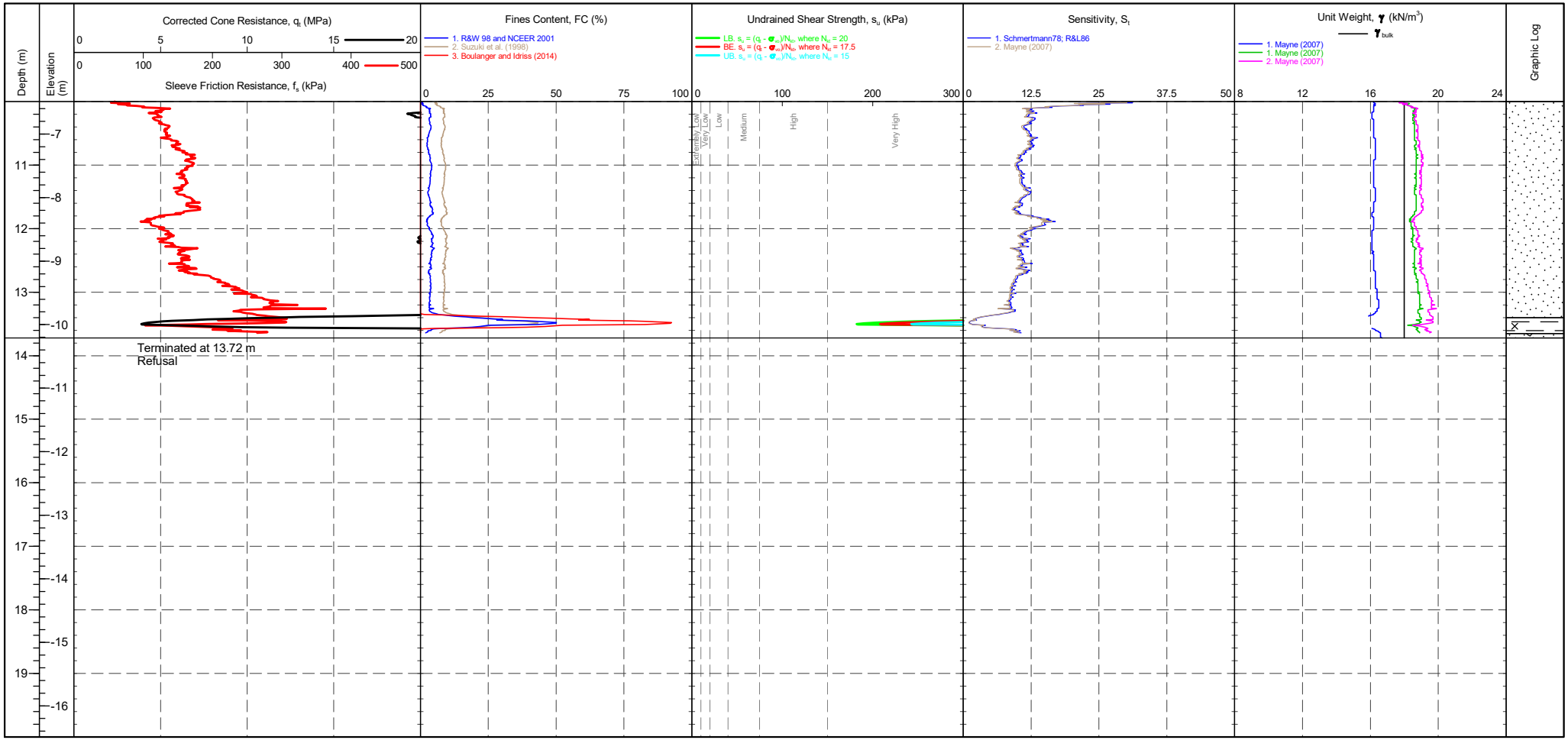
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-14**

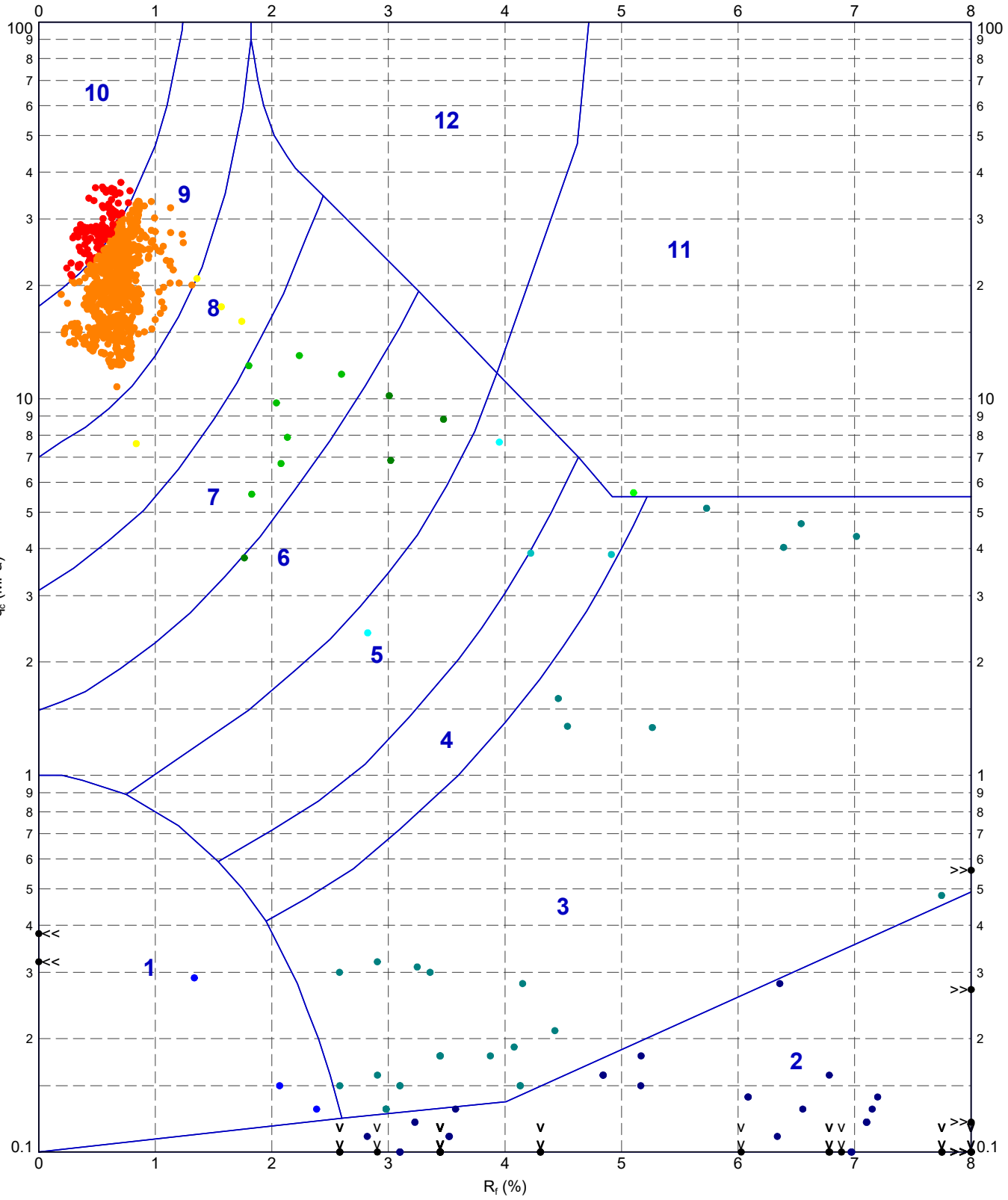
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653887.3 m NORTHING : 292609.8 m ELEVATION : 3.51 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-14

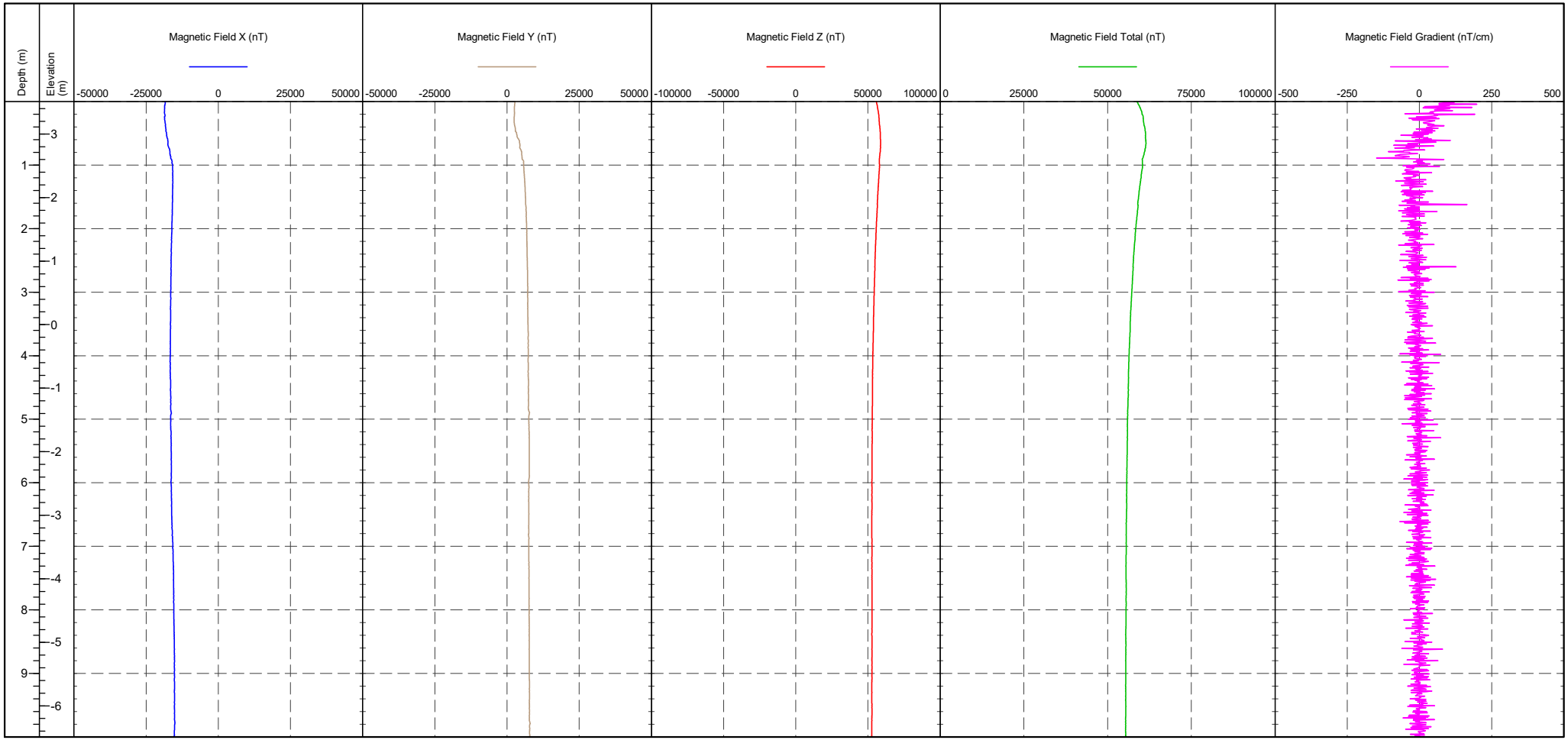
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:33 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-14**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653887.3 m NORTHING : 292609.8 m ELEVATION : 3.51 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

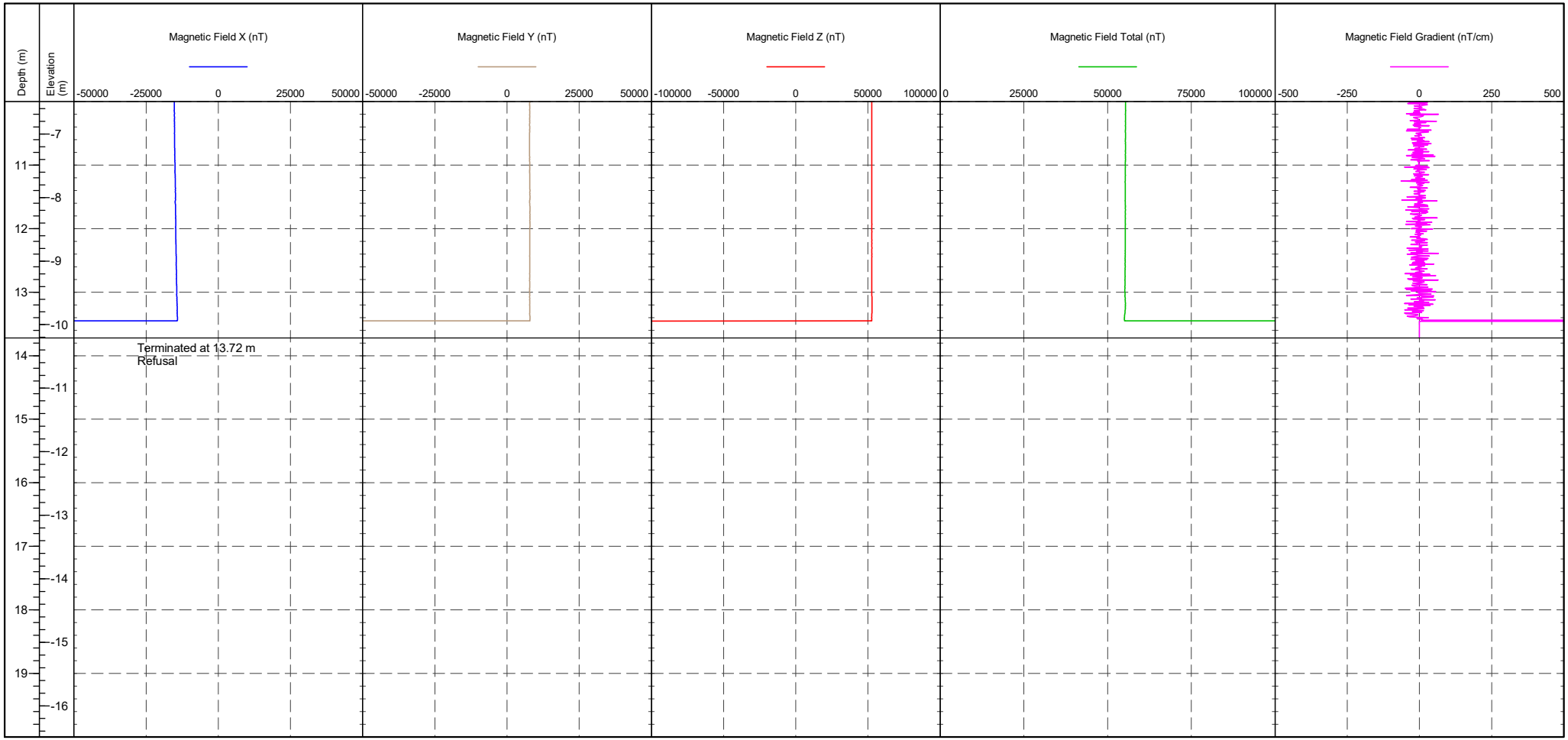


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-14**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653887.3 m NORTHING : 292609.8 m ELEVATION : 3.51 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



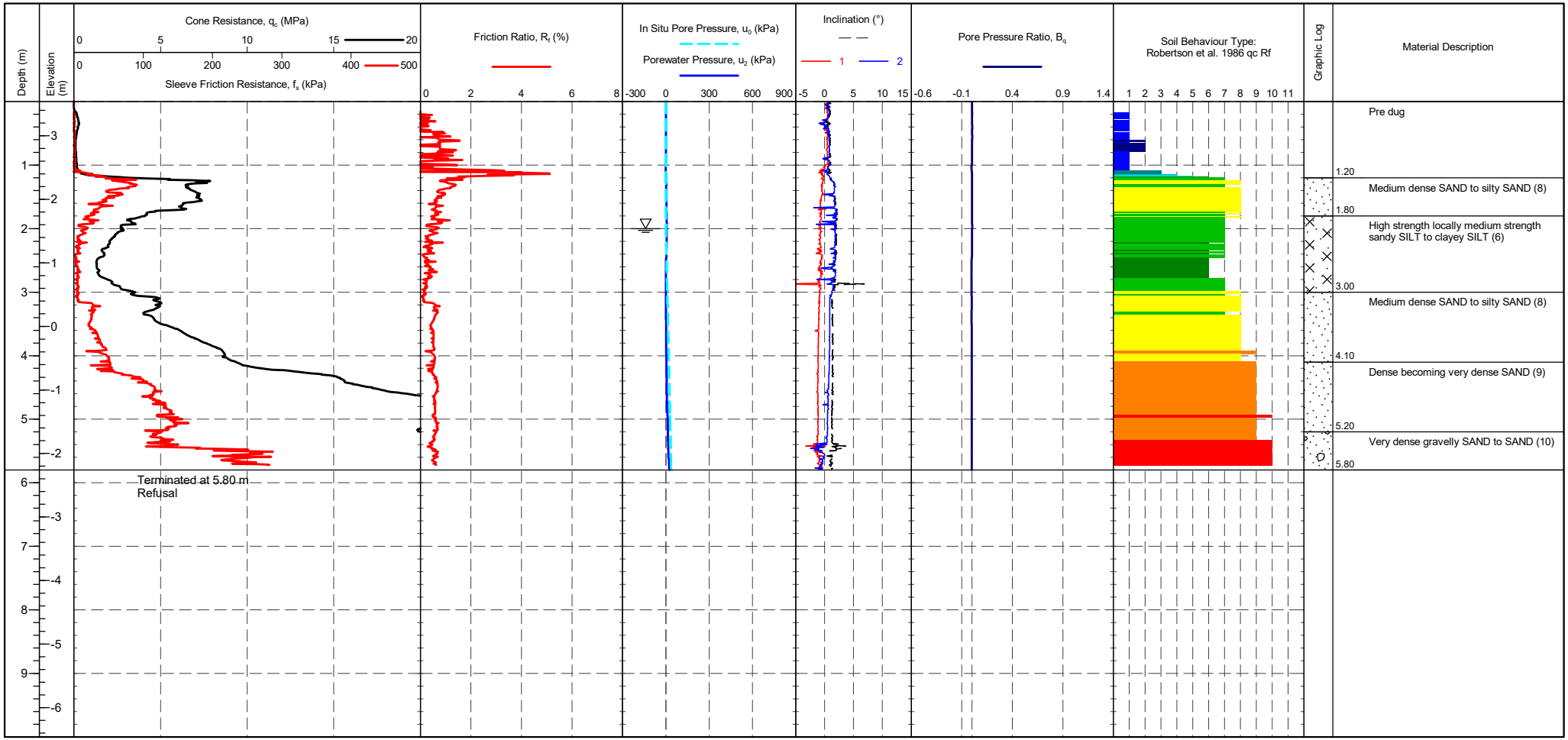
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-15**

CLIENT : Geosphere Environmental	EASTING : 653901.0 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292568.7 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.54 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	201 mV	-0.086 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	295 mV	317 mV	0.017 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	Pore Pressure 2	311 mV	313 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2470 mV	2467 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

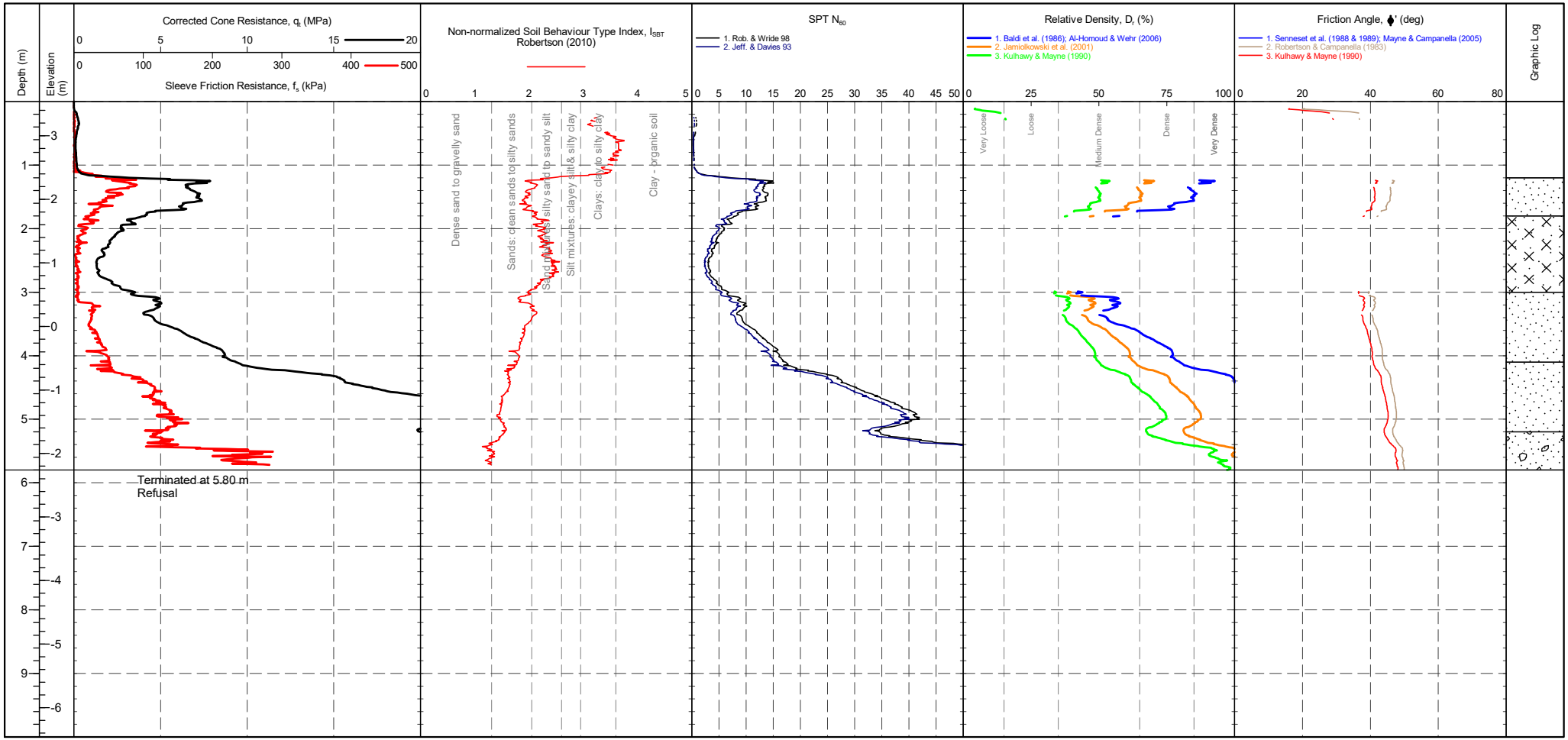
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-15

CLIENT : Geosphere Environmental	EASTING : 653901.0 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292568.7 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.54 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	209 mV	201 mV	-0.086 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	295 mV	317 mV	0.017 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	311 mV	313 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	X-Y Inclinometer	2470 mV	2467 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

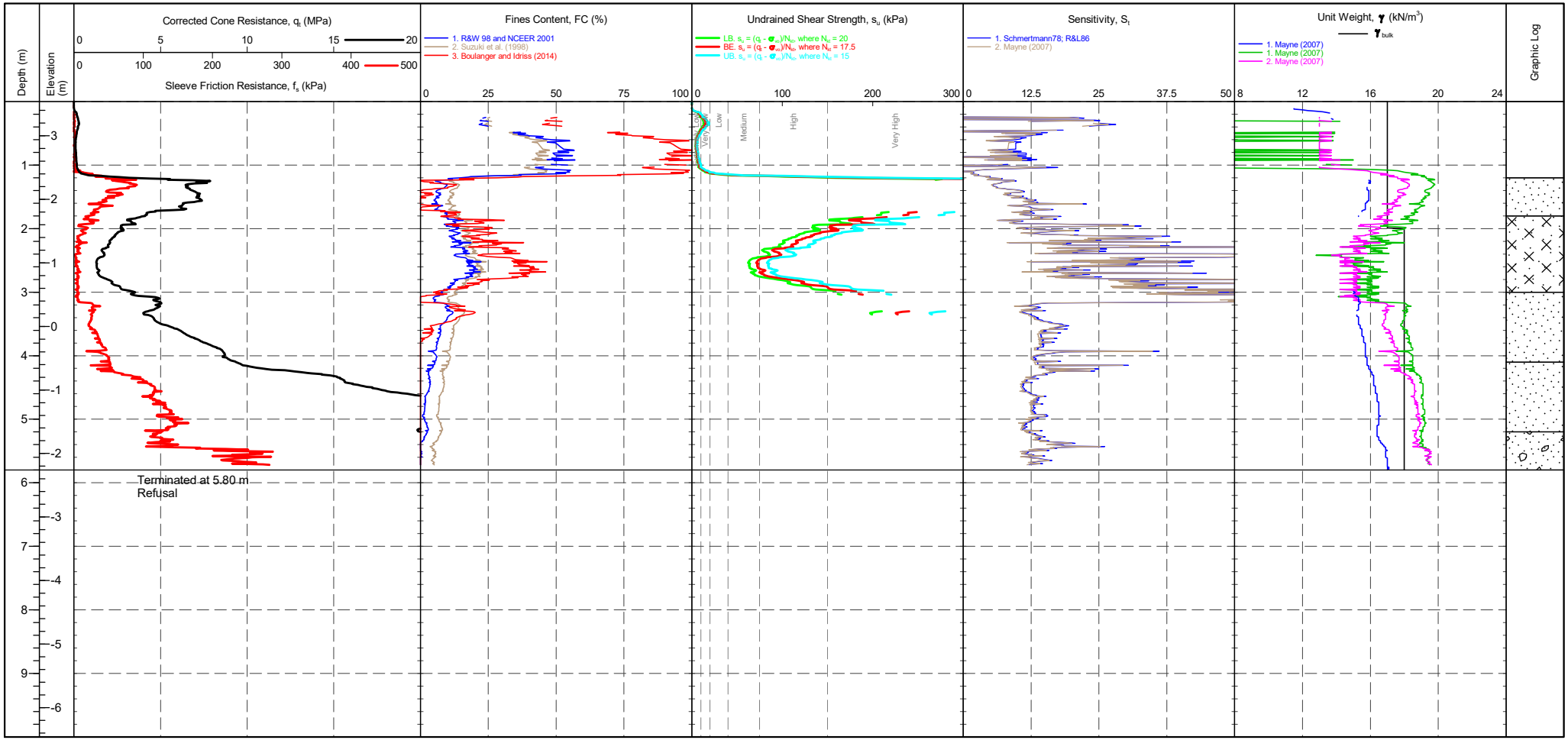
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-15**

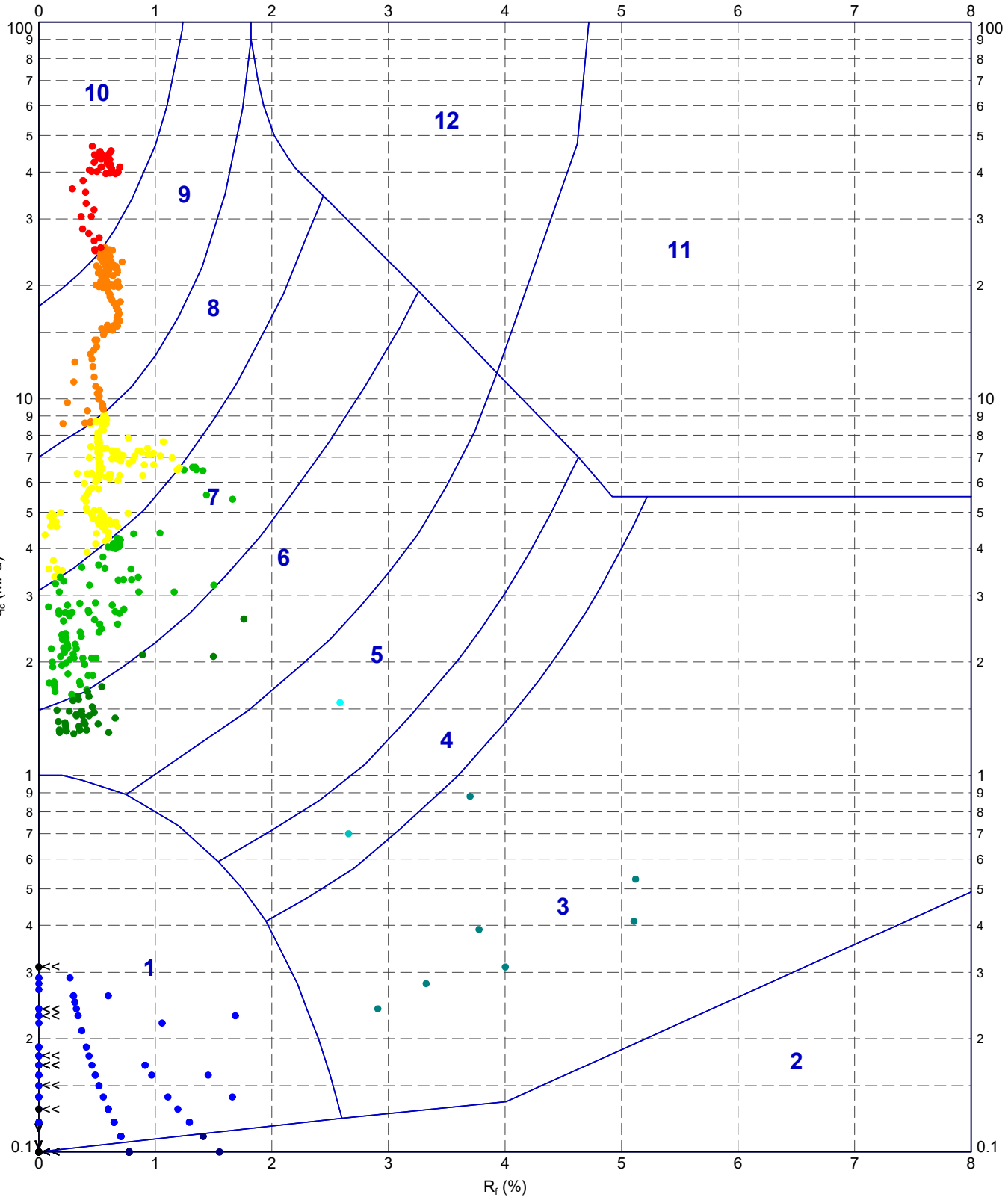
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653901.0 m NORTHING : 292568.7 m ELEVATION : 3.54 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	201 mV	-0.086 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	295 mV	317 mV	0.017 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	Pore Pressure 2	311 mV	313 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2470 mV	2467 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-15

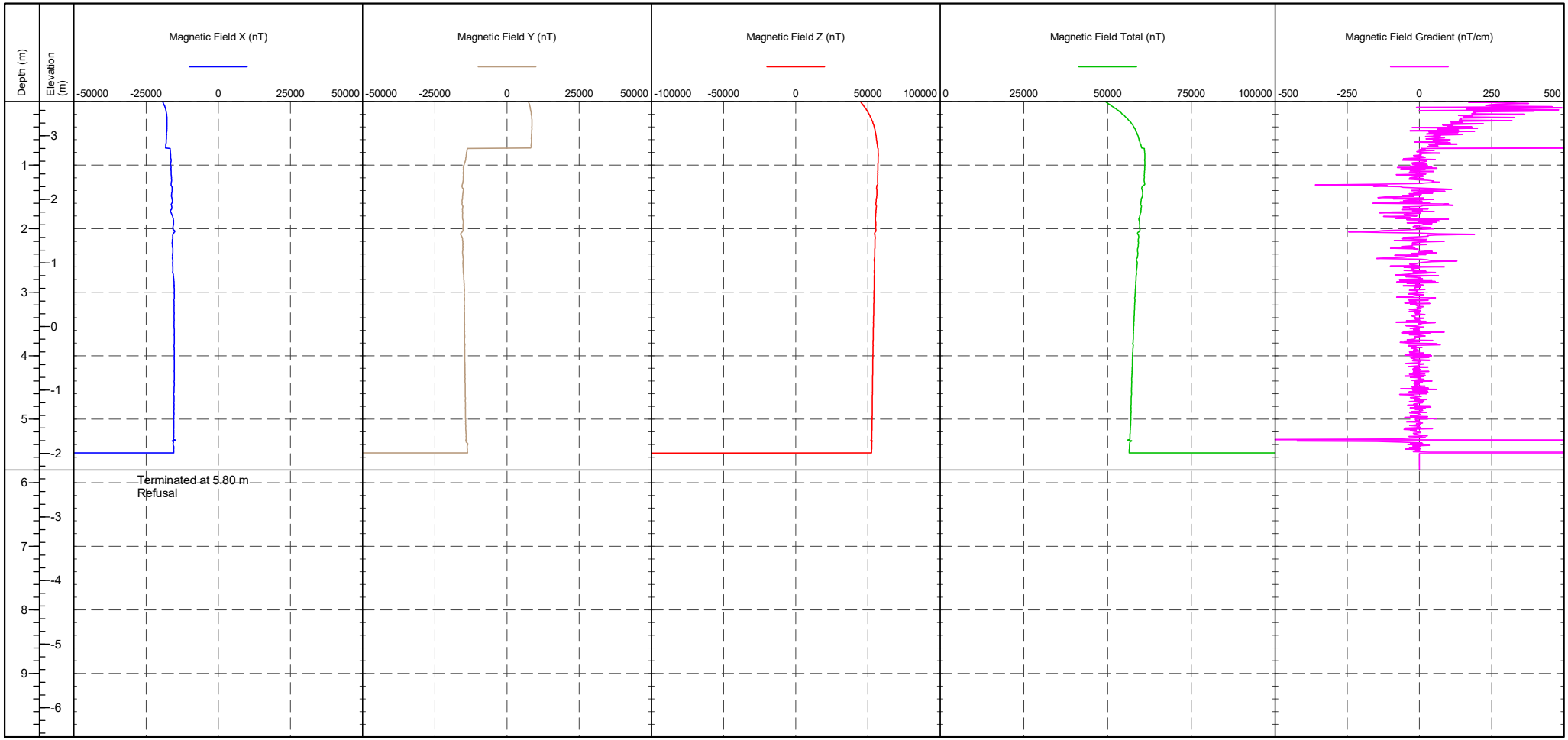
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:34 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-15**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653901.0 m NORTHING : 292568.7 m ELEVATION : 3.54 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



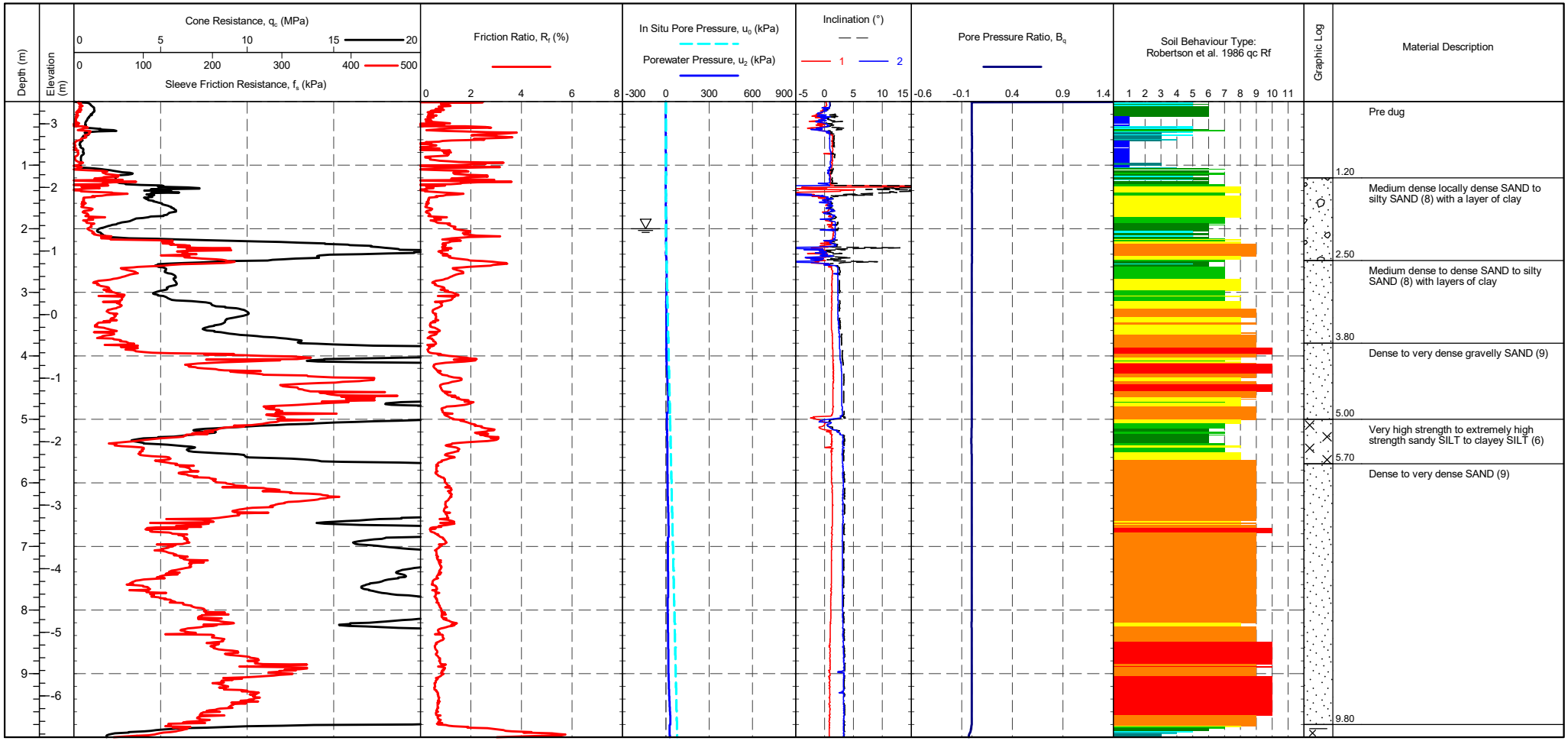
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	201 mV / -0.086 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	295 mV	317 mV / 0.017 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	Pore Pressure 2	311 mV	313 mV / 0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2470 mV	2467 mV

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-18**

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

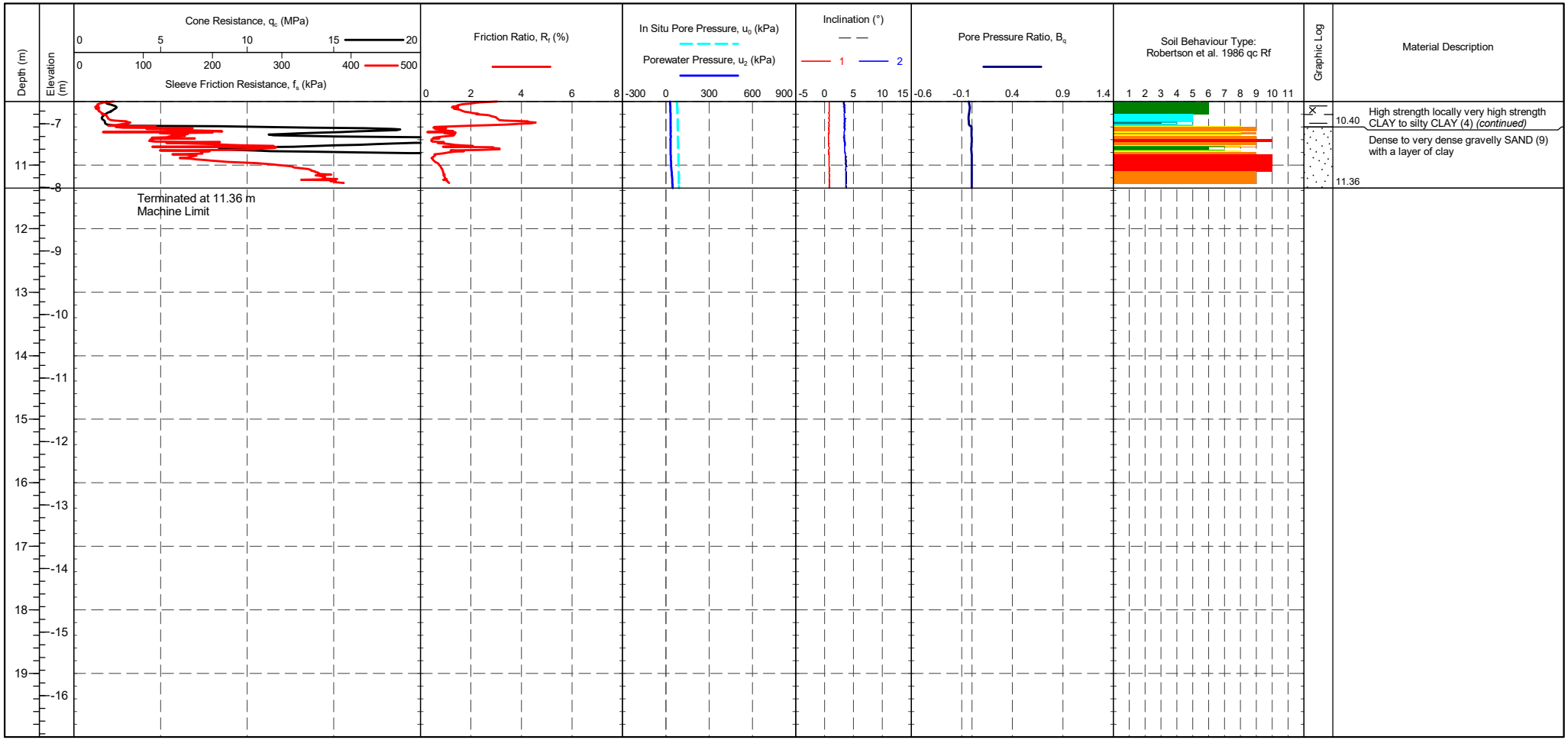
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-18**

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre / Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV / 190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV / 304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV / 377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV / 2416 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

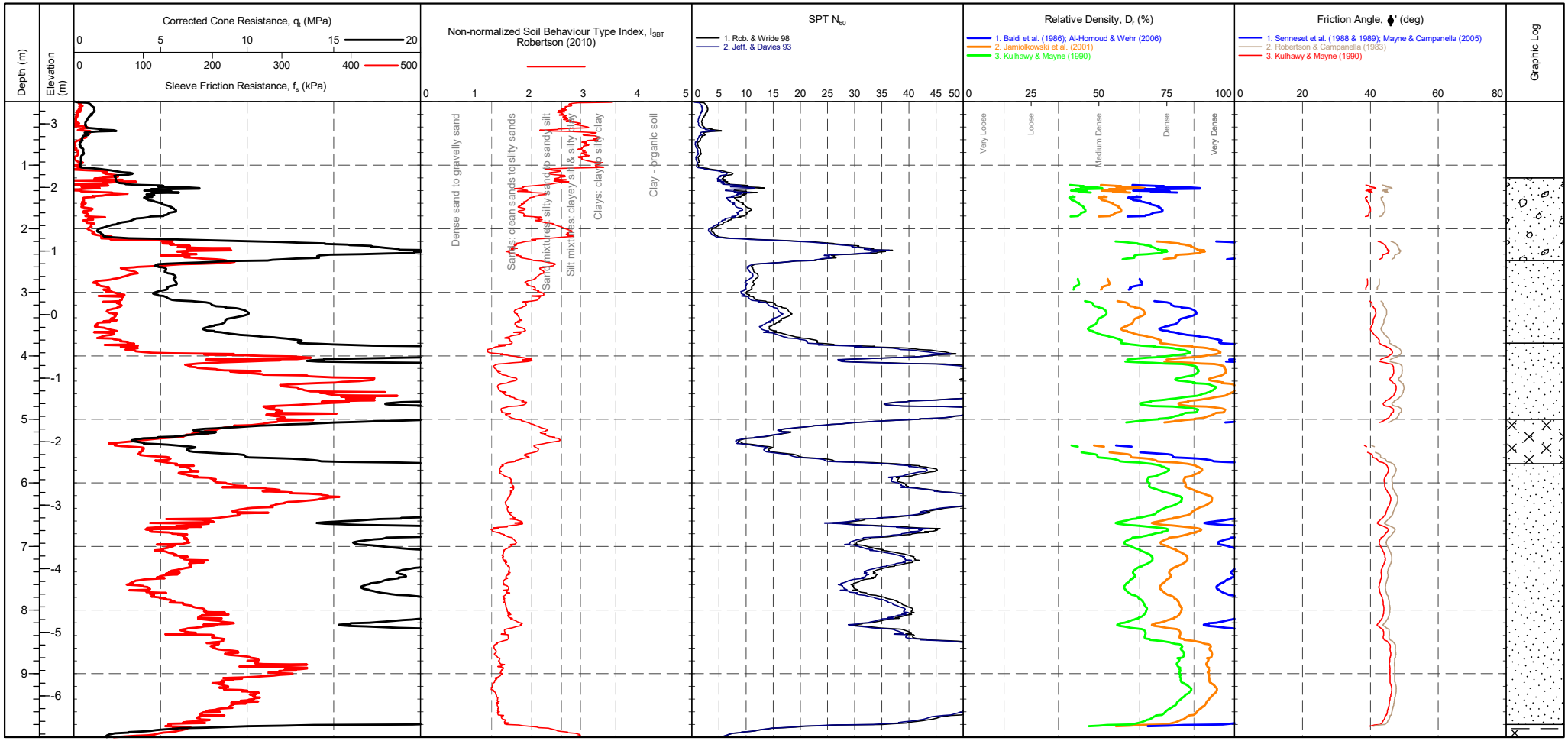
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-18

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

Groundwater Level

Dissipation Test

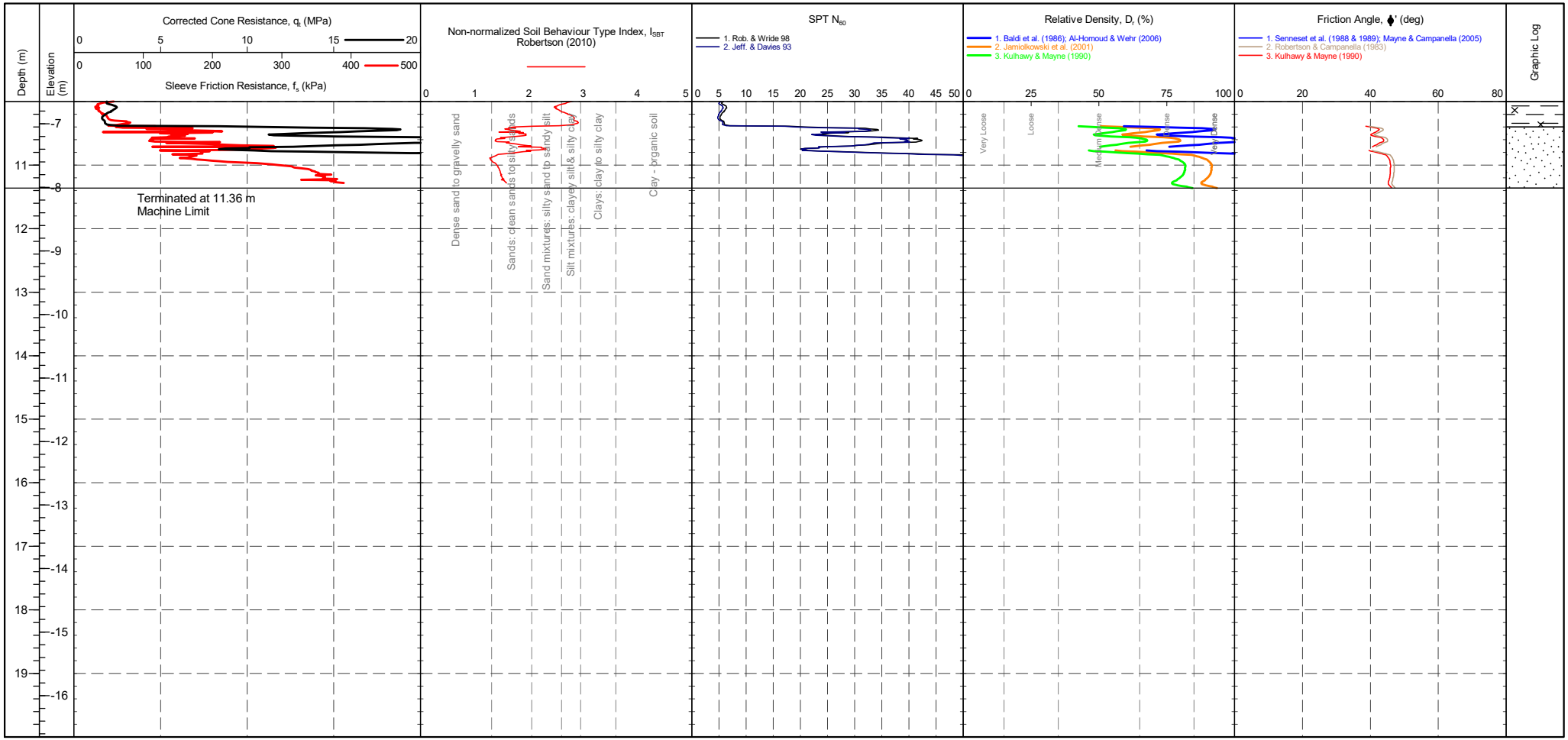
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-18

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	208 mV	190 mV	-0.194 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	X-Y Inclinometer	2465 mV	2416 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

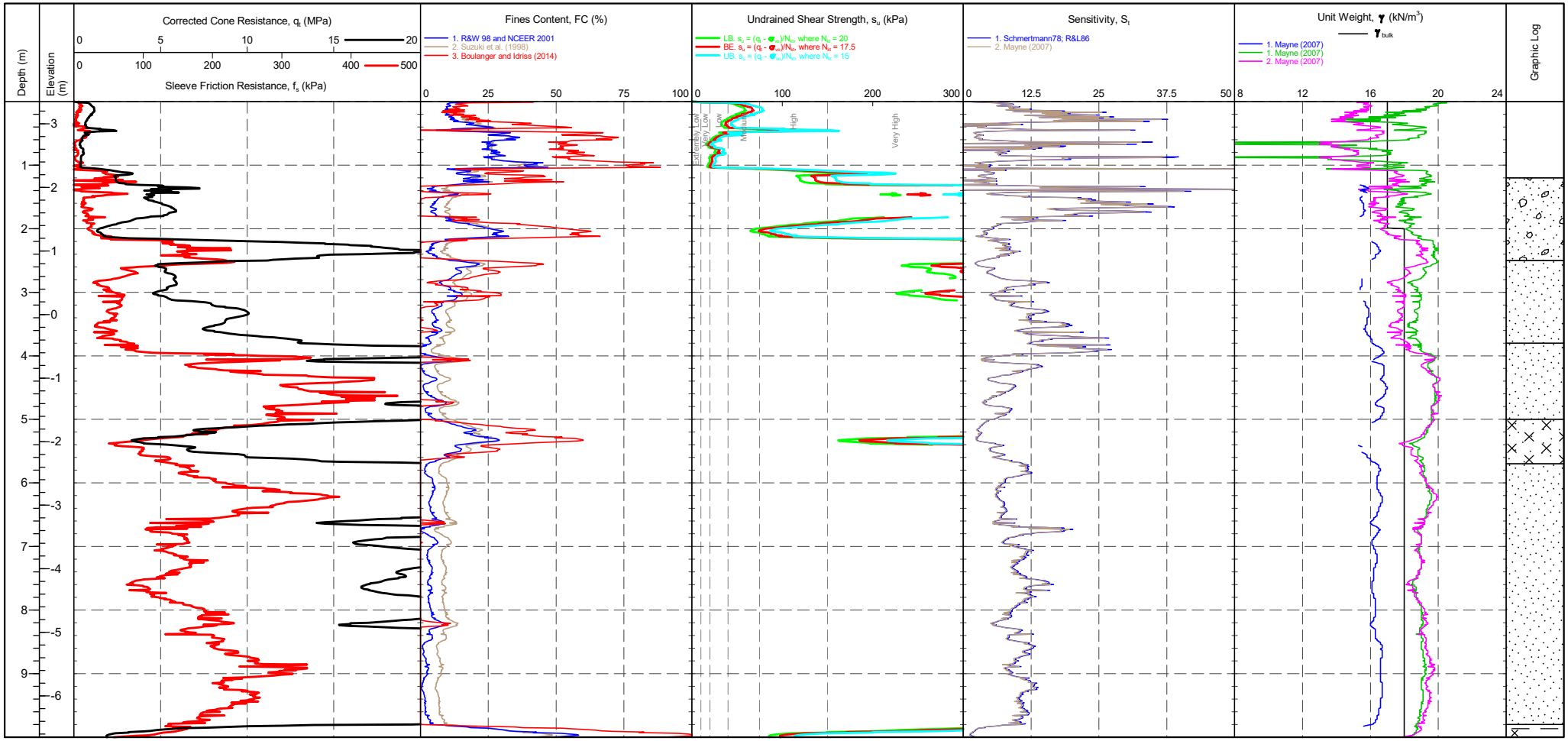
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-18**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653951.1 m NORTHING : 292447.8 m ELEVATION : 3.35 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

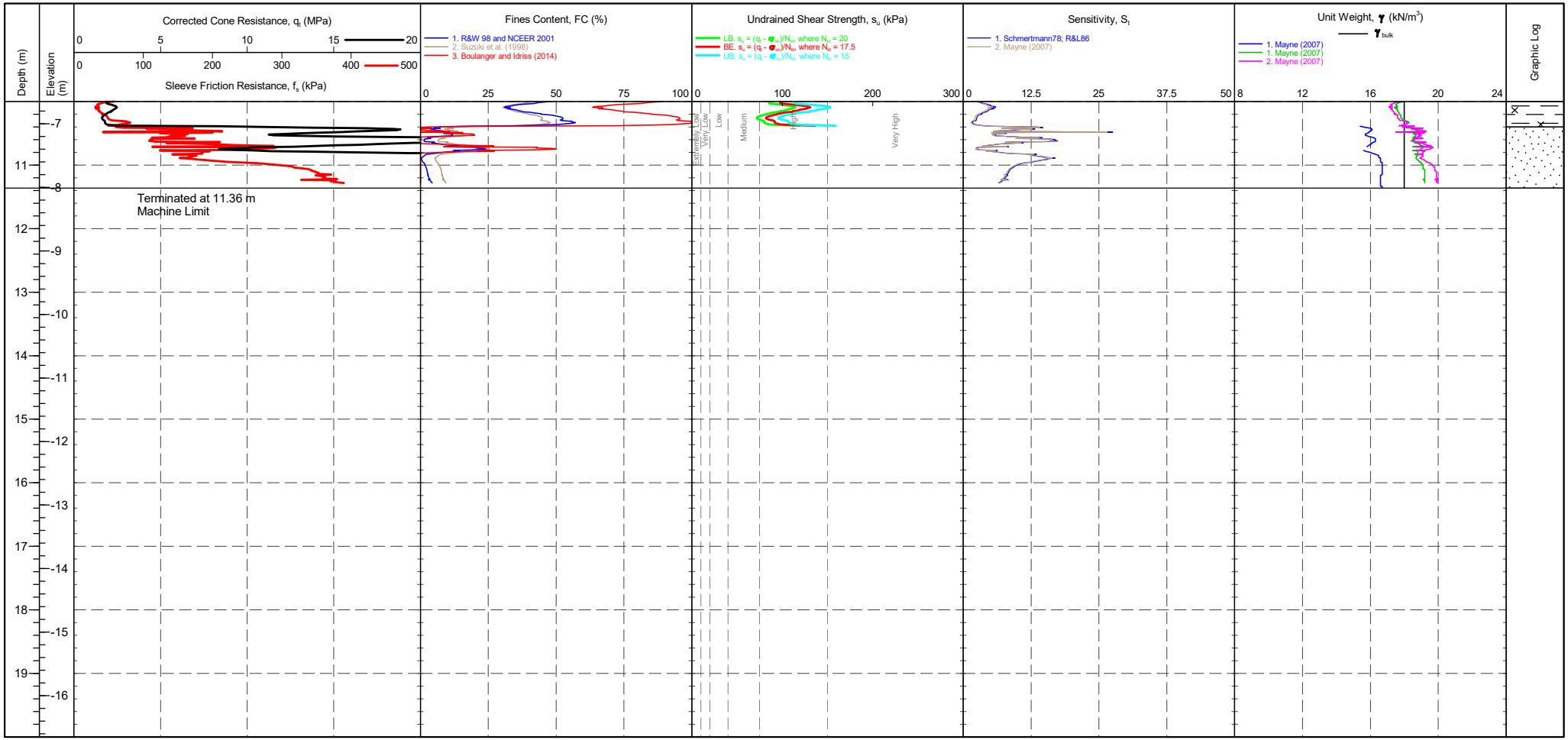
PointID **CPTC-18**

CLIENT : Geosphere Environmental
PROJECT : Lowestoft
LOCATION : Lowestoft
PROJECT No. : 1170456

EASTING : 653951.1 m
NORTHING : 292447.8 m
ELEVATION : 3.35 m
CHECKED BY : LD
TERMINATION REASON : Machine Limit

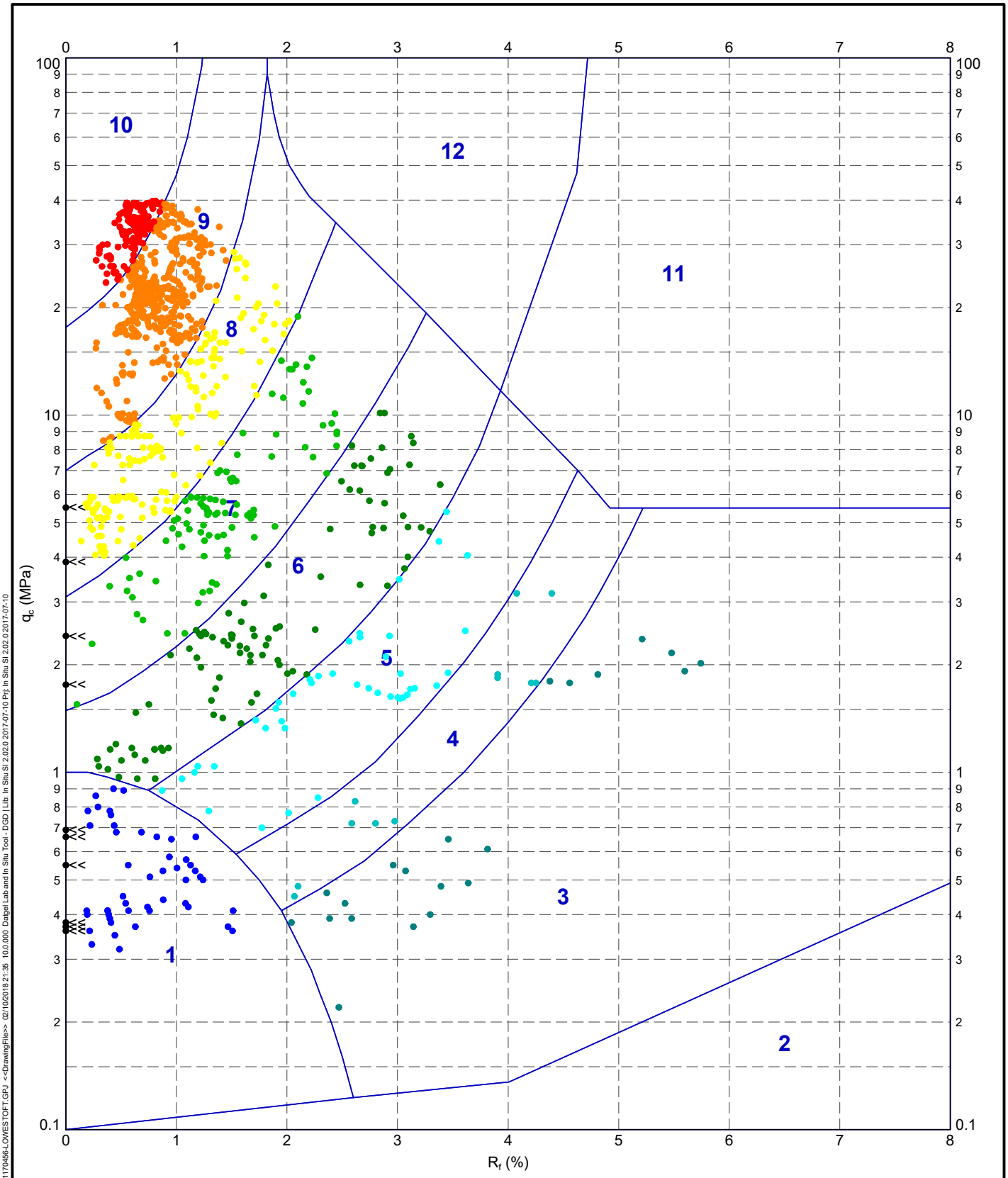
Remark:
Test stopped due to buckling rods.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 07/12/2017
PLOT DATE : 02/10/2018
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

Groundwater Level
Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-18

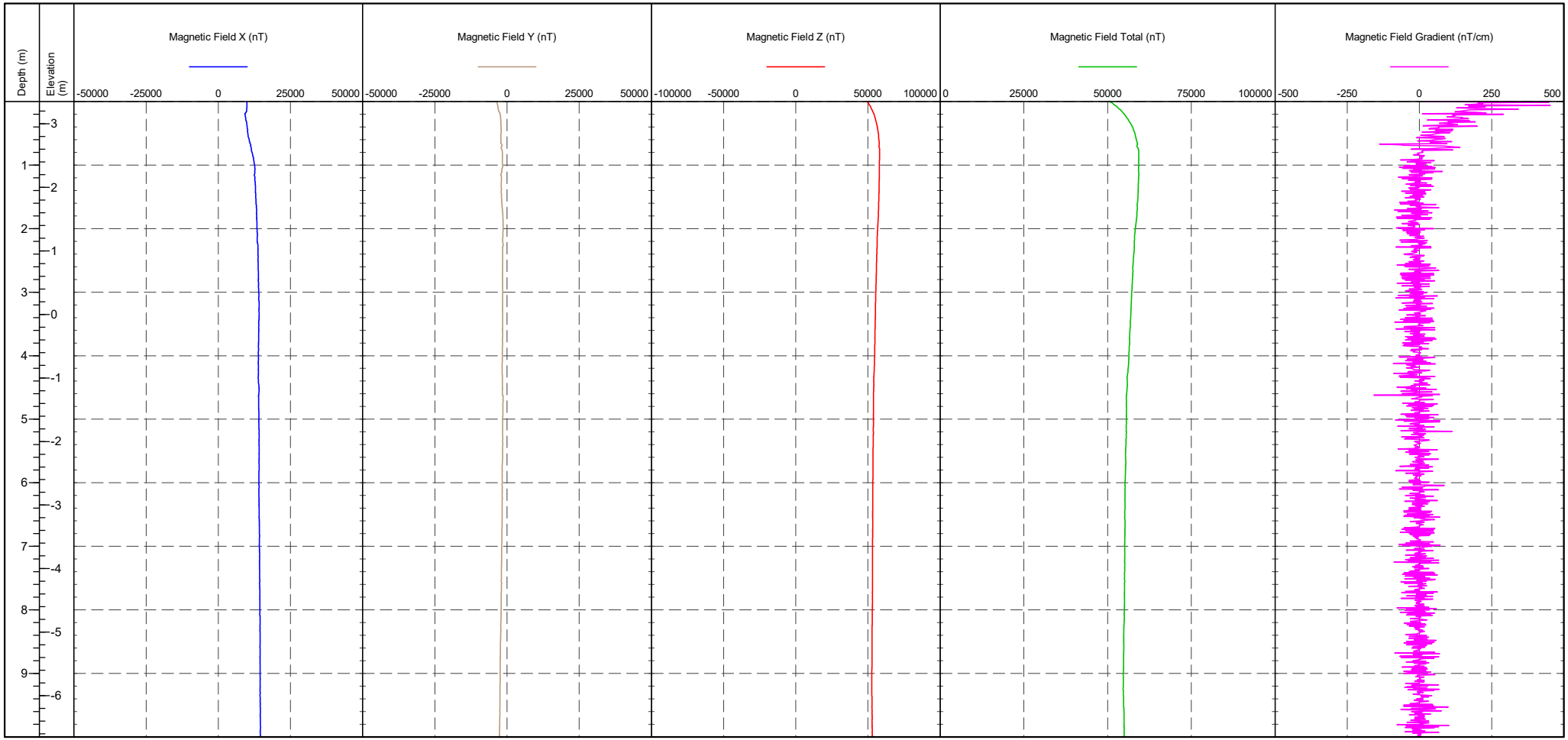
DRAWN	DATE 02/10/2018	
CHECKED	DATE 02/10/2018	
SCALE Not To Scale		A4
PROJECT No 1170456	FIGURE No	

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:35 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID
CPTC-18

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653951.1 m NORTHING : 292447.8 m ELEVATION : 3.35 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

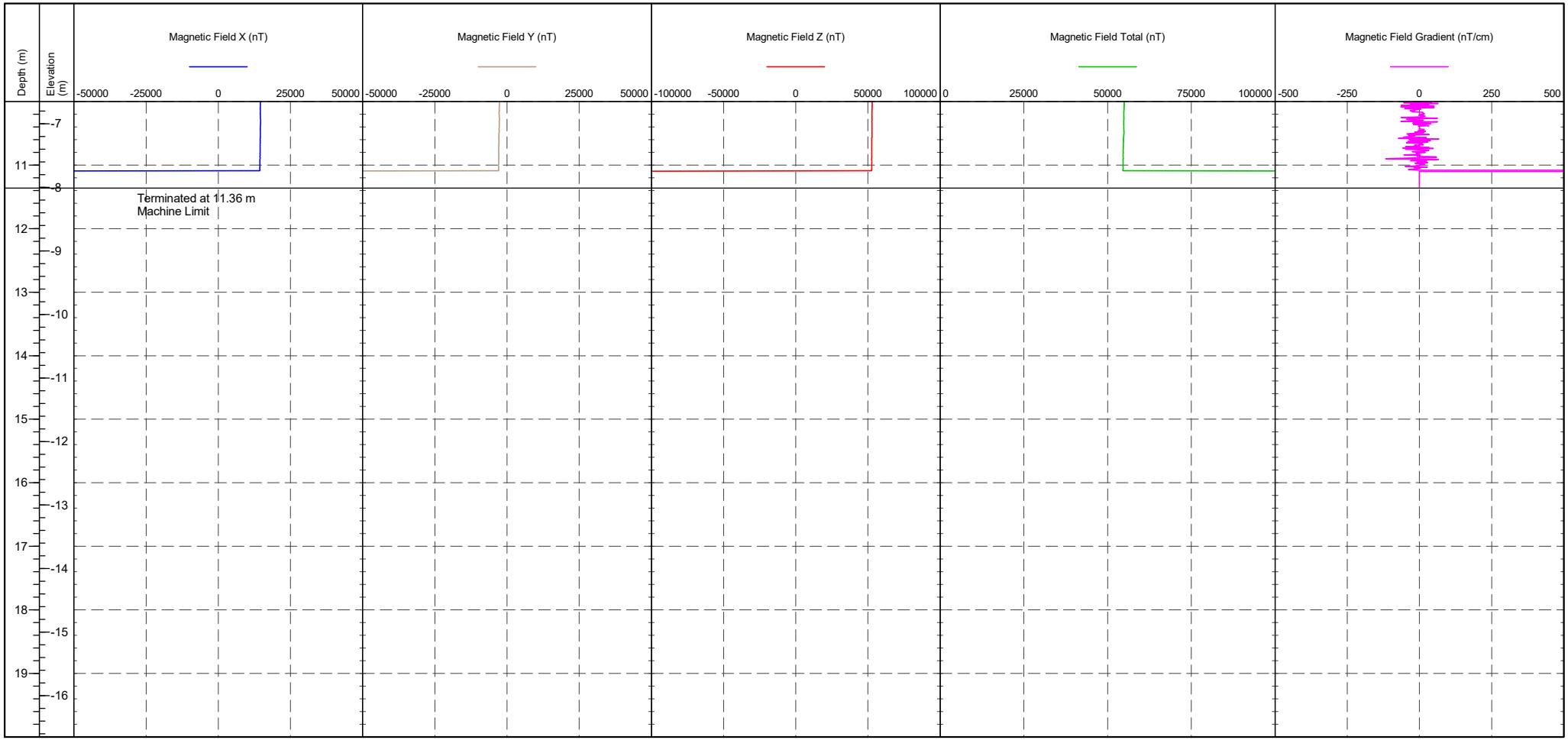


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV / -0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV / -0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV / 0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-18**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653951.1 m NORTHING : 292447.8 m ELEVATION : 3.35 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



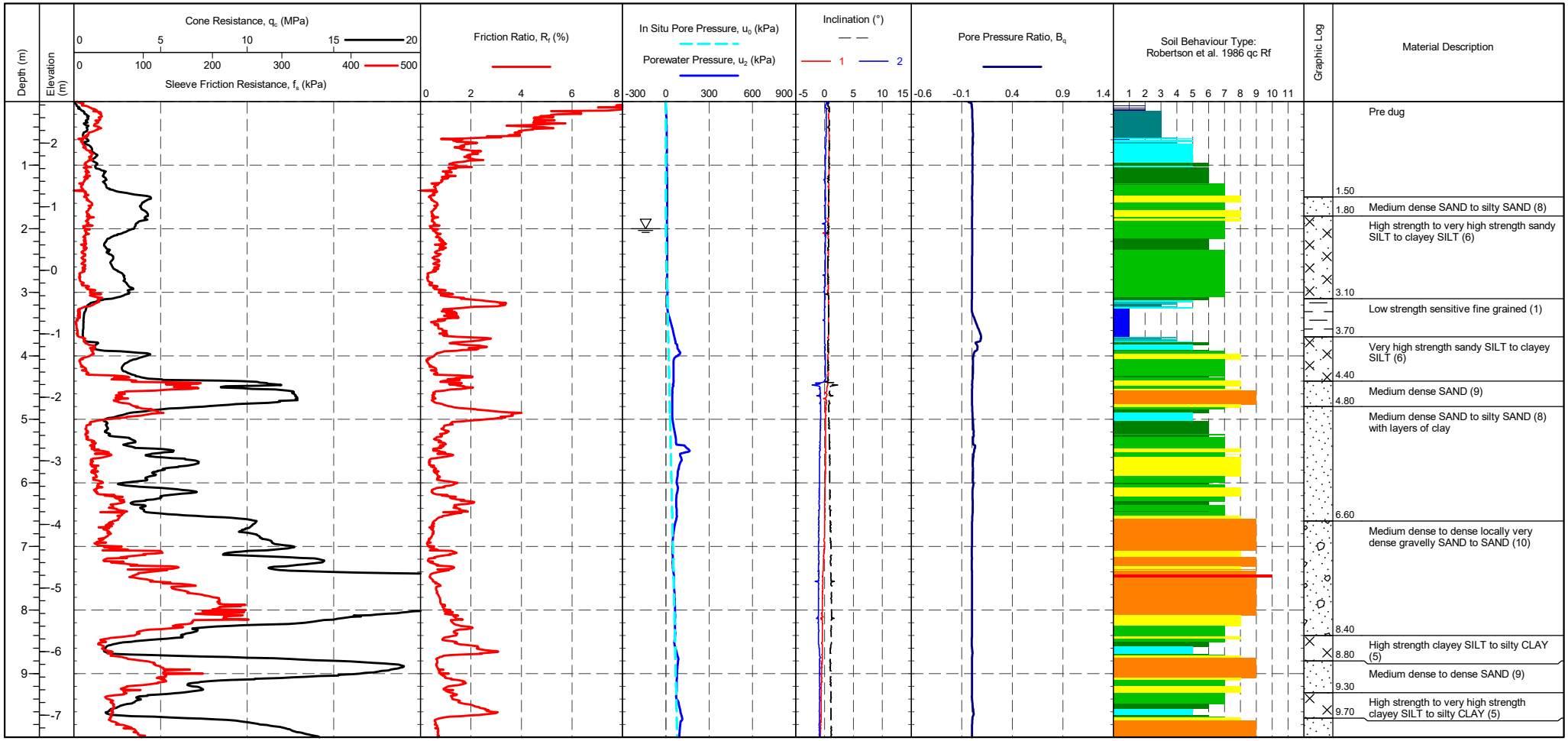
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 1 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	
FILTER POSITION	: u2	OPERATOR	: DH	
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	208 mV	161 mV	-0.508 MPa
Sleeve	293 mV	160 mV	-0.103 kPa
Pore Pressure 2	306 mV	162 mV	-0.045 kPa
X-Y Inclinometer	2460 mV	158 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

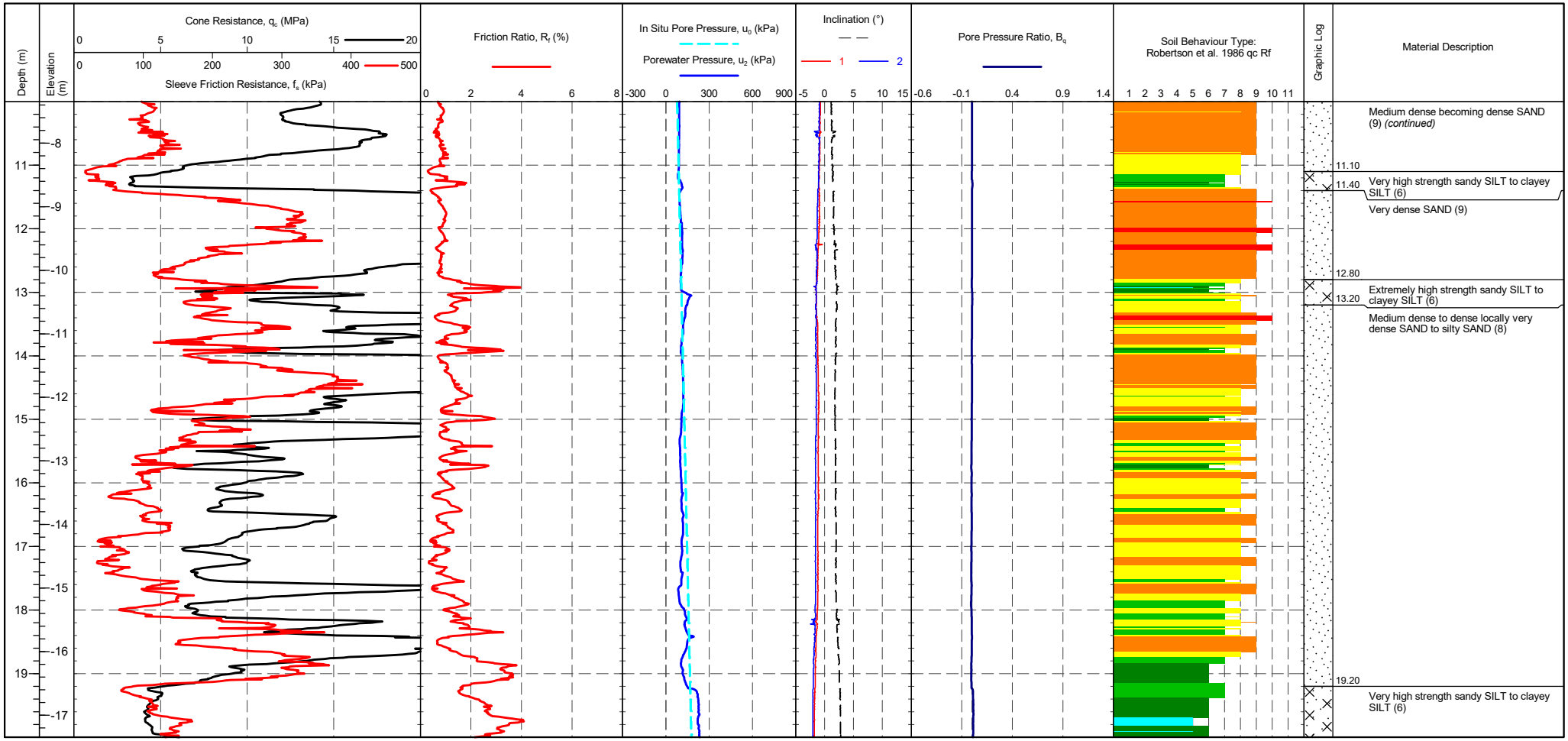
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 2 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

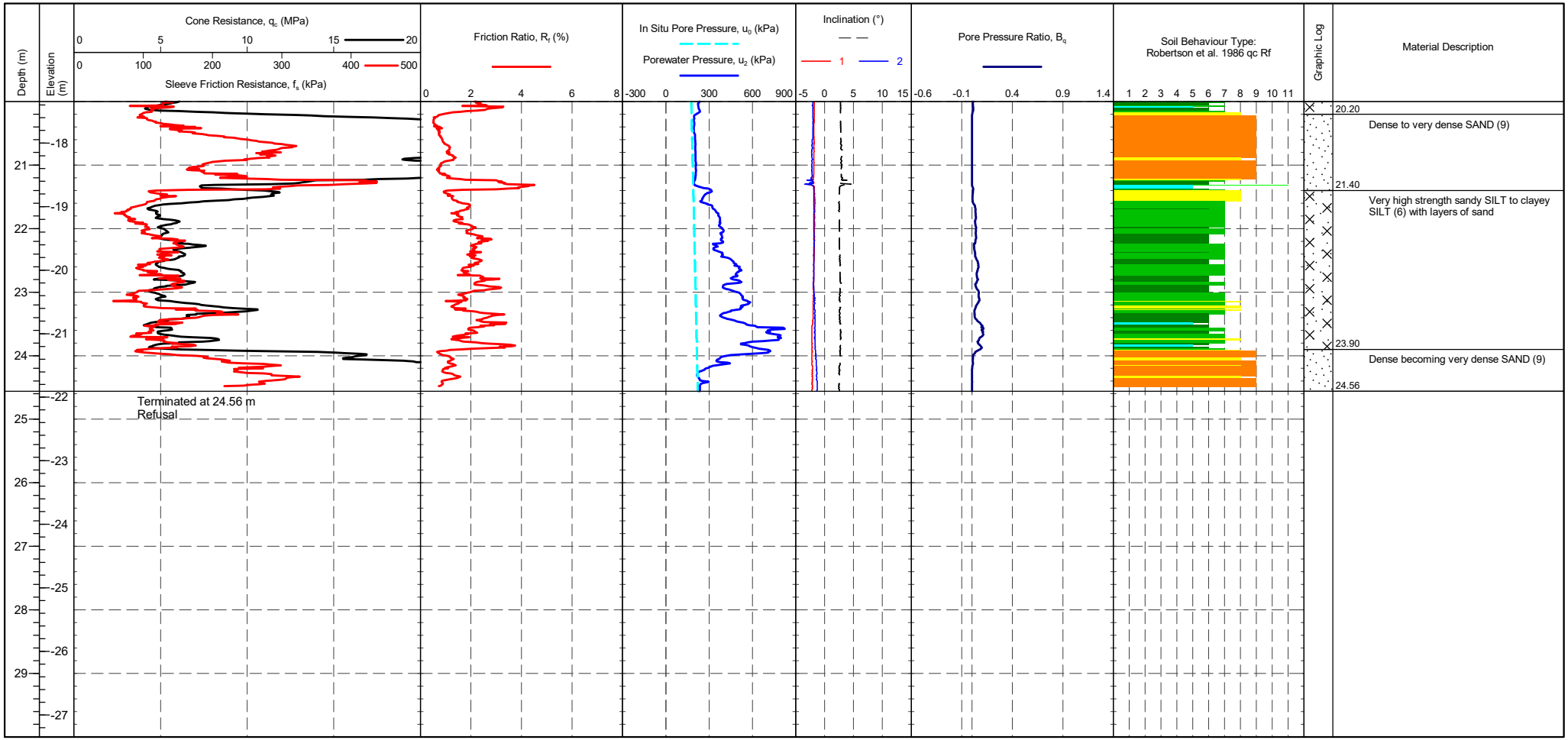
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 3 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

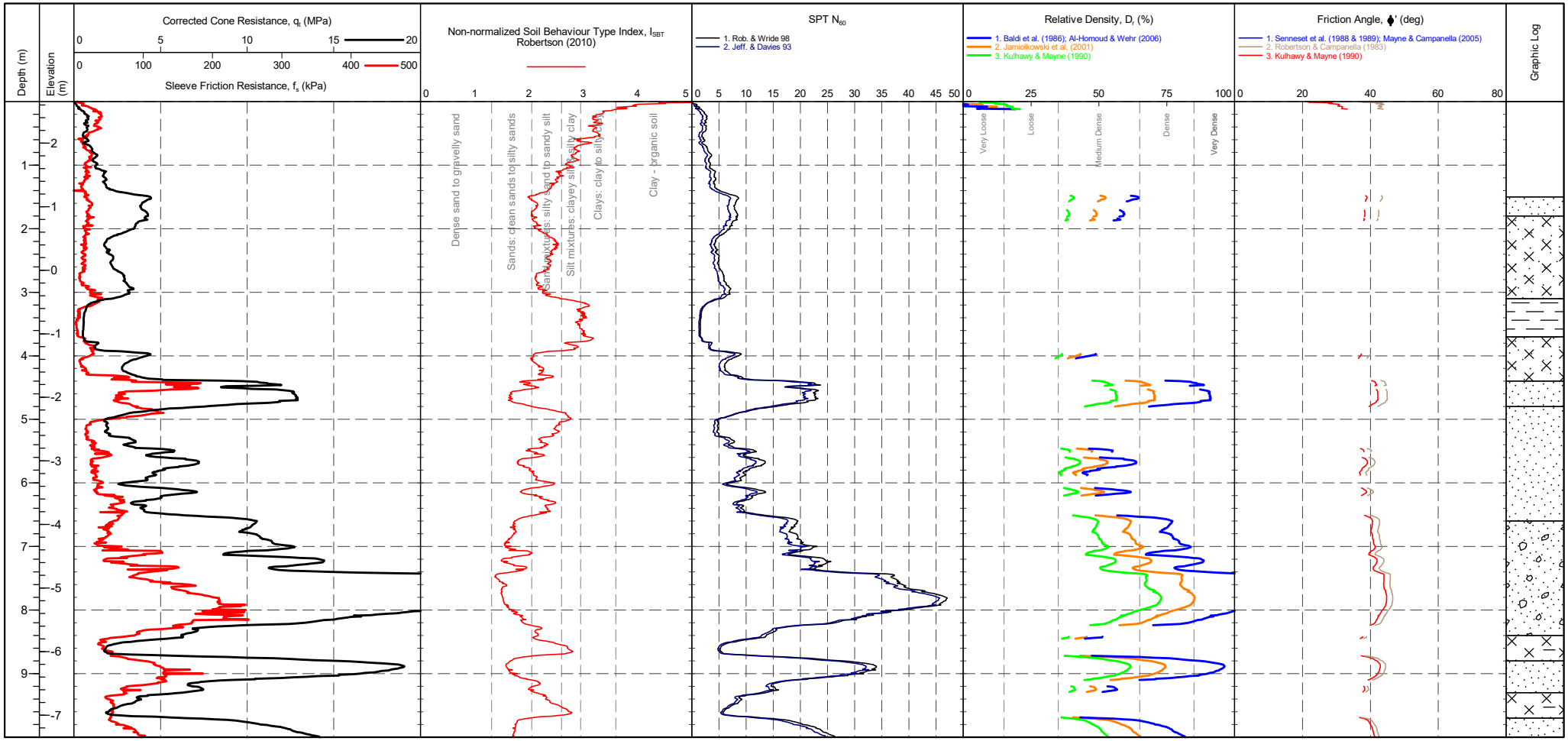
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 1 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

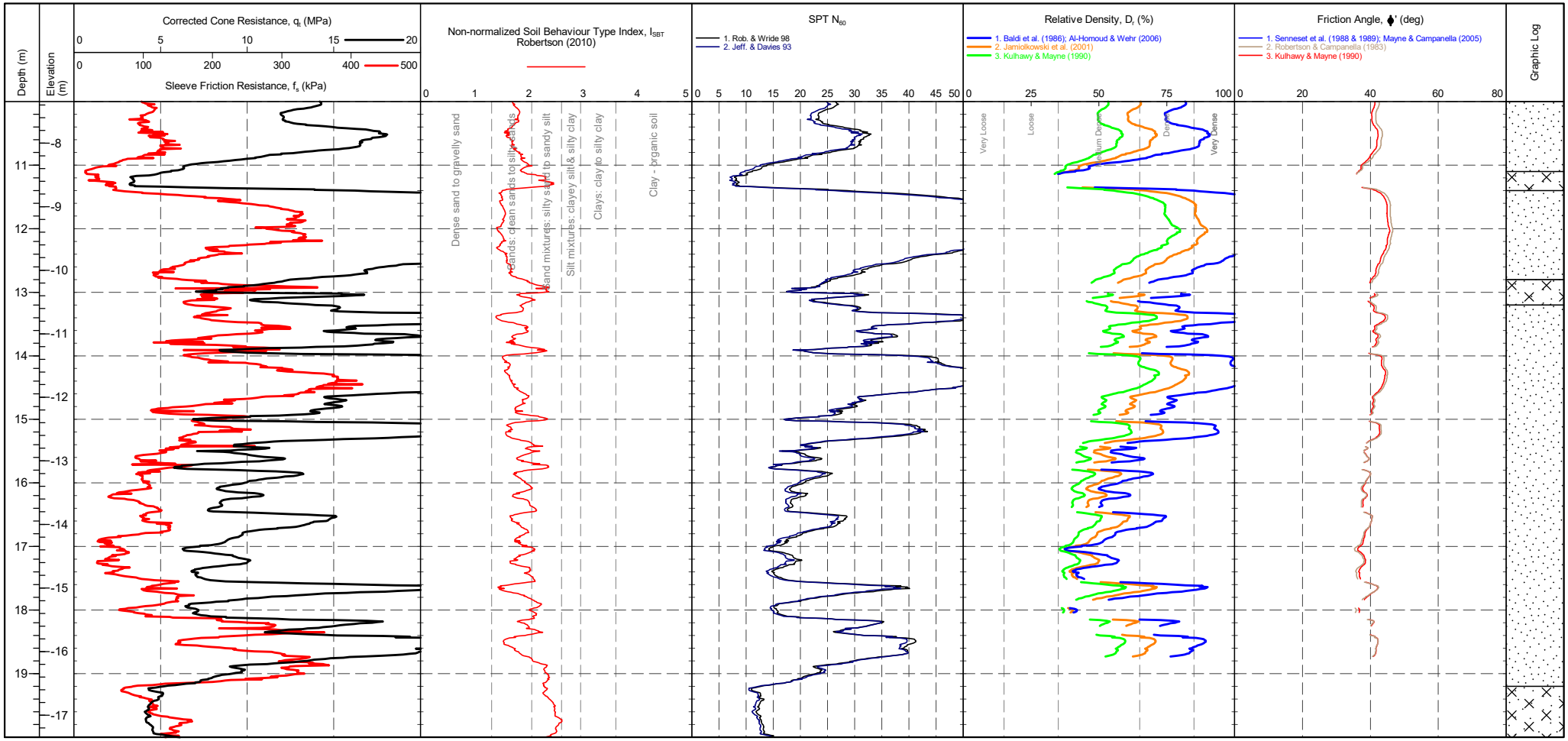
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 2 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

Dissipation Test

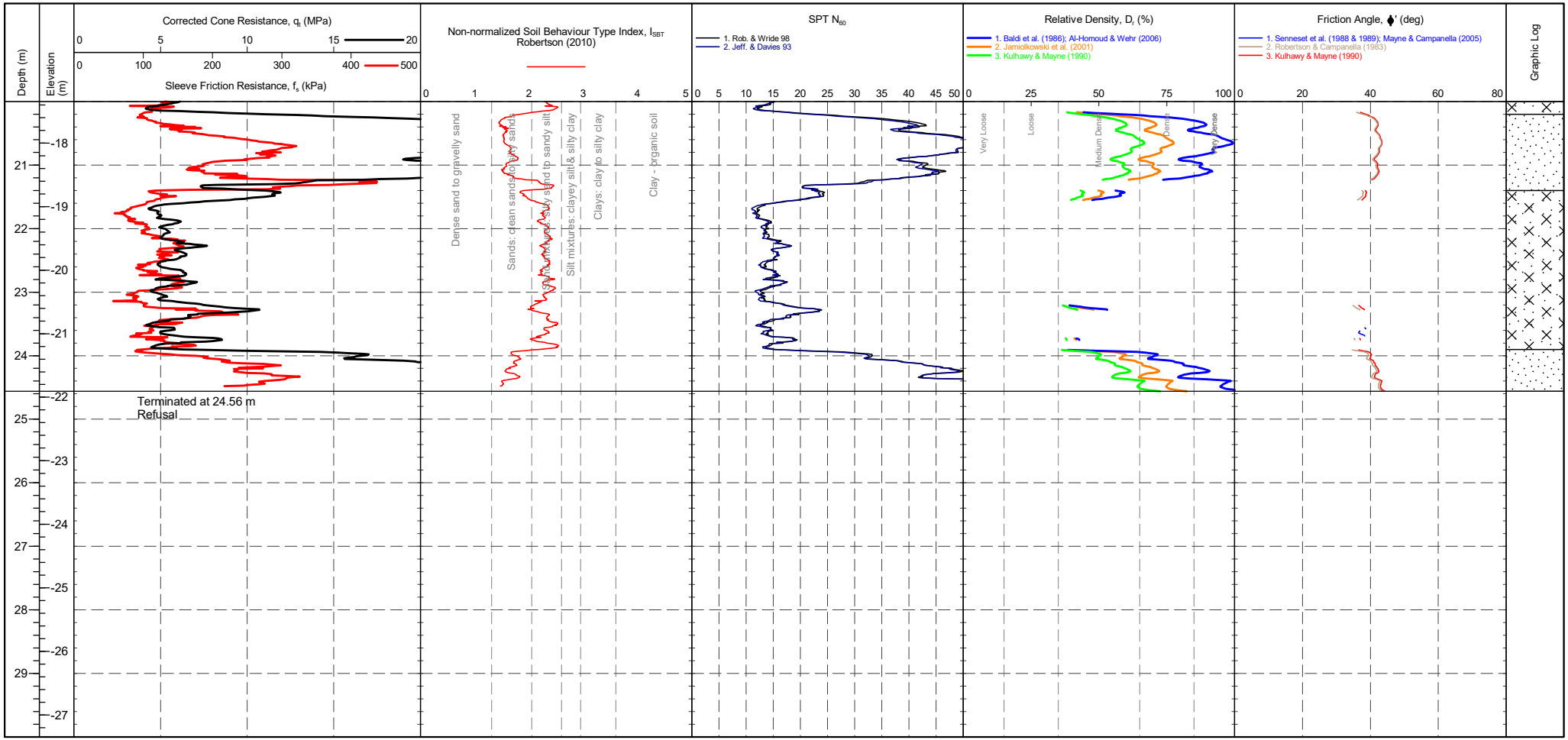
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-20

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 3 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	208 mV	161 mV	-0.508 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	X-Y Inclinometer	2460 mV	158 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

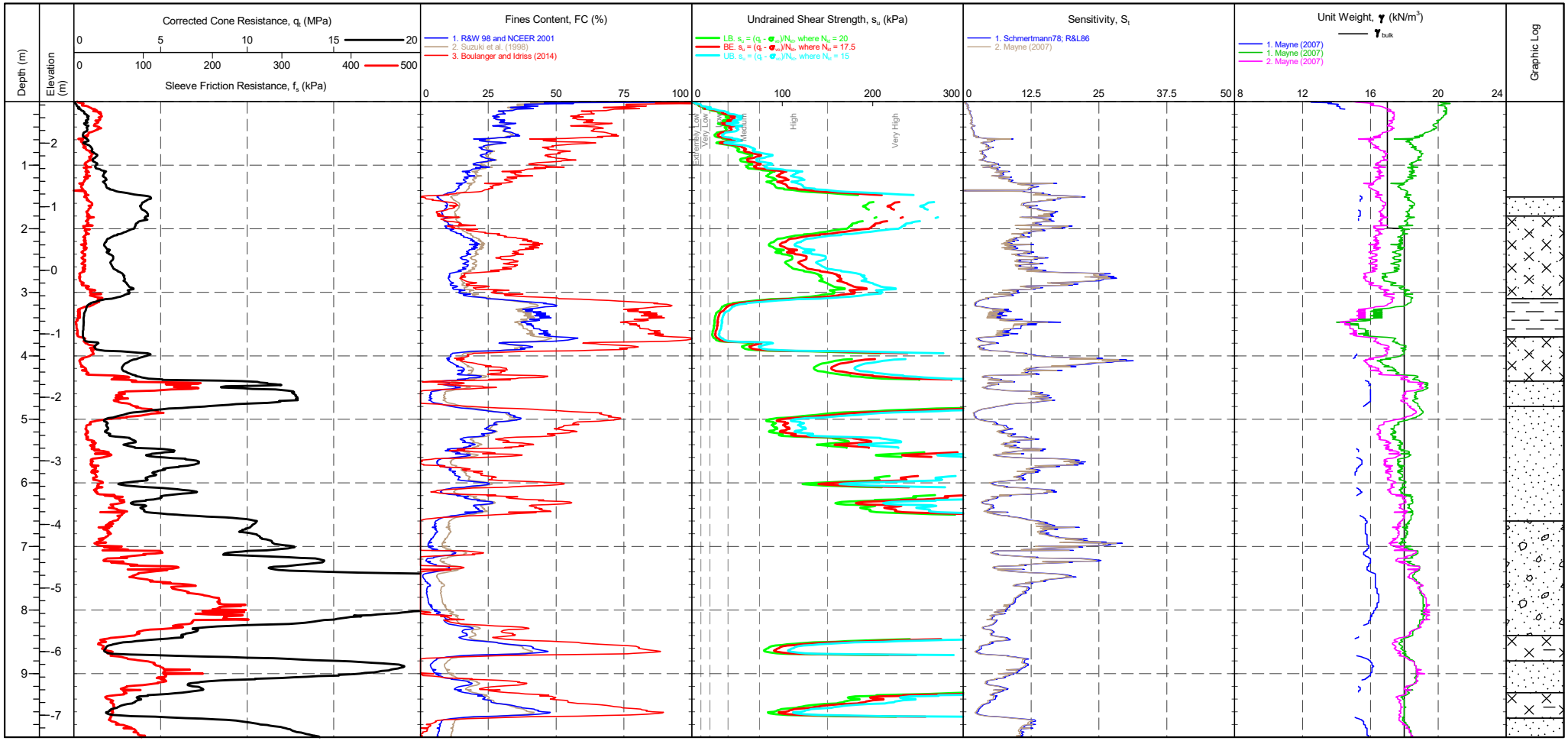
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 1 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

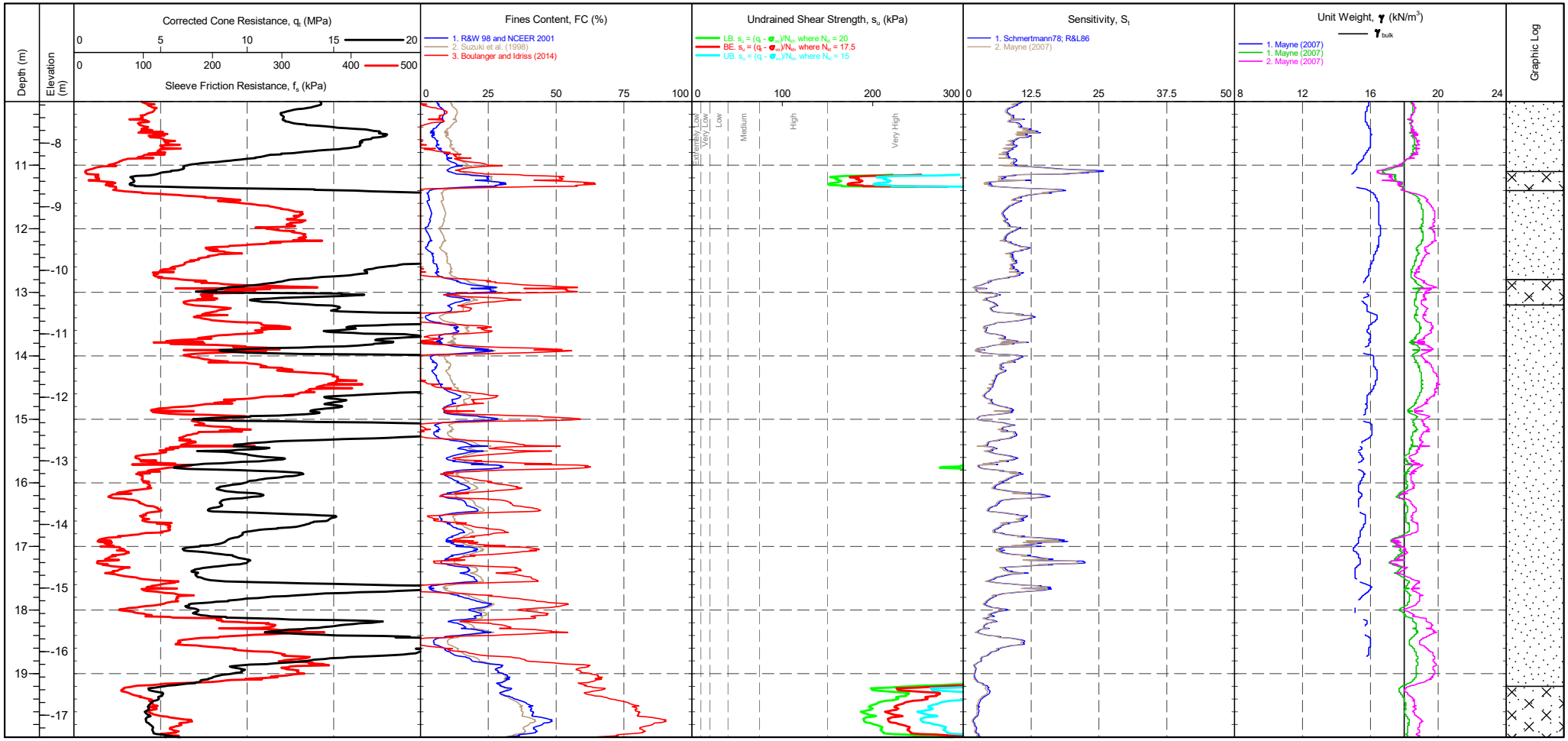
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 2 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

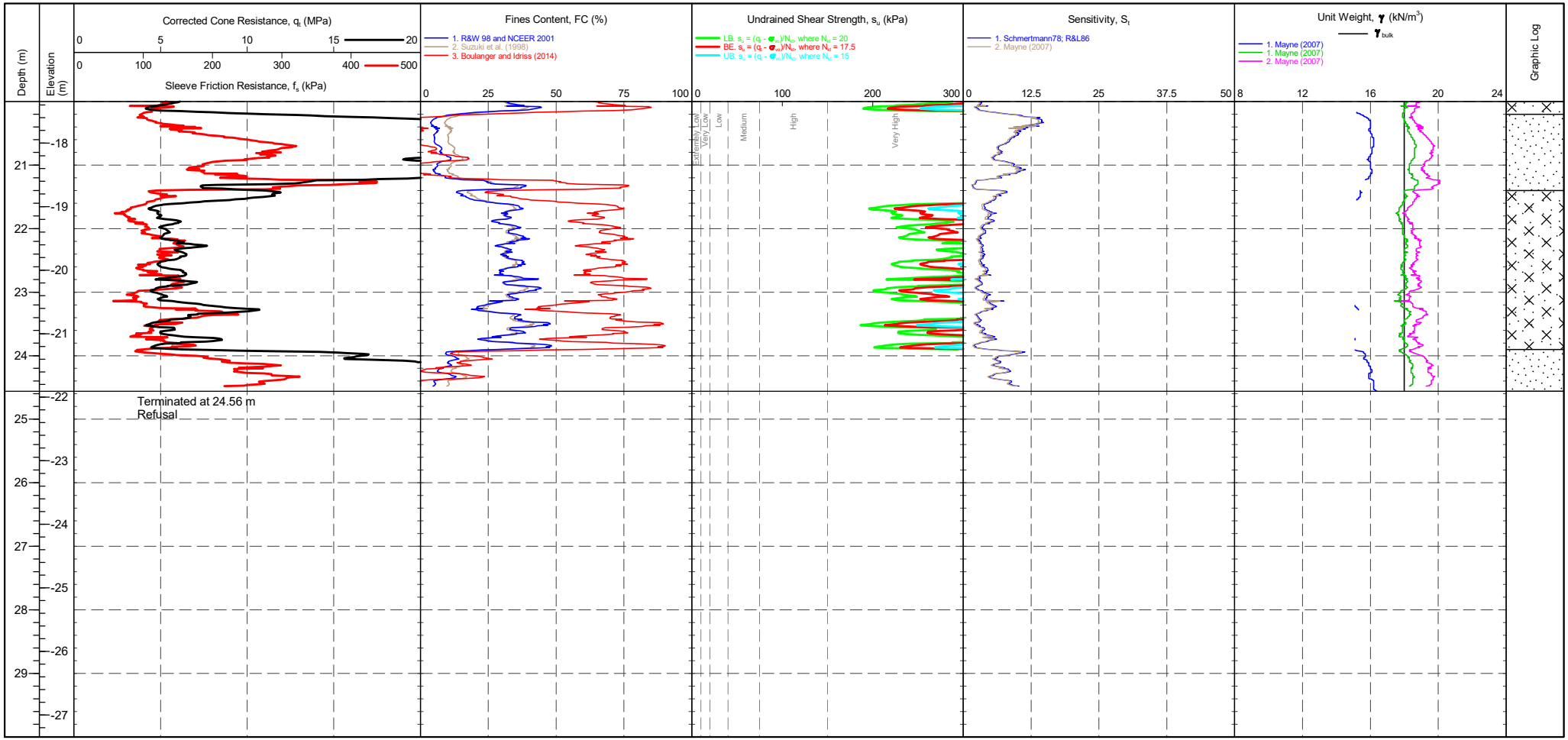
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-20**

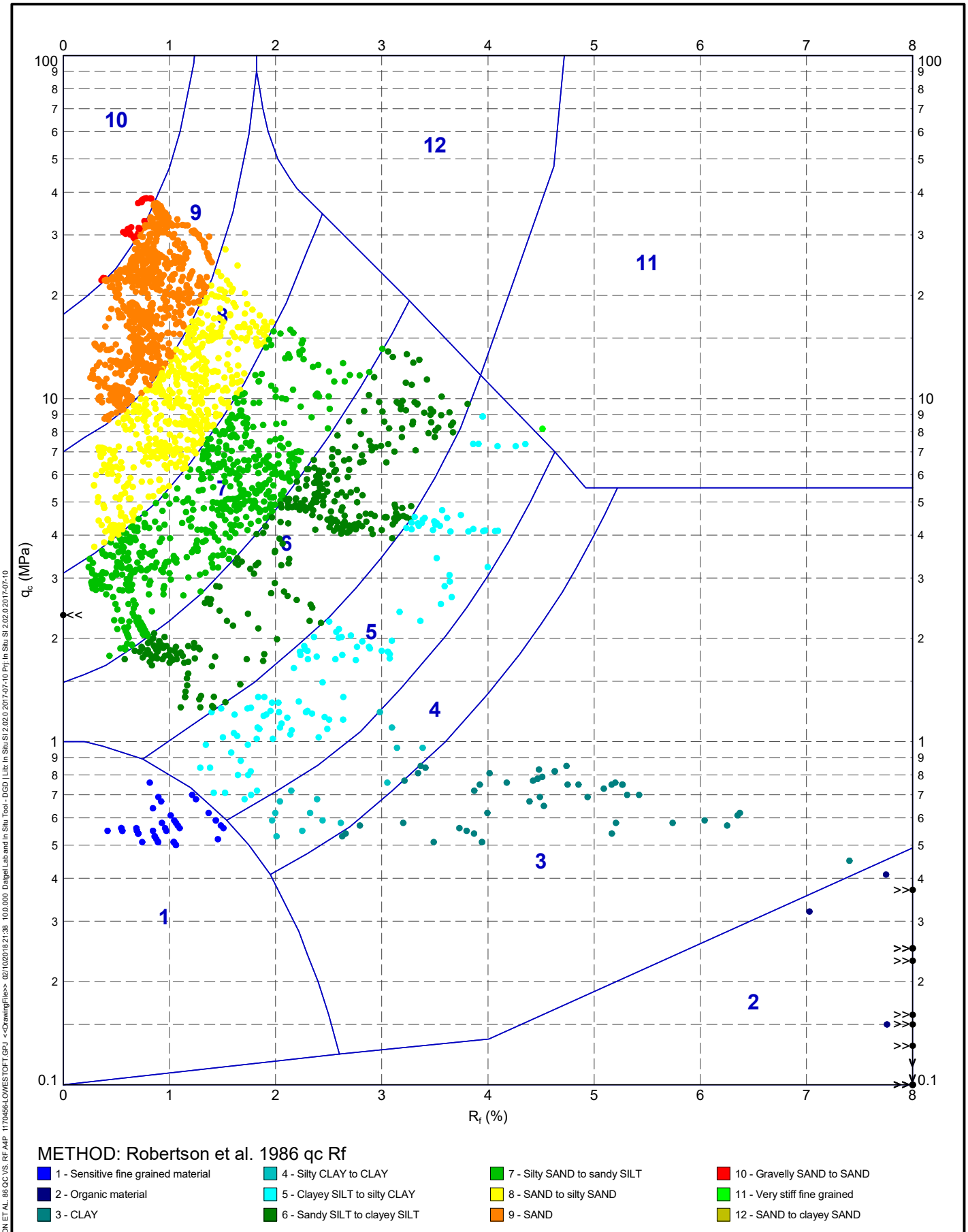
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV / -0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV / -0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV / -0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU
SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-20

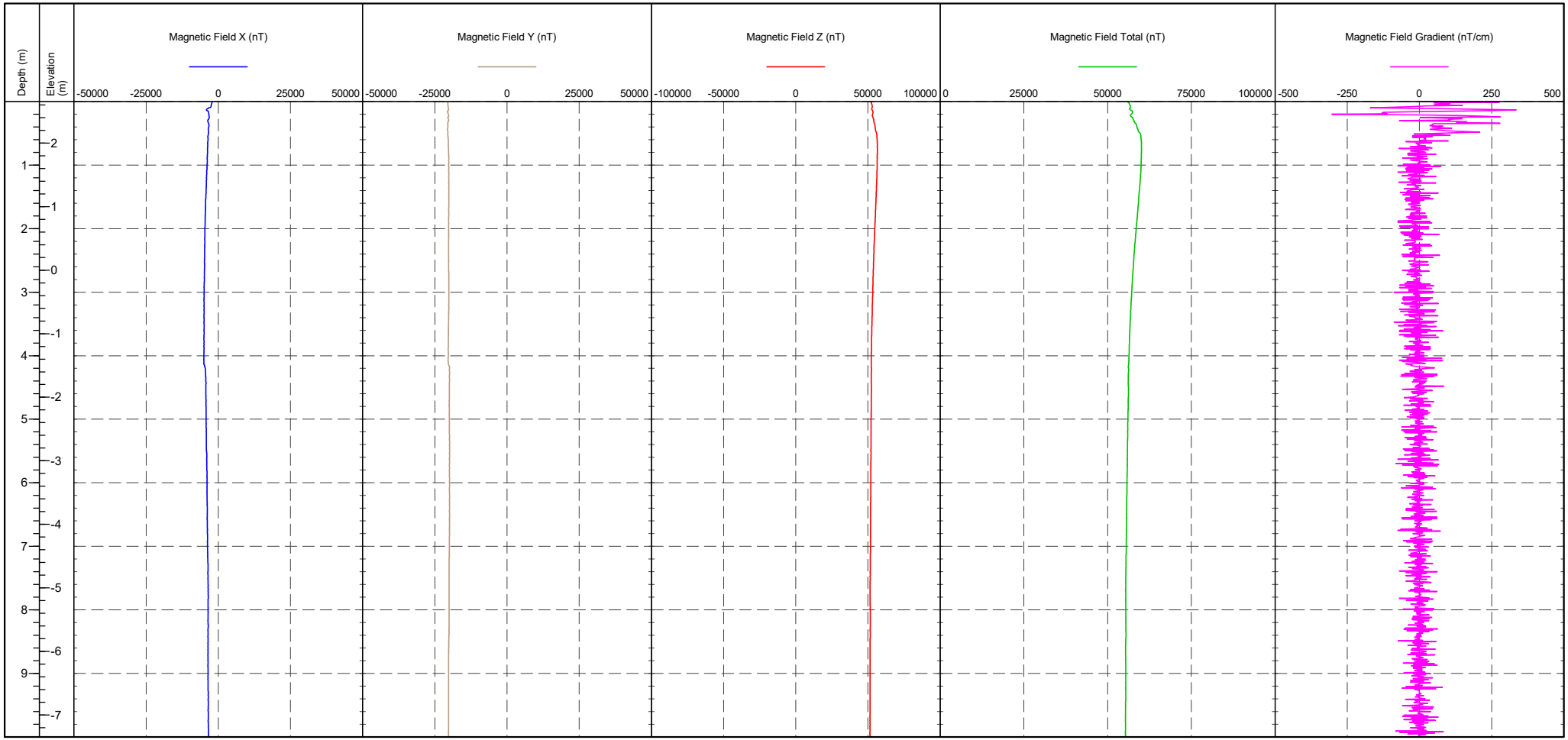
DRAWN	DATE 02/10/2018	
CHECKED	DATE 02/10/2018	
SCALE Not To Scale		A4
PROJECT No 1170456	FIGURE No	

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:38 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

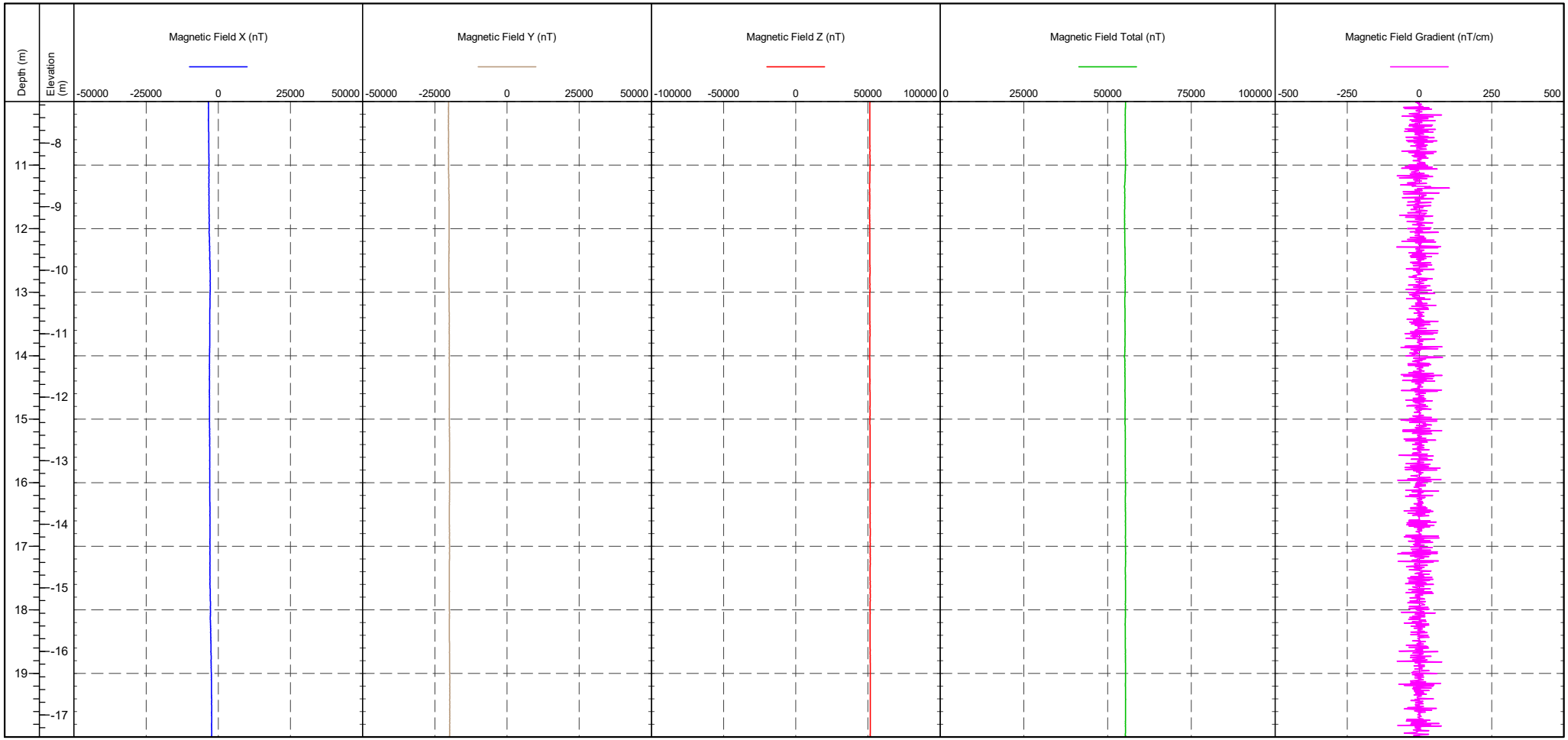


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

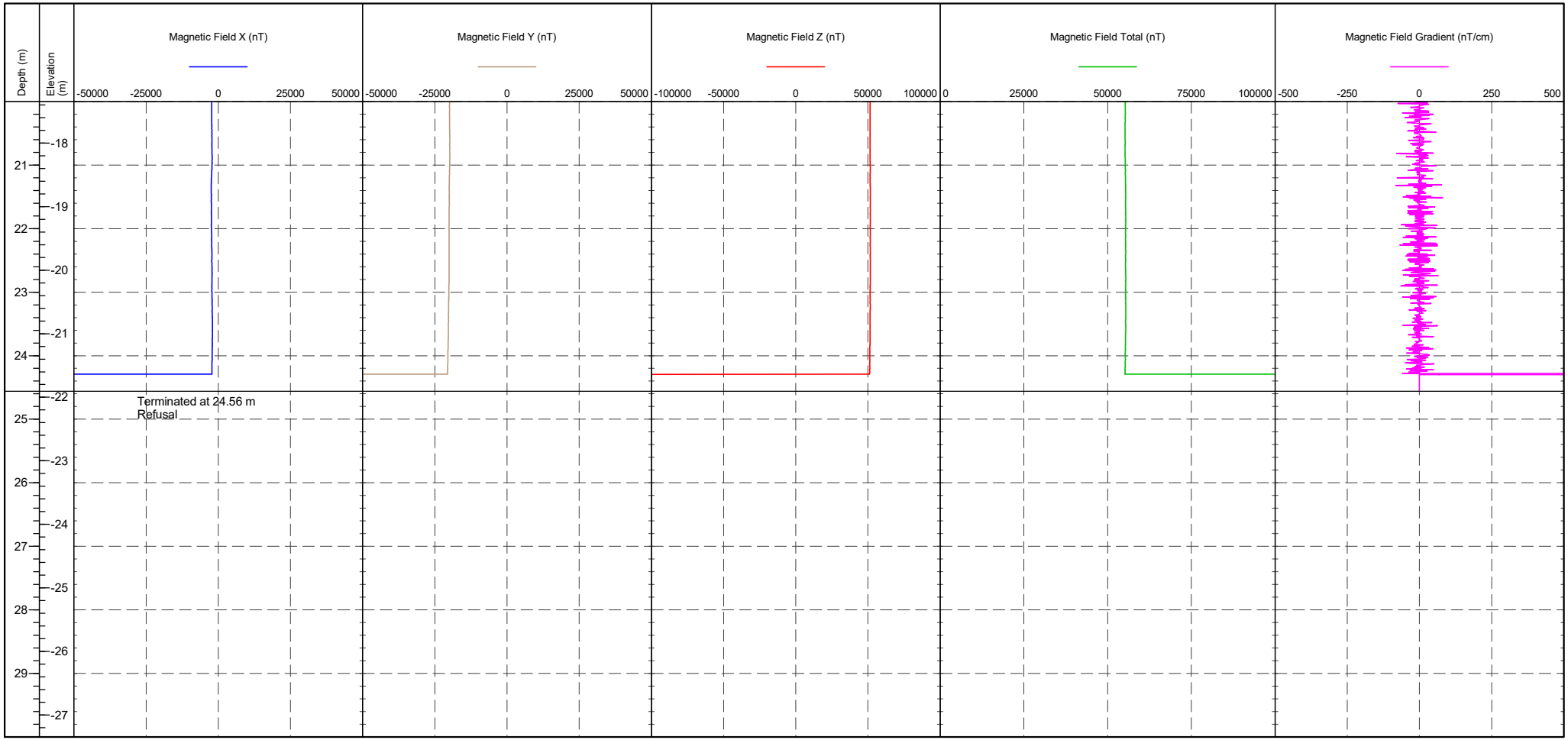


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

geosphere environmental ltd

investigate design resolve

FACTUAL GROUND INVESTIGATION REPORT

FOR A PROPOSED THIRD CROSSING

AT

LAKE LOTHING, LOWESTOFT, SUFFOLK

Prepared For

Suffolk County Council
Endeavour House
8 Russell Road
Ipswich
IP1 2BX

Report Reference Number:	2543,GI/GROUND/LF,GF/23-10-18/V2
Project Number:	2543,GI
Issue Number	3
Issue Date:	23 October 2018






ADDRESS
Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

TELEPHONE
01603 298 076

FAX
01603 298 075

WEBSITE
www.geosphere-environmental.co.uk

DOCUMENT ISSUED RECORD

Report Number:	2543,GI/GROUND/LF,GF/23-10-18/V2
Client:	Suffolk County Council c/o WSP
Project:	Third Crossing at Lake Lothing, Lowestoft, Suffolk
Project Number:	2543,GI
Report Type:	Ground Investigation
Date of Report:	23 October 2018

Prepared by:	**Lianne Fountain** *Geoenvironmental Consultant*	[redacted]	Date: 23 October 2018
	Joe Glenwright *Assistant Geoenvironmental Consultant*	[redacted]	Date: 23 October 2018
Reviewed by:	**Geoff Faro** *Principal Engineering Geologist*	[redacted]	Date: 23 October 2018
Authorised by:	**Paul Davies** *Director*	[redacted]	Date: 23 October 2018

Prepared by:	Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ. Telephone (01603) 298 076. www.geosphere-environmental.co.uk
Confidentiality, Copyright and Reproduction	This document has been prepared by Geosphere Environmental Ltd in connection with a contract to supply goods and/or services and is submitted only on the basis of strict confidentiality. The contents must not be disclosed to third parties other than in accordance with the terms of the contract. Geosphere Environmental Ltd accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

REVISION RECORD

Revision	Date	Document	Prepared By:	Admin
V2	02-10-18	2543,GI,GROUND,LF,GF,19-09-18,V1-DRAFT	JG	AD
V3	23-10-18	2543,GI,GROUND,LF,GF,17-10-18,V2	JG	AD

AMENDMENT RECORD

Revision	Date	Amendments

CONTENTS

Page No.

DOCUMENT ISSUED RECORD		**2**
1.	**INTRODUCTION**	**5**
1.1	Purpose of Investigation	5
1.2	CDM Responsibilities	5
2.	**SITE SETTINGS**	**6**
2.1	Site Description	6
3.	**SITE WORKS**	**8**
3.1	Methodology	8
3.2	Scope	8
3.2.1	Service Avoidance	9
3.2.2	Cable Percussion Boreholes	9
3.2.3	Installations	10
3.2.4	Trial Pitting	11
3.2.5	Cone Penetration Testing (CPT)	11
3.2.6	Windowless Sampling	11
3.2.7	Inspection Pits	12
3.2.8	Plate Load Testing	12
3.2.9	Environmental Sampling	12
3.2.10	In-situ Headspace Testing	13
3.2.11	Ground Gas Monitoring	13
3.2.12	Groundwater Level Monitoring	13
3.2.13	Borehole Purging and Groundwater Sampling	13
3.2.14	Amendments from Proposed Scope and Cancellations	14
3.2.15	Invasive Species	14
4.	**LABORATORY TESTING**	**15**
4.1	Methodology	15
4.2	Environmental Testing	15
4.2.1	Quality Control	15
4.2.2	Environmental Testing Suites	15
4.3	Geotechnical Testing Suite	18
APPENDICES		**20**
APPENDIX 1 – ACRONYMS AND ABBREVIATIONS		**21**
APPENDIX 2 – REPORT LIMITATIONS AND CONDITIONS		**22**
APPENDIX 3 – EXPLORATORY HOLE LOG LEGEND		**23**
APPENDIX 4 – CABLE PERCUSSION BOREHOLE LOGS		**24**

APPENDIX 5 – CABLE PERCUSSIVE BOREHOLE HAND PITS 25

APPENDIX 6 – TRIAL PIT LOGS 26

APPENDIX 7 – WINDOWLESS SAMPLER BOREHOLE LOGS 27

APPENDIX 8 – INSPECTION PIT LOGS 28

APPENDIX 9 – CONE PENETROMETER TEST RESULTS 29

APPENDIX 10 – PLATE BEARING TEST RESULTS AND LOGS 30

APPENDIX 11 – EXPLORATORY HOLE CO-ORDINATES 31

APPENDIX 12 – PHOTOGRAPHS 32

APPENDIX 13 – SUMMARY OF SCHEDULES AND ENVIRONMENTAL LABORATORY TEST RESULTS 33

APPENDIX 14 – GEOTECHNICAL LABORATORY TEST RESULTS INCLUDING BATCH SUMMARY AND UNSUITABLE SAMPLE RECORDS 34

APPENDIX 15 – GROUND GAS MONITORING DATA 35

APPENDIX 16 – GROUNDWATER MONITORING DATA 36

APPENDIX 17 – GROUNDWATER PURGING DATA 37

APPENDIX 18 – REFERENCES 38

APPENDIX 19 – DRAWINGS 39

APPENDIX 20 – SCHEDULE OF EXPLORATORY HOLES 40

APPENDIX 21 – LABORATORY UKAS ACCREDITATIONS 41

1. INTRODUCTION

Geosphere Environmental Ltd was commissioned by the Client, Suffolk County Council, to undertake a Ground Investigation for a proposed Third Crossing at Lake Lothing, Lowestoft, Suffolk.

The specification of the ground investigation was provided by The Designers; WSP, under the guidance of the Institute of Civil Engineers publication 'UK Specification for Ground Investigation, Second Edition', published in 2012 (ref. **R.1**). Project specific criteria was provided within a supplementary document provided by Mouchel (later WSP), reference 1069948/000/SPEC - 'Specification for Ground Investigation', Version 3, dated February 2017 (ref. **R.2**).

It is understood that the proposed development is to comprise of the construction of a third bascule bridge crossing and new road alignments linking the north and south of Lake Lothing.

1.1 Purpose of Investigation

In accordance with the above referenced document, the primary objectives of the ground investigation were to:

- Determine a detailed stratigraphy of the site's underlying ground conditions through intrusive investigations;
- Investigate the groundwater conditions at the site through intrusive ground investigations;
- Obtain soil samples in order to carry out the laboratory testing to determine geotechnical parameters for the design process;
- Obtain soil and groundwater samples in order to carry out geo-environmental testing of the existing ground;
- Carry out in-situ testing to determine geotechnical and structural parameters for design; and
- Carry out geochemical laboratory testing to determine potential ground aggressiveness to the proposed structures.

The following items were included within the original scope of works but were later postponed or cancelled:

- Carry out intrusive investigation to determine the extents and details of existing buried services, i.e. quay wall ties and anchors – postponed to a later phase of the project; and
- Carry out in-situ groundwater piezometer testing.

Further details are provided within section 3.2.14 of this report.

1.2 CDM Responsibilities

Under CDM regulations, roles were fulfilled as follows:

- Client, Suffolk County Council (referred to as SCC);
- Principal Designer & Investigation Supervisor, WSP; and
- Principal Contractor, Geosphere Environmental Ltd.

2. SITE SETTINGS

2.1 Site Description

The subject site comprised of a number of land parcels adjacent to and including a section of Lake Lothing, a large saltwater lake in Lowestoft, Suffolk, which connects to the North Sea. A Site Location Plan is presented as Figure 1 below.

The site is separated into three sites: Site A, Site B and Site C, as shown in Figure 1 below and can be further divided into a number of land parcels as presented within Figure 2 below. Descriptions of the sites and land parcels have been provided below. Investigation was not required within all land parcels and therefore only the parcels investigated are described below.

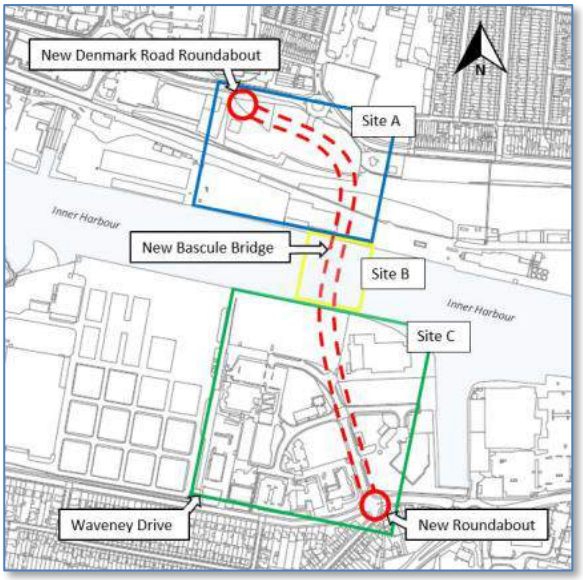


Figure 1 – Aerial Image of the Lake Lothing Site
Source: Lake Lothing Third Crossing GI Specification by WSP

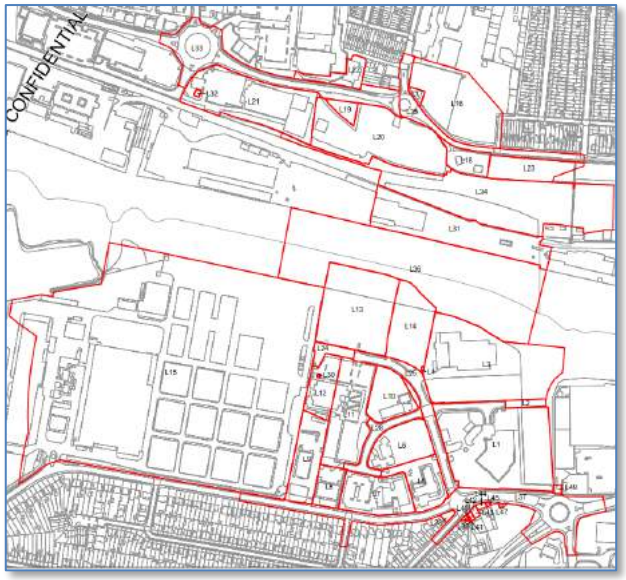


Figure 2 – Land Parcel Location Plan
Source: Provided by WSP, drawing dated June 2016

Site A
Site A, comprised of four land parcels for investigation L19, L20, L34 and L31. At the time of the investigation, L19 and L20, were derelict compounds associated with a former industrial site, whereas L34 and L31, comprised of active industrial sites belonging to Network Rail and ABP respectively.

Hardstanding (concrete or flexible surfacing) covered the entirety of parcels L20 and L31. L19, comprised of a built-up, heavily vegetated area of softstanding bordered by wooden fencing. Access to L19 was by a small, steep slope from L20, meaning access by plant was not possible. L34, comprised of sections of compacted hard-core and softstanding which also meant access by plant was difficult during periods of rainfall.

Site B
Site B, comprised of a section of Lake Lothing within the Inner Harbour of the Port of Lowestoft, immediately adjacent to Sites A and C. Although originally included within the scope of works, revision to the scope meant that intrusive works on Site B, were no longer required within this phase of investigation.

Site C
Site C, encompassed a number of land parcels of differing use and size. The majority of the exploratory holes were focussed on the derelict former industrial site of L13/L14 and the active carriageway and footway of Riverside Road (L25). A limited number of exploratory holes were also positioned within the land of the

neighbouring active businesses along Riverside Road, such as Lings Motor Group, Bellablue Beauty Clinic and Suffolk County Council's Births, Deaths and Marriages office.

As some exploratory hole locations were positioned along the active carriageway and footway of Riverside Road, traffic management procedures were required during intrusive works.

3. SITE WORKS

3.1 Methodology

The investigation was undertaken in accordance with The GI Specification, 'UK Specification for Ground Investigation, Second Edition', 2012, (ref. **R.1**) and also in line with the 'Lake Lothing Third Crossing Specification for Ground Investigation' by Mouchel (later WSP), dated February 2017 (ref. **R.2**).

The locations of the exploratory holes have been surveyed using GPS methods and plotted onto base plans of the site. These exploratory hole location plans are presented within Appendix 17 of this report, Drawing refs. 17148/M/01-02 and 17148/M/02-02, produced by EDI Surveys Ltd.

3.2 Scope

Intrusive site works were undertaken between July 2017 and May 2018 and comprised of the following:

- Twenty-five cable percussion boreholes within Sites A and C, to a scheduled depth of between 15m bgl and 50m bgl;
- Installation of ten 50mm diameter ground gas and groundwater monitoring wells in nine cable percussion borehole locations within Sites A and C, including a dual monitoring well installation within location BHC24;
- Sixteen machine-excavated trial pits within Sites A and C, to a scheduled depth of 3.0m bgl;
- Fourteen windowless sampler boreholes within Sites A and C, to a maximum depth of 5.0m bgl;
- Eighteen Cone Penetrometer Tests, (CPTs) within Sites A and C, to a maximum depth of 25.0m bgl;
- Five hand-dug inspection pits within the L19 land parcel, to a maximum depth of 1.5m bgl;
- Eleven In-situ Plate Load Bearing tests, using a 600mm diameter plate, and three In-situ Plate Load Bearing, using a 300mm diameter plate; and
- In-situ soil logging in accordance with BS5930:2015 (ref. **R.3**) was undertaken at each exploratory hole location with the exception of the CPT locations.

Monitoring and groundwater sampling works were undertaken after the completion of the intrusive works, between May and July 2018, and comprised of the following:

- Ground gas monitoring using a Gas Analyser and Photoionization Detector to measure concentrations of Methane, Carbon Dioxide, Oxygen and Volatile Organic Compounds (VOCs), as well as gas flow rate at each monitoring well location;
- Groundwater level monitoring using a dip-meter to measure water levels within each monitoring well location;
- Purging of monitoring wells whilst measuring conductivity, pH, temperature, dissolved oxygen and Redox potential until stabilisation of these parameters; and
- Collecting groundwater samples from each location (where possible) subsequent to purging of the monitoring wells.

3.2.1 Service Avoidance

Prior to any intrusive works being undertaken, the following measures were carried out at each exploratory hole location in order to minimise the risk of service strikes:

- Review of available Client-supplied service drawings;
- Observation of any visible indicators of services (trenching scars and manholes etc.); and
- Scan with a Cable Avoidance Tool (C.A.T).

The following measures were also undertaken at the borehole locations in order to minimise the risk of service strikes during drilling:

- Excavation of a hand-dug service pit to minimum depth of 1.2mbgl; and
- Secondary scan with a Cable Avoidance Tool (C.A.T) at the base of the service pit.

3.2.2 Cable Percussion Boreholes

Cable percussion boreholes were undertaken using Dando 3000, Dando 2500 and Dando 175 drilling rigs by two drilling crews, Drilltechnics Ltd and James and Milton Drilling Ltd.

Boreholes were drilled to target depths of between 15.0m bgl and 50.0m bgl.

Representative disturbed samples for geotechnical and environmental purposes were collected during drilling, as well as undisturbed thin wall UT100 samples within cohesive soils. Where very soft or alluvial soils were encountered, in some boreholes piston sampling was attempted instead of a UT100 sample.

Standard Penetration Tests (SPTs) were carried out at metre intervals during drilling, alternating with UT100 samples within cohesive soils. The depths of recovered samples and results of SPTs are presented on the exploratory hole logs, provided within Appendix 4 of this report.

If a borehole was located on hardstadning , then the location was cored prior to borehole formation.

Casing was used and progressively reduced with depth dependant on the ground consiotions. Starting casing was either 10” or 12” and at each casing reduction an environmental seal was installed – sees ection 3.2.2.1.

Recovered soils were logged by the Lead Driller and Supervising Engineer from Geosphere Environmental Ltd.

BHC02 and BHC13 did not achieve target depth due to adverse driling conditions, see section 3.2.2.2

BHC06 was redrilled a number of times. The original BHC06 reached target depth but due to blowing sands, in-situ testing was not recovered. BHC06A was positioned approximately 7m from the original position by the Investigation Supervisor, however, an underground storm drain prevented progression and therefore the position was moved for a final time to BHC06B which reached target depth with in-situ data recovered.

3.2.2.1 Groundwater Protection Measures

Each borehole was cased, which was progressively reduced in diameter with depth. Environmental seals of bentonite pellets, adequately hydrated were installed with every change in casing diameter, in order to minimise downward mobilisation of any contaminants within shallow soils or Made Ground.

3.2.2.2 Limitations to drilling method due to ground conditions

As mentioned above, a number of boreholes did not achieve the target depth due to adverse drilling conditions where saturated granular soils were subject to excess hydrostatic pressures, sometimes referred to as blowing sands. In this scenario, the staturated granular soils progress up into the casing when the drillling tool is removed. The reduces the actual depth of the borehole and renders in-situ testing results as void. SPT results for example, record much lower results than non-blown similar strata.

This explains why BHC06 and BHC04 were completed to the target depth however, little in-situ testing was obtainable. A switch of drilling methodologies and contractors took place at the end of November 2017. Drilling fluid, i.e. water or a 'Dandopol' polymer/water mix, was added to some of the boreholes to aid drilling. This helped mitigate the blowing within strata, however, the drilling speed was also significantly hindered. This resulted in boreholes taking far longer than previously anticipated within the specification document and pre-start duration of works pushing a 7 week project into 39 weeks.

Where records of added water and polymer have been provided by the drillers, they have been included within the exploratory hole logs.

3.2.2.3 UXO Clearance

UXO clearance was undertaken by a suitably trained operative using a magnetometer on ten of the boreholes (BHC02, BHC03, BHC04, BHC06, BHC10, BHC15, BHC17, BHC20, BHC24, BHC28). The holes selected for magnetometer testing was based upon the risk designation and mitigation measures recommended on the in depth UXO report, reference '6608TA', provided by the client within Appendix D.

3.2.3 Installations

Daily drilling records and exploratory hole logs were provided to the Investigation Supervisor during drilling of the cable percussion boreholes. These records were used by the Investigation Supervisor to determine monitoring well installation details.

The installations were predominantly combined ground gas and groundwater monitoring wells, with the exception of location BHC24, where dual monitoring wells were installed at different depths in order to monitor ground gas and groundwater levels separately.

Ground gas and groundwater monitoring installations were solely made from 50mm HDPE well pipe. The specified response zone of each installation consisted of filter packs of 3 to 5mm gravel and slotted well pipe (with geosock membrane). Bentonite pellets were used to seal off and isolate response zones. All installations were finished with a bung and gas tap and a flush well cover, or raised cover in the case of BHC08 only.

The installation depths are included on the borehole logs presented in Appendix 4 and the subsequent monitoring data is included in Appendices 16 and 17.

3.2.4 Trial Pitting

Trial pitting was undertaken using a JCB 3CX wheeled excavator with bladed (i.e. non- toothed) bucket. Break-out of hardstanding surfaces was required within the majority of the locations and therefore the pecker attachment of the digger was utilised. A second service scan using a CAT was undertaken beneath the hardstanding prior to further excavation, to minimise the risk of service strikes.

An Archaeological Watching Brief was in place during the trial pitting and excavation was undertaken in shallow layers to assist the archaeologist.

Disturbed samples were collected at the intervals indicated on the Ground Investigation Specification for both environmental and geotechnical purposes.

In-situ Plate Load Tests were undertaken within selected trial pit locations as described in section 3.2.8.

The target depth of all holes was 3.0m bgl, although groundwater ingress or sidewall instability caused some trial pits to be terminated before the target depth. Approval by the Investigation Supervisor was sought, prior to terminating the trial pits.

3.2.5 Cone Penetration Testing (CPT)

Cone Penetration Testing was undertaken by IN-SITU Site Investigation at eighteen locations at the site, in order to provide information on soil conditions and geotechnical parameters.

Concrete coring or break-out and hand-dug inspection pits were undertaken by GEL prior to commencement of the tests.

The tests included measurements of cone resistance, sleeve friction, porewater pressure and inclination. The site works and factual reporting undertaken by IN-SITU Site Investigation were carried out in accordance with the international technical standard, BS EN ISO 22476-1:2012, (ref. **R.4**).

The results of the CPT testing and details of the interpretation methods are included in Appendix 9.

3.2.6 Windowless Sampling

Windowless sampling was not included within the original scope of works outlined within the Ground Investigation Specification. However, due to the concentration of services along Riverside Road, windowless sampling was deemed to be a safer alternative to the proposed trial pits.

A number of windowless sampler boreholes were also undertaken within the locations of some cable percussion boreholes, in order to obtain shallow soil data for environmental purposes before commencement of the cable percussion boreholes, for example, WSC19 and WSC22.

A service scan and hand-dug inspection pit was undertaken within each location before drilling and service break-out carried out where required.

Recovered material was logged by an experienced engineer upon recovery and a number of representative samples were taken for environmental purposes within amber glass jars and air-tight plastic tubs. Small disturbed and bulk samples were taken from selected holes for geotechnical purposes.

The target depth of the windowless sample boreholes was 3.0m below any Made Ground. Where this was not achieved due to the presence of potential blowing sands or borehole collapse, the hole was terminated and instruction was sought from the Investigation Supervisor.

3.2.7 Inspection Pits

Due to the raised ground level and dense vegetation, access by plant to the L19 land parcel could not be achieved, and therefore five hand-dug inspection pits (IPC01-IPC05) were undertaken in order to assess the shallow soils.

At each location, a hand dug pit was excavated to c. 1.2m bgl and then hand auger techniques were used to continue the hole as deep as possible. Due to the loose, silty nature of the recovered soils, a maximum depth of 1.5m bgl, was achieved.

The soils were logged by a Geosphere Environmental engineer and sampled for environmental purposes.

Hand-dug inspections pits were undertaken within each cable percussion, windowless sampler and Cone Penetration Test location, as a precautionary measure to identify any potential services prior to drilling.

Although proposed as cable percussion or windowless sampler locations, exploratory holes BHC30, BHC31, WSC16 and, WSC101 were concluded as hand-dug inspection pits only, due to access constraints (BHC30, BHC31) or obstructions (WSC16, WSC101).

An exploratory hole location plan for the above inspection pits, Drawing ref. 2543,GI, 001/Rev 0 is included within Appendix 19.

3.2.8 Plate Load Testing

In-situ Plate Load Testing was undertaken by Eurotest Ltd, using a 600mm or 300mm diameter plate within a number of selected trial pit locations.

Within each location, the trial pit was excavated to a depth of around 0.5m bgl and a Plate Load Test undertaken. A disturbed bulk sample was then collected of the tested soils for subsequent laboratory CBR testing, if required. The results of Plate Load Testing are provided within Appendix 10 of this report.

3.2.9 Environmental Sampling

Samples were collected from the exploratory holes for environmental purposes.

Soil samples were collected in airtight plastic tubs and amber glass jars and groundwater samples were taken in glass and plastic bottles and glass vials. The samples were taken at the depth intervals specified within the Specification, with additional samples collected where visual and olfactory indicators of contamination were present.

The types and depths of the collected samples are included in the exploratory hole logs which are included in Appendix 4.

3.2.10 In-situ Headspace Testing

Headspace testing was undertaken on all environmental glass jar samples shortly after recovery using a Photoionization Detector (PID).

Jar samples were inserted into an air-tight plastic bag with lids removed, disturbed and then left for a period of time to allow any compounds to disperse into the plastic bag. The PID tube was then inserted into the bag and the readings monitored for a minimum of 30 seconds. The highest reading was logged and any visual or olfactory evidence of contamination noted.

3.2.11 Ground Gas Monitoring

Six rounds of ground gas monitoring were undertaken following completion of the intrusive works on a fortnightly basis in conjunction with the borehole groundwater purging and sampling.

A Gas Analyser and PID were used by an experienced Geosphere Environmental Ltd engineer, to monitor concentrations of Methane (CH_4), Carbon Dioxide (CO_2), Oxygen (O_2) and Volatile Organic Compounds (VOCs) from the monitoring installations. The Gas Analyser was also used to measure borehole gas flow rate (l/hr) and atmospheric pressure (mb).

The results of ground gas monitoring are presented within Appendix 15 of this report.

3.2.12 Groundwater Level Monitoring

Monitoring of groundwater levels was carried out daily during the intrusive works and after the completion of the intrusive works on a fortnightly basis, in conjunction with the ground gas monitoring and borehole groundwater purging and sampling.

A water level dip meter was inserted into the monitoring installation and the depth of water recorded once indicated by the dip meter. The results of the groundwater level monitoring are provided within Appendix 16 of this report.

3.2.13 Borehole Purging and Groundwater Sampling

Monitoring installations were purged and sampled on a fortnightly basis. Purging was undertaken until stabilisation of the measured parameters and a groundwater sample taken afterwards.

Groundwater was monitored for conductivity, pH, temperature, dissolved oxygen and Redox potential during purging. Groundwater samples were undertaken following purging and collected in glass and plastic bottles and glass vials for environmental testing.

Samples were received by the laboratory within twenty-four hours of sample recovery.

The groundwater purging data are provided within Appendices 16. The groundwater chemical laboratory results are included within Appendix 13.

3.2.14 Amendments from Proposed Scope and Cancellations

Some amendments to the proposed scope have been discussed within the preceding sections, such as, the windowless sampling. Further changes have been outlined below.

The original scope included the following works which were postponed to a later phase of the project due to access constraints or impracticalities:

- Ten offshore cable percussion boreholes to a maximum depth of 40.0m below sea bed level;
- Twelve self-boring pressure meter tests within two overwater boreholes;
- Four observation trenches to determine the construction of the existing quay walls; and
- Two electrical soil resistivity measurements (ESRM).

Further to the above, the following proposed exploratory hole locations were cancelled by the investigation supervisor during fieldwork due to access constraints or unacceptable risk of service strikes:

- Cable percussion borehole locations: BHC11, BHC12, BHC16, BHC21, BHC25, BHC29. Hand-dug inspection pits for locations BHC30 and BHC31 were undertaken in preparation for drilling, although the holes were cancelled before the borehole commenced;
- Cone Penetrometer Test locations: CPTC16, CPTC17 and CPTC19. Location CPTC16, was replaced by location WSC16/WSC16a;
- Trial pit locations: TPC11, TPC12, TPC13, TPC14, TPC15, TPC16, TPC17, TPC18, TPC19, TPC20. Location TPC14, was replaced by WSC14.

3.2.15 Invasive Species

The presence of an invasive species, Japanese Knotweed (*Fallopia japonica*) was noted by GEL within section L19. WSP and SCC were informed immediately.

The extent and cause of knotweed presence could not be determined as part of these works and should be dealt with under a separate invasive species survey and a Knotweed Management Plan (KMP) be drawn up as appropriate to detail and record any control or eradication put in place

4. LABORATORY TESTING

4.1 Methodology

Representative disturbed and undisturbed samples were taken at the depths shown on the exploratory hole logs and were dispatched to the relevant laboratories. The exploratory hole logs are included in Appendix 4 of this report.

Soil samples for environmental purposes were collected in amber glass jars and airtight plastic pots and kept in a cool box to reduce sample degradation. Groundwater samples were collected in litre glass and plastic bottles and small glass vials.

Samples collected for geotechnical assessment were recovered in plastic bulk bags, airtight plastic tubs and undisturbed UT100 or piston sample liners. The sample containers and storage methods were used to prevent moisture loss of the natural soils.

Daily drilling records and draft engineering logs with sample details were submitted to the Investigation Supervisor shortly after sample recovery, along with chain of custody forms with sample details to facilitate scheduling of testing. Upon receipt of the analysis schedule, completed chain of custodies were submitted to the relevant laboratories for testing to begin.

4.2 Environmental Testing

4.2.1 Quality Control

The environmental laboratory used, Chemtest Ltd, was an accredited laboratory by the United Kingdom Accreditation Service (UKAS), and at least 50% of individual parameters are from methods pending accreditation to the Environment Agency Monitoring Certification Scheme (MCERTS) for the range of analyses undertaken as part of this investigation. The laboratory UKAS certificate is included within Appendix 21.1 in the back of the report and includes the accreditations for each test the lab provides.

4.2.2 Environmental Testing Suites

The selected samples and suites of chemical analysis were scheduled by the Investigation Supervisor. The nature of the analyses is detailed below:

Total Soil Analysis

- Metals – arsenic, cadmium, chromium (III and VI), lead, mercury, selenium, boron (water soluble), beryllium, copper, nickel and zinc;
- Inorganics – cyanide (total and free), sulphate (total and water soluble as 2:1 extract);
- Others – pH, asbestos screen, soil organic matter;
- Speciated polycyclic aromatic hydrocarbons (USEPA-16);
- Speciated total petroleum hydrocarbons (TPH CWG) C5-C35 with aliphatic and aromatic split;
- BTEX (benzene, toluene, ethylbenzene and xylene) and MTBE (Methyl tertiary butyl ether);
- Phenol;
- Speciated volatile organic compounds (VOCs) and speciated semi-volatile organic compounds (SVOCs);

- Speciated polychlorinated biphenyls (EPC7 congeners or WHO – 12 congeners).

Soil Leachability Analysis

- Leachate prep;
- Metals – arsenic, cadmium, chromium (III and VI), lead, mercury, nickel, selenium, copper, zinc and boron;
- Inorganics – cyanide (free and total), soluble sulphate;
- pH;
- Phenol and speciated phenols;
- Speciated polycyclic aromatic hydrocarbons (USEPA-16);
- Speciated total petroleum hydrocarbons (TPH CWG) C5-C35 with aliphatic and aromatic split;
- BTEX (benzene, toluene, ethylbenzene and xylene) and MTBE (Methyl tertiary butyl ether); and
- Speciated semi-volatile organic compounds (SVOCs).

Water Analysis

- Metals – arsenic, cadmium, chromium (III and VI), lead, mercury, nickel, selenium, copper, zinc and boron;
- Inorganics – cyanide (free and total), soluble sulphate;
- pH;
- Phenol and speciated phenols;
- Speciated polycyclic aromatic hydrocarbons (USEPA-16);
- Speciated total petroleum hydrocarbons (TPH CWG) C5-C35 with aliphatic and aromatic split;
- BTEX (benzene, toluene, ethylbenzene and xylene) and MTBE (Methyl tertiary butyl ether); and
- Speciated volatile organic compounds (VOCs) and speciated semi-volatile organic compounds (SVOCs).

Waste Acceptance Criteria Testing

- WAC eluate suite;
- Total organic carbon;
- BTEX (benzene, toluene, ethylbenzene and xylene);
- Polychlorinated biphenyls (PCB 7 congeners);
- Mineral oil (C_{10} – C_{40});
- Speciated polycyclic aromatic hydrocarbons (USEPA-16);
- Loss on ignition;
- Acid neutralisation capacity at pH 4 and pH 6; and
- pH.

The laboratory test results are included in Appendix 13 of this report. A summary of the testing is provided in Tables 1, 2 and 3 below:

Table 1 – Summary of soils testing.		
TESTING	**BOQ ITEM REF.**	**TOTALS**
SOILS		
Metals	L3.1.1	88
pH	L3.1.2	88
TPH CWG	L3.1.3	97
VOC by GCMS	L3.1.4	97
SVOCs by GCMS	L3.1.5	91
Speciated PAH	L3.1.6	97
Ammonia	Email agreement	88
Phenols	L3.1.7	90
SOM	L3.1.8	33
Cyanide - total	L3.1.9	87
Cyanide - free	L3.1.10	87
PCBs EC7	L3.1.11	37
PCBs WHO 12	L3.1.12	36
Sulphate - total	L3.1.13	85
Sulphate - water sol	L3.1.14	88
Asbestos	L3.1.15	57
Total WAC	L6.1.1	22

Table 2 – Summary of leachate testing		
TESTING	**BOQ ITEM REF.**	**TOTALS**
LEACHATE		
Leachate prep	L5.1.1	28
Metals	L5.1.2	27
Ammonia	Email agreement	27
Phenols	L5.1.3	28
Cyanide total	L5.1.4	27
Cyanide free	L5.1.5	27
Sulphate water	L5.1.6	27
pH	L5.1.7	27
TPH CWG	L5.1.8	29
SVOC	L5.1.9	29
Speciated PAHs	L5.1.10	29

Table 3 – Summary of groundwater testing		
TESTING	**BOQ ITEM REF.**	**TOTALS**
WATER		
Metals	L4.1.1	49
Ammonia as N	Email agreement	49
Total Cyanide	L4.1.2.	49
Free Cyanide	L4.1.3	49

Table 3 – Summary of groundwater testing		
Water Soluble Sulphate	L4.1.4	49
Ph	L4.1.5	49
TPH CWG	L4.1.6	49
BTEX	L4.1.6	49
MTBE	L4.1.6	49
Phenol	L4.1.7	49
VOCs	L4.1.8	49
SVOCs	L4.1.9	49
PAH	L4.1.10	49

4.3 Geotechnical Testing Suite

The geotechnical testing was scheduled by the Investigation Supervisor and undertaken at Soil Property Testing (SPT) Ltd, which is a UKAS accredited laboratory. The laboratory UKAS certificate is included within Appendix 21.2 at the back of the report and includes the accreditations for each test the lab provides. The following tests were scheduled:

- Moisture content determination;
- Particle size distribution (PSD) by wet sieve;
- Particle size distribution (PSD) by wet sieve and hydrometer;
- Liquid and plastic limit determination;
- Triaxial single stage and multi stage;
- Consolidation testing;
- Soaked California Bearing Ratio (CBR);
- Loss on ignition;
- Soil organic matter; and
- Brownfield suite (pyrite present or absent).

The laboratory test results are included in Appendix 14 of this report.

A summary of the geotechnical testing undertaken is presented in Table 4 below;

Table 4 – Summary of Geotechnical testing		
GEOTECHNICAL LABORATORY TESTING		
TESTING	**BOQ REF.**	**TOTALS**
Moisture content	K1.1	377
PSD by wet sieve	K1.9	152
PSD by wet sieve + hydrometer	K1.9 + K1.12	32
PSD by hydro inc pre sieve	K1.12	237
Liquid/Plastic Limit	K1.2	147
Wet Sieve	Extra over	68
Sedimentation by Hydrometer	K1.12	13
Triaxial test single	K6.16	84
Triaxial multi stage	K6.4	3
Consolidation	K4.1	10
Conol extra 24 hrs	K4.2	9
Soaked CBR with compaction	K3.9	33
Soaked Days from above	K3.10	104
Soaked CBR Swelling Measurement	Extra Over	13
Compaction with 2.5kg rammer	K3.1	30
Compaction with 4.5kg rammer	K3.2	9
Loss on Ignition	K2.2	19
Organic matter	K2.1	47
Brownfield Site pyrite absent	K9.3	15
Brownfield site pyrite present	k9.4	74

APPENDICES

ADDRESS
Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

TELEPHONE
01603 298 076

FAX
01603 298 075

WEBSITE
www.geosphere-environmental.co.uk

APPENDIX 1 – ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
ACM	Asbestos containing material
ADE	Average daily exposure
ASPT	Average score per Taxon
BOD	Biochemical oxygen demand
BH	Borehole
BRE	Building Research Establishment
BS	British Standard
BTEX	Benzene, Toluene, Ethyl benzene and Xylenes
CIRIA	Construction Industry Research and Information Association
CLEA	Contaminated Land Exposure Assessment
CLR	Contaminated Land Research reports
DEFRA	Department of the Environment, Food and Rural Affairs (formerly the DoE and DETR)
DETR	Department of the Environment, Transport and the Regions (formerly the DoE and now Defra)
DO	Dissolved oxygen
DoE	Department of the Environment (then DETR and later Defra)
DQRA	Detailed quantitative risk assessment (Tier 2)
EA	Environment Agency
EPH	Extractable petroleum hydrocarbons
EQI	Environmental Quality Index
EQS	Environmental Quality Standards
GQRA	Generic quantitative risk assessment (Tier 1)
mAOD	Metres above ordnance datum
mbgl	Metres below ground level
NGR	National grid reference
NHBC	National House Building Council
NRA	National Rivers Authority (now the Environment Agency)
PACM	Potentially asbestos containing material

APPENDIX 2 – REPORT LIMITATIONS AND CONDITIONS

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

The comments given in this report, and any opinions expressed herein, are based upon the readily available information collated for the report.

This report has been prepared for the sole use of the Client, contractors and subcontractors for geo-environmental purposes and it is understood the information contained within this report will be used to determine an accurate ground model and to select the appropriate geotechnical parameters for the purposes of geotechnical and structural design for the scheme.

No extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

This report is prepared and written for the use stated herein; it should not be used for any other purposes without reference to Geosphere Environmental Limited.

Whilst the report may express (directly or indirectly) an opinion on possible configurations of strata between or beyond exploratory holes discussed or on the possible presence of features based on visual, verbal or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

APPENDIX 3 – EXPLORATORY HOLE LOG LEGEND

Exploratory Hole Log Key Sheet

Samples

ENV		Environmental Sample
UT	(4)	Undisturbed Thinwall, 100mm diameter with blow count in brackets
UT/B	(4)	Failed Undisturbed sample recovered as bulk sample with blow count in brackets
WAC		Waste Acceptance Criteria sample
D		Disturbed Sample
B		Large Bulk Sample
CS		Core Sample
W		Water Sample

In-Situ Testing

SPT(s)	Standard Penetration Testing undertaken with Split Spoon Sampler
SPT(c)	Standard Penetration Testing undertaken with Cone
N	SPT N Value

N= blows/penetration - Refused SPT, total blows including seating

SV	Hand Shear Vane Result (kPa)

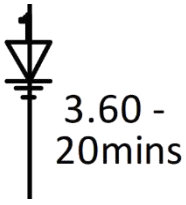
Abbreviations

OD	Ordnance Datum
TCR	Total Core Recovery
SCR	Solid Core Recovery
RQD	Rock Quality Designation
LEG	Legend
m	Meters
CAT	Cable Avoidance Tool
mm	Millimetres
NGR	National Grid Reference

Groundwater Symbols



Groundwater strike with depth (m bgl)



Groundwater (m bgl) 'risen to' level

Installations



Gravel (3-5mm) Filter



Gravel Filter (with 1 slotted pipe)



Gravel Filter (with 1 slotted pipe and 1 plain pipe)



Concrete (with 1 Plain pipe)

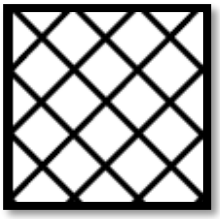


Bentonite Seal (with one pipe)

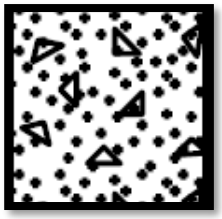
Strata Legend



TOPSOIL



MADE GROUND



CONCRETE



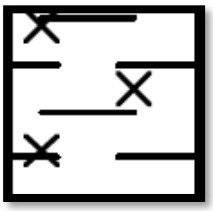
PEAT



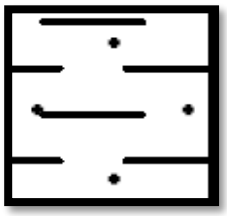
Silty PEAT



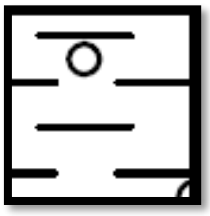
CLAY



Silty CLAY



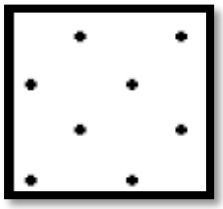
Sandy CLAY



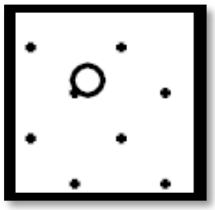
Gravelly CLAY



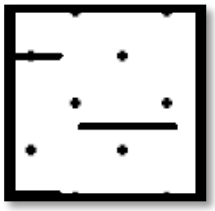
Sandy gravelly CLAY



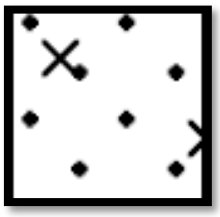
SAND



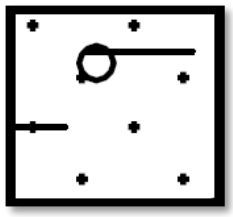
Gravelly SAND



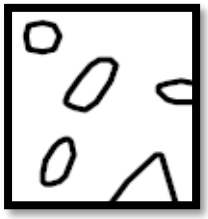
Clayey SAND



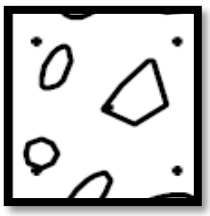
Silty SAND



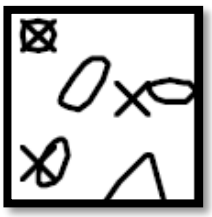
Clayey gravelly SAND



GRAVEL



Sandy GRAVEL



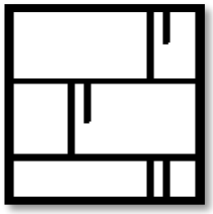
Silty GRAVEL



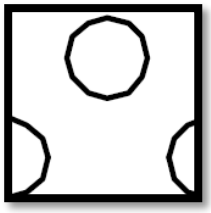
Clayey GRAVEL



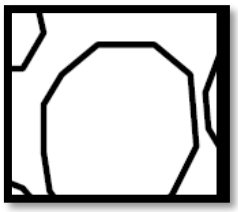
Clayey sandy GRAVEL



CHALK



COBBLES



BOULDERS

APPENDIX 4 – CABLE PERCUSSION BOREHOLE LOGS

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 3.5m 150mm cased from 3.5 to 8.5m	**HOLE No. BHC01**
Ground Level 4.239m OD	Equipment: Dando 3000		DATES 19/04/2018 - 20/04/2018
Coordinates: E 653752.89, N 293039.258 NGR	SHEET 1 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown slightly gravelly silty fine to coarse SAND with rootlets. Gravel of angular to subrounded fine to coarse flint (TOPSOIL)			0.00						
				Dark orange brown and brown mottled slightly gravelly fine and medium SAND. Gravel of subangular to subrounded fine to coarse brick and flint (MADE GROUND)			0.15	0.20 0.20- 0.50 0.30	B B ES ES	1 1 1 J1			VOC = 0ppm
				0.50 Becoming gravelly with depth				0.50	B	2			
								0.70	ES ES	2 J2			VOC = 0ppm
1				Orange brown gravelly medium and coarse SAND. Gravel of subangular to rounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			1.00	1.00 1.00- 1.50 1.10	B B ES ES	3 3 3 J3		–	VOC = 0ppm Hand dug inspection pit undertaken from ground level to 1.20m bgl
								1.50 1.50- 2.00	B B S	5 5	2 2 3 4 5 6	18/300mm	
								1.70	ES ES	4 J4			VOC = 0ppm
2				2.00 Becoming yellow brown with depth			–	2.00 2.04	B EW	6 W2		–	
								2.50 2.58	ES B ES C EW	5 7 J5 W1	2 2 2 3 3 2	10/300mm	VOC = 0ppm
								2.90	EW	W3			
3				Yellow brown slightly gravelly silty fine SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			3.00	3.00 3.00- 3.50 3.12 3.24 3.31	B B EW EW EW	8 8 W4 W5 W6		–	
								3.50	ES B ES C	6 9 J6	3 3 3 4 3 3	13/300mm	VOC = 0ppm
4							–					–	Environmental seal installed from 4.0m to 3.0m bgl
								4.50 4.60	B C ES ES	10 7 J7	2 2 1 2 3 2	8/300mm	VOC = 0ppm
5							–					–	

Remarks: Water (l) added = 75l (1.5m to 15.0m);
50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 3.5m 150mm cased from 3.5 to 8.5m	**HOLE No. BHC01**
Ground Level 4.239m OD	Equipment: Dando 3000		DATES 19/04/2018 - 20/04/2018
Coordinates: E 653752.89, N 293039.258 NGR	SHEET 2 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Yellow brown silty/clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			5.50	5.50	B	11	1 1	9/300mm	
								5.50-6.00	B	11	2 2 3 2		VOC = 0ppm
								5.60	C ES	8 J8			
6							–					–	
								6.50	B S	13	3 3 3 3	12/300mm	
								6.60	ES ES	9 J9	3 3		VOC = 0ppm
7							–					–	
				Yellow brown very clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			7.50	7.50	B	15	1 2	16/300mm	
								7.50-8.00	B S	15 10	3 4 4 5		VOC = 0ppm
								7.60	ES ES	J10			
8							–					–	
								8.50	B S	17	2 3 4 6	22/300mm	
								8.60	ES ES	11 J11	6 6		VOC = 0ppm
9							–					–	
								9.00	B	18			
								9.00-9.50	B	18			
								9.50	B S	20	7 10 11 12	45/300mm	
								9.60	ES ES	12 J12	12 10		VOC = 0ppm
10							–					–	
								10.50	B S	22	5 6 7 6	23/300mm	
								10.60	ES ES	13 J13	5 5		VOC = 0ppm
				Dark grey slightly clayey fine and medium SAND (CRAG GROUP)			10.80						
11													

Remarks: Water (l) added = 75l (1.5m to 15.0m);
50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 3.5m 150mm cased from 3.5 to 8.5m	**HOLE No. BHC01**
Ground Level 4.239m OD	Equipment: Dando 3000		DATES 19/04/2018 - 20/04/2018
Coordinates: E 653752.89, N 293039.258 NGR	SHEET 3 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Dark grey slightly clayey fine and medium SAND (CRAG GROUP) *(continued)*				11.00 11.00- 11.50	B B	23 23			
								11.50	B S	25	10 12 12 15 16 7	50/255mm	
12							–					–	
				Grey medium and coarse SAND with weak to moderate natural organic odour (CRAG GROUP)			12.50	12.50 12.50- 13.00	B B S	27 27	18 7 19 20 11	50/190mm	
13							–					–	
								13.50	B S	29	6 6 4 4 3 3	14/300mm	
14							–					–	
				Grey CLAY with weak to moderate natural organic odour (CRAG GROUP)			14.20	14.30	B B	30 30			
								14.50 14.50- 14.95 14.50 14.50- 15.10 14.60	UT UT B B ES ES	31 31 32 32 14 J14	(35)		UT100 partly in granular soil due to strata change within sample extent VOC = 0ppm
				Dark grey silty medium SAND with moderate natural organic odour (CRAG GROUP)			14.80						
15							–					–	
							15.10						Borehole terminated at 15.1m bgl. Target depth achieved. Backfilled to 4.3m bgl with bentonite grout. Monitoring well installed Borehole Terminated at 15.1m depth.
16							–					–	

Remarks: Water (l) added = 75l (1.5m to 15.0m);
50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 10.0m 200mm cased from 10.0 to 12.0m	**HOLE No. BHC02**
Ground Level 2.532m OD	Equipment: Dando 3000		DATES 11/08/2017 - 17/08/2017
Coordinates: E 653770.926, N 292995.18 NGR	SHEET 1 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00	0.00	EW	W1			
				Orangish brown very gravelly coarse SAND. Gravel of angular to subrounded fine and medium brick and flint (MADE GROUND)			0.20	0.25	ES	J1			VOC=1ppm (peak)
				Greyish brown very gravelly fine and medium SAND. Gravel of fine and medium subrounded to angular red brick and concrete (MADE GROUND)			0.40	0.40	ES	J2			VOC=1ppm (peak)
				Black and brown slightly gravelly organic SAND. Gravel of fine subrounded to subangular flint (MADE GROUND)			0.50	0.60	ES	J3			VOC=1ppm (peak)
				Greyish brown slightly gravelly medium and coarse SAND. Gravel of fine subangular to subrounded fine flint (POTENTIAL MADE GROUND)			0.70	0.90	ES	J4			VOC=0ppm
1		1.00 1.00					–	1.00	B S	1	3 3 4 2	13/300mm	
								1.10-1.40	EW	W2	3 4		
								1.20	D	1			
				Brown fine slightly gravelly silty medium SAND. Gravel of subrounded to rounded flint (POTENTIAL MADE GROUND)			1.30	1.30	ES	J2			VOC=0ppm
								1.41	EW	W4			
								1.47	EW	W5			
								1.57	EW	W6			
								1.71	EW	W3			
				Light brown silty fine SAND with occasional pockets of clay (HAPPISBURGH GLACIGENIC FORMATION)			1.80						
2							–	2.00	B D ES S	2 2 J6	2 1 1 1 2 2	6/300mm	VOC=0ppm
3							–	3.00	B D ES S	3 3 J7	2 1 1 1 3 2	7/300mm	VOC=0ppm
4							–	4.00-5.00	P ES	1 J8		–	>90% recovery from P1 sample within soft soils
								4.00					VOC=0ppm
5							–	5.00	B D ES S	4 4 J9	3 3 6 6 5 7	24/300mm	VOC=0ppm

Remarks: Hand inspection pit excavated by GEL;
50mm HDPE pipe installed with flush cover;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 10.0m 200mm cased from 10.0 to 12.0m	**HOLE No. BHC02**
Ground Level 2.532m OD	Equipment: Dando 3000		DATES 11/08/2017 - 17/08/2017
Coordinates: E 653770.926, N 292995.18 NGR	SHEET 2 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light brown silty fine SAND with occasional pockets of clay (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
6								6.00	B ES P	5 J10 P2			No recovery within P2, bulk taken VOC=0ppm
7								7.00	D B ES S	5 6 J11	1 1 1 3 4 6	14/300mm	VOC=0ppm
8				8.40 - 8.50 Grey clay band, recovered in lumps				8.00	B ES S	7 J12	1 2 1 2 3 1	7/300mm	VOC=0ppm
9				Possible grey slightly silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.20	9.00	U100 B ES	1 8 J13			UT100 failed due to granular material, bulk taken VOC=0ppm Blowing sands encountered from 9.2m bgl
10				9.80 - 10.10 Fine selenite gravel				10.00	B ES S	9 J14	3 2 4 4 5 1	14/300mm	VOC=0ppm Environmental seal installed from 10.0m to 9.0m
11													

Remarks: Hand inspection pit excavated by GEL;
50mm HDPE pipe installed with flush cover;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 10.0m 200mm cased from 10.0 to 12.0m	**HOLE No. BHC02**
Ground Level 2.532m OD	Equipment: Dando 3000		DATES 11/08/2017 - 17/08/2017
Coordinates: E 653770.926, N 292995.18 NGR	SHEET 3 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Possible grey slightly silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									SPT sunk under own weight
12							12.00		S		1 0 0 0 0 0	0/300mm	Borehole Terminated at 12m depth. Borehole terminated at 12.0m bgl. Target depth not achieved due to blowing sands. Backfilled to 11.5m bgl with bentonite grout. Monitoring well installed
13													
14													
15													
16													

Remarks: Hand inspection pit excavated by GEL;
50mm HDPE pipe installed with flush cover;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 8.0m 200mm cased from 8.0 to 15.5m 150mm cased from 15.5 to 25.0m	**HOLE No. BHC03**
Ground Level 2.51m OD	Equipment: Dando 2500		DATES 15/08/2017 - 23/08/2017
Coordinates: E 653815.346, N 292988.561 NGR	SHEET 1 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				MADE GROUND (Brown grey red gravelly sand. Gravel of angular to subrounded brick and flint)			0.20	0.30	ES	J1			
				MADE GROUND (Dark brown slightly gravelly sand. Gravel of subrounded to subangular fine and medium and fine brick)			0.50	0.60	ES	J2			
				Possible MADE GROUND (Pale brown slightly clayey sand. Occasional gravel of rounded to subangular flint)			0.70	0.90	ES	J3			
1		1.00 1.00						1.00	B	1			
								1.20	D	1	2 5	29/300mm	
								1.30	B ES	2 J4	4 8 7 10		
2				Pale brown silty SAND with occasional gravel of subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			2.00	2.00	D B ES	2 3 J5	1 1 3 3 2 4	12/300mm	VOC=0ppm (peak)
3								3.00	D B ES	3 4 J6	1 1 2 1 1 3	7/300mm	VOC=0ppm (peak)
4				Possible pale orange brown slightly clayey fine SAND with occasional grey mottling (HAPPISBURGH GLACIGENIC FORMATION)			4.00	4.00	D B ES	4 5 J7	1 0 1 1 1 1	4/300mm	VOC=0ppm (peak) Blowing sands encountered from 4.6m to 19.0m bgl
5								5.00	D B ES	5 6 J8	1 1 2 1 3 2	8/300mm	VOC=0ppm (peak)

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 1-10m, redrilled due to BS from 4.8 on 16-8-17, redrilled from 9.2m on 17-8-17, redrilled from 10m on 22-8-17, redrilled from 6m on 23-8-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 8.0m 200mm cased from 8.0 to 15.5m 150mm cased from 15.5 to 25.0m	**HOLE No. BHC03**
Ground Level 2.51m OD	Equipment: Dando 2500		DATES 15/08/2017 - 23/08/2017
Coordinates: E 653815.346, N 292988.561 NGR	SHEET 2 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible pale orange brown slightly clayey fine SAND with occasional grey mottling (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
6				Possible pale brown silty SAND with occasional pockets of clay (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00	B ES	7 J9		–	VOC=0ppm (peak)
7							–	7.00	D B ES	6 8 J10	2 1 2 3 5 6	16/300mm	VOC=0ppm (peak)
8							–	8.00	B ES	9 J11	2 3 5 4 5 5	19/300mm	VOC=0ppm (peak) Environmental seal installed from 8.0m to 7.0m bgl
9							–	9.00	B ES	10 J12	2 2 3 5 7 7	22/300mm	VOC=0ppm (peak)
				Possible pale brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.40						
10							–	10.00	B ES	11 J13		–	VOC=0ppm (peak) Environmental seal installed from 10.0m to 9.0m bgl
11													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 1-10m, redrilled due to BS from 4.8 on 16-8-17, redrilled from 9.2m on 17-8-17, redrilled from 10m on 22-8-17, redrilled from 6m on 23-8-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 8.0m 200mm cased from 8.0 to 15.5m 150mm cased from 15.5 to 25.0m	**HOLE No. BHC03**
Ground Level 2.51m OD	Equipment: Dando 2500		DATES 15/08/2017 - 23/08/2017
Coordinates: E 653815.346, N 292988.561 NGR	SHEET 3 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Possible pale brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B	12	2 2 3 2 2 3	10/300mm	
12								12.00	B	13	1 2 2 3 3 4	12/300mm	
13								13.00	B	14			
14								14.00	B	15			
15				Possible grey brown slightly silty fine and medium SAND (CRAG GROUP)			15.00	15.00	B	16			
											1 0 1 1 1 2	5/300mm	Environmental seal installed from 15.50m to 14.50m bgl
16								16.00	B	17			

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 1-10m, redrilled due to BS from 4.8 on 16-8-17, redrilled from 9.2m on 17-8-17, redrilled from 10m on 22-8-17, redrilled from 6m on 23-8-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 8.0m 200mm cased from 8.0 to 15.5m 150mm cased from 15.5 to 25.0m	**HOLE No. BHC03**
Ground Level 2.51m OD	Equipment: Dando 2500		DATES 15/08/2017 - 23/08/2017
Coordinates: E 653815.346, N 292988.561 NGR	SHEET 4 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible grey brown slightly silty fine and medium SAND (CRAG GROUP) *(continued)*									
17								17.00	B	18	4 11 11 8 6 5	30/300mm	
18								18.00	B	19			
19								19.00	B	20	3 7 7 10 13 17	47/300mm	
20													
21				Dark grey fine and medium SAND with bands of clay (CRAG GROUP)			21.00	21.00	B	21	11 13 20 6	26/150mm	
22													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 1-10m, redrilled due to BS from 4.8 on 16-8-17, redrilled from 9.2m on 17-8-17, redrilled from 10m on 22-8-17, redrilled from 6m on 23-8-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 8.0m 200mm cased from 8.0 to 15.5m 150mm cased from 15.5 to 25.0m	**HOLE No. BHC03**
Ground Level 2.51m OD	Equipment: Dando 2500		DATES 15/08/2017 - 23/08/2017
Coordinates: E 653815.346, N 292988.561 NGR	SHEET 5 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey fine and medium SAND with bands of clay (CRAG GROUP) *(continued)*				22.00	B	22	14 17 24	24/75mm	
23								23.00	B	23	17 11 19 14 18	51/225mm	
24								24.00	B	24			
25							25.00				2 4 5 8 9 11	33/300mm	Borehole terminated at 25.0m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 25m depth.
26													
27													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 1-10m, redrilled due to BS from 4.8 on 16-8-17, redrilled from 9.2m on 17-8-17, redrilled from 10m on 22-8-17, redrilled from 6m on 23-8-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE (Pale grey, no rebar)			0.00						
				Dark orangish brown silty cobbly SAND AND GRAVEL. Gravel of angular to subrounded fine to coarse concrete, brick and flint (MADE GROUND)			0.20	0.30	B ES	1 J1			VOC = <0.1ppm (peak)
				Black and dark brown silty SAND AND GRAVEL with weak to moderate natural organic odour. Gravel of angular to subrounded fine to coarse flint, brick, concrete and occasional wood (MADE GROUND)			0.50 0.60	0.60	B ES	2 J2			VOC = <0.1ppm (peak) Rest groundwater level at 0.6m bgl
				Black silty fine grained silt with strong sulphurous and hydrocarbon odour (MADE GROUND)				0.90	ES	J3			VOC = 4.0ppm (peak)
1				Dark yellowish brown fine and medium sand with black staining and strong hydrocarbon odour (MADE GROUND)			1.00		S		1 2 1 1 1 2	5/300mm	
								1.10	B	3			
								1.20	ES	J4			VOC = 5.0ppm (peak)
				Dark yellowish brown very clayey fine and medium SAND with pockets of dark yellowish brown gravelly clay (ALLUVIUM)			1.30						
2	2.00	2.40						2.00	B ES S	4 J5	1 0 0 0 0 0	0/300mm	VOC = <0.1ppm (peak)
3				Black organic CLAY with rare black shells (ALLUVIUM)			3.00	3.00	B ES S	5 J6	1 0 0 0 0 0	0/300mm	VOC = <0.1ppm (peak) Sample B5 unrepresentative due to recovery of saturated clayey sands Sample D2 representative of black organic clay
				Black organic rich clayey fine and medium SAND with black clay pockets (ALLUVIUM)			3.70						
4								4.00	B ES S	6 J7	1 0 0 0 0 0	0/300mm	VOC = <0.1ppm (peak), environmental seal installed from 4.0m to 3.0m
5				Orangish brown and brown mottled very clayey fine and medium SAND with clay bands (ALLUVIUM)			5.00	5.00	B ES S	7 J8	2 2 2 4 4 2	12/300mm	VOC = <0.1ppm (peak)
				Orangish brown and brown mottled sandy CLAY (ALLUVIUM)			5.20						

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Orangish brown and brown mottled sandy CLAY (ALLUVIUM) *(continued)*									
6				Yellowish brown and orangish brown mottled silty fine and medium SAND with dark orangish brown horizons and pockets of dark grey sandy clay (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00	UT100 B ES	1 8 J9		–	VOC = <0.1ppm (peak); UT100 attempted due to the presence of pockets of dark grey clay.
7							–	7.00	B ES S	9 J10	2 3 6 10 13 15	44/300mm	VOC = <0.1ppm (peak)
8							–	8.00	B ES S	10 J11	5 8 2 3 5 6	16/300mm	VOC = <0.1ppm (peak)
9	9.00	9.60 5.00					–	9.00	B ES S	11 J12	2 2 2 3 6 9	20/300mm	VOC = <0.1ppm (peak)
10							–	10.00	B ES S	12 J13	1 2 3 7 9 6	25/300mm	VOC = <0.1ppm (peak)
11													

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Yellowish brown and orangish brown mottled silty fine and medium SAND with dark orangish brown horizons and pockets of dark grey sandy clay (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B S	13	1 2 2 4 5 11	22/300mm	Blowing sands encountered from 11.6m to 14.0m bgl. Casing driven down to 14.0m bgl
12							–	12.00	B	14		–	
13							–	13.00	B	15		–	
14				Dark grey slightly clayey fine and medium SAND (CRAG GROUP)			14.00	14.00	B S	16	1 0 0 0 0 0	0/300mm	
15							–	15.00	B	17		–	
16				Possible dark grey medium and coarse SAND with black and white shells (CRAG GROUP)			16.00	16.00	B S	1	3 2 4 7 10 13	34/300mm	Continued blowing sands from 16m to 32m bgl

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
17				Possible dark grey medium and coarse SAND with black and white shells (CRAG GROUP) *(continued)*				17.00	B	19			
18								18.00	B	20			
19								19.00	B	21			
20								20.00	B	22			
21								21.00	B	23			
22													

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Possible dark grey medium and coarse SAND with black and white shells (CRAG GROUP) *(continued)*				22.00	B	24			
23								23.00	B	25			
24								24.00	B	26			
25													Environmental seal installed between 25.0m to 24.0m bgl
								25.50-26.00	B	27			
26				Possible dark grey silty gravelly medium and coarse SAND with occasional sandy clay bands. Gravel of fine flint and shell fragments (CRAG GROUP)			26.00						
27								27.00	B	28			

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata Leg	Strata Reduced Level	Strata Depth	Sampling/In-Situ Testing Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible dark grey silty gravelly medium and coarse SAND with occasional sandy clay bands. Gravel of fine flint and shell fragments (CRAG GROUP) *(continued)*								
28								28.00	B	29		–	
29								29.00	B	30		–	Environmental seal installed at the end of shift to counteract blowing material
30								30.00	B	31		–	
31								31.00	B	32		–	
32								32.00	B S	33	17 21 19 23 8	50/225mm	Continued blowing sands from 32m to 39m bgl
33													

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Possible dark grey silty gravelly medium and coarse SAND with occasional sandy clay bands. Gravel of fine flint and shell fragments (CRAG GROUP) *(continued)*					S		3 4 3 4 1 1	9/300mm	
34							–		S		4 4 2 1 3 1	7/300mm	
35							–					–	
36							–	36.00	B	34		–	
37							–					–	
38							–					–	

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - AS+RF	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 25.0m 150mm cased from 25.0 to 40.0m	**HOLE No. BHC04**
Ground Level 2.448m OD	Equipment: Dando 2500		DATES 01/09/2017 - 22/09/2017
Coordinates: E 653859.145, N 292985.56 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible dark grey silty gravelly medium and coarse SAND with occasional sandy clay bands. Gravel of fine flint and shell fragments (CRAG GROUP) *(continued)*								
39													Environmental seal installed from 39.5m to 38.5m
40													
41								41.00	B	35			
							41.50						Borehole terminated at 41.5m depth due to continued blowing sands. Backfilled to ground level with bentonite grout Borehole Terminated at 41.5m depth.
42													
43													
44													

Remarks: Coring by GEL (5hr on 24/08/17);
Hand inspection pit excavated by GEL;
Blowing sands encountered from 11m, redrilling from 4.2m on 6-9-17, redrilling from 12m on 7-9-17, redrilling from 14.4m on 18-9-17, redrilling from 8.1 on 19-9-17, redrilling from 23m on 20-9-17, redrilling from 28m on 21-9-17.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Greyish brown clayey gravelly fine to coarse SAND. Gravel is fine to coarse angular to subrounded of brick, concrete and flint (MADE GROUND)			0.25	0.40	B	1			VOC = 1ppm (peak)
								0.40-0.60	B	1			
								0.40	ES	1			
				Dark greyish brown gravelly clayey fine to coarse SAND. Gravel of angular to subrounded fine and medium concrete and flint (MADE GROUND)				0.50	EW	1			VOC = 2ppm (peak)
								0.60	B	2			
									ES	J2			
1								0.90	B	3			VOC = 1ppm (peak)
	1.00	1.10					–	0.90-1.10	B	3		–	
		0.50						0.90	ES	J3			
				Grey gravelly slightly clayey medium SAND. Gravel is fine to coarse subangular flint (MADE GROUND)			1.20	1.20	B	5	1 0	2/300mm	VOC = 1ppm (peak)
								1.20-1.70	B	5	0 1		
								1.20	ES	J4	0 1		
									C				
2				Dark grey to black silty CLAY (ALLUVIUM)			1.90	1.90	D	6		–	
							–	2.00	B	7			VOC = 1ppm (peak)
								2.00-2.20	B	7			
								2.00	ES	J5			
								2.30	D	8			
								2.30-2.75	D	8			
								2.30	B	9			
								2.30-2.80	B	9			VOC = 1ppm (peak)
								2.50	ES	J6			
3							–	3.00	UT	10	(15)	–	VOC = 1ppm (peak)
								3.00-3.45	UT	10			
								3.00	UT100	10			Environmental seal installed from 3.0m to 2.0m bgl
								3.00-3.50	B	12			
								3.00	ES	J7			
				Dark brown organic silty medium SAND (ALLUVIUM)			3.50						
								3.60	D	11			
									D	11			
4				Dark grey very sandy CLAY (ALLUVIUM)			4.00	4.00	B	13	1 1	8/300mm	VOC = 2ppm (peak)
									ES	J8	2 2		
									C		2 2		
								4.60	D	14			
									D	14			
5							–	5.00	B	15	(24)	–	VOC = 1ppm (peak)
								5.00-5.50	B	15			
								5.00	ES	J9			UT100 sample attempted due to pocket of clay
									UT100	UT			

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey very sandy CLAY (ALLUVIUM) *(continued)*									
6				Brown fine and medium slightly clayey SAND with rare fine angular flint gravel. (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00 6.00-6.50 6.00	D DS B B ES S	16 16 17 17 J10	2 3 4 6 6 7	23/300mm	VOC = 0ppm
7								7.00 7.00-7.50 7.00	D DS B B ES S	18 18 19 19 J11	2 4 6 6 7 8	27/300mm	VOC = 1ppm (peak)
8								8.00	D DS B ES S	20 20 21 J12	4 5 5 7 7 8	27/300mm	VOC = 1ppm (peak)
9								9.00 9.00-9.50 9.00	D DS B B ES S	22 22 23 23 J13	3 2 3 2 8 8	21/300mm	VOC = 0ppm
10								10.00	D DS B ES S	24 24 25 J14	2 4 9 12 13 12	46/300mm	VOC = 1ppm (peak)
11													

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Brown fine and medium slightly clayey SAND with rare fine angular flint gravel. (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	D DS B S	26 26 27	6 8 13 15 17 5	50/235mm	
12								12.00 12.00- 12.45 12.00	D D B S	28 28 29	2 3 4 3 6 7	20/300mm	
				Grey sandy CLAY (CRAG GROUP)			12.70						
13								13.00 13.00- 13.45 13.00	UT UT B	30 30 47	(28)		
				Grey slightly clayey silty fine SAND (CRAG GROUP)			13.60	13.60	D	31			
14								14.00 14.00- 14.50	D DS B B S	32 32 33 33	4 8 13 16 17 4	50/230mm	
15								15.00	D DS B S	34 34 35	4 9 8 9 11 8	36/300mm	
16								16.00	B C	36	4 5 5 6 7 6	24/300mm	

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly clayey silty fine SAND (CRAG GROUP) *(continued)*									
17							–	17.00	D	37	4 8	50/300mm	
								17.00-	DS	37	10 12		
								17.50	B	38	13 15		
									B	38			
									S				
				Grey silty/clayey fine SAND (CRAG GROUP)			17.50						
				Grey silty fine SAND (CRAG GROUP)									
18				Grey silty/clayey fine SAND with rare coarse to cobble sized subangular flint gravel (CRAG GROUP)			18.00	18.00	UT	39	(65)	–	UT100 taken due to clayey component within the strata.
				18.00 - 18.50 Occasional coarse subangular gravel or cobbles of flint				18.00-	UT	39			
								18.45	B	41			
								18.00					
				Grey silty slightly clayey fine SAND (CRAG GROUP)			18.50						
								18.60	D	40			
19							–	19.00	D	42	6 5	33/300mm	
								19.00-	DS	42	7 8		
								19.50	B	43	9 9		
									B	43			
									S				
				Grey slightly sandy CLAY (CRAG GROUP)			19.90	–					
20								20.00	UT	44	(42)	–	
								20.00-	UT	44			
								20.45	B	45			
								20.00	B	45			
								20.00-					
								20.50					
				Grey silty fine SAND (CRAG GROUP)			20.50						
21							–	21.00	D	46	10 12	50/170mm	Environmental seal installed between 21.0m and 20.0m bgl
								21.00-	DS	46	18 20		
								21.50	B	48	12		
									B	48			
									S				
22													

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey silty fine SAND (CRAG GROUP) *(continued)*				22.00	D DS B S	49 49 50	4 7 10 12 13 14	49/300mm	
23							–	22.90 23.00	D DS S B	51 51 52	4 10 12 14 8 9	43/300mm –	
24							–	24.00 24.00- 24.50	D DS B B S	53 53 54 54	2 14 15 15 14 6	– 50/245mm	
25							–	25.00	D DS B S	55 55 56	13 12 14 16 20	– 50/210mm	
26							–	25.80 26.00 26.00- 26.50	D DS S B B	57 57 58 58	7 9 15 17 18	50/200mm –	
27							–	27.00	D DS B S	59 59 60	5 7 10 12 18 10	– 50/245mm	
				Grey silty fine SAND with occasional fine shelly fragments (CRAG GROUP)			27.30						

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine SAND with occasional fine shelly fragments (CRAG GROUP) *(continued)*									
28							–	28.00	B	61		–	SPT rod detached in hole, however was fully recovered. Subsequent SPT taken at 28.7m due to soil disturbance
								28.00-28.50	B	61			
								28.50	B	63			
								28.70	D	62	10 15	50/200mm	
									DS	62	18 18		
									S		14		
29							–					–	
								29.50	D	64	6 17	50/190mm	
									DS	64	19 18		
									B	65	13		
									S				
30							–					–	
								30.50	D	66	10 15	50/200mm	
								30.50-31.00	DS	66	17 20		
									B	67	13		
									B	67			
									S				
31							–					–	
								31.50	D	68	12 13	50/115mm	
									DS	68	31 19		
									B	69			
									S				
32							–					–	
								32.50	D	70	8 17	50/165mm	
									DS	70	18 23		
									B	71	9		
									S				
33													

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty fine SAND with occasional fine shelly fragments (CRAG GROUP) *(continued)*				33.50 33.50- 34.00	D DS B B S	72 72 73 73	11 11 5 5 6 20	36/300mm	
34							–					–	
								34.50	D DS B S	74 74 75	6 9 19 23 8	50/180mm	
35							–					–	Environmental seal installed from 35.0m to 34.0m bgl
				Grey silty / clayey fine SAND (CRAG GROUP)			35.40						
								35.50 35.50- 35.95 35.50	D D B S	76 76 77	8 17 18 24 8	50/170mm	
36							–					–	
								36.50 36.50- 37.00	D DS B B S	78 78 79 79	25 31 19	19/30mm	
37							–					–	
								37.50	D DS B S	80 80 81	10 15 50	50/70mm	
38							–					–	

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 39.6m	**HOLE No. BHC05**
Ground Level 2.361m OD	Equipment: Dando 175		DATES 16/03/2018 - 27/04/2018
Coordinates: E 653858.712, N 292942.862 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty / clayey fine SAND (CRAG GROUP) *(continued)*				38.50	D B S	82 83	14 11 38 12	50/90mm	
39							–					–	
								39.50 39.50-40.00	B B	84 84			
40							40.00	40.00	D DS S	85 85	25 35 15	15/30mm	Borehole terminated at 40.0m bgl. Target depth achieved. Backfilled to ground level with betonite grout Borehole Terminated at 40m depth.
41							–					–	
42							–					–	
43							–					–	
44													

Remarks: Coring by GEL of original position (4.5hr on 20/09/17);
Water (l) / Dandopol (ml) added = 200l / 20ml (20.0m - 21.0m), Water (l) / Dandopol (ml) added = 250l / 15ml (21.0m - 26.0m), Water (l) added = 250l (27.0m-31.5m), Water (l) added = 300l (32.5m-34.5m), Water (l) added = 200l (35.5m-40.0m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 1 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE (Pale grey fine to medium grained. No rebar identified)			0.00						
				Dark orangish brown slightly gravelly cobbly fine to coarse SAND. Cobbles of dark grey/black stained concrete. Gravel is angular to sub-rounded fine to coarse quartz and flint (MADE GROUND)			0.17 0.30	0.20	ES	J1			VOC = 0 ppm (peak)
								0.40	ES	J2			VOC = 6 ppm (peak)
				Black stained silty slightly gravelly fine to medium SAND with strong hydrocarbon odour. Gravel is angular to sub-rounded fine to coarse flint (POTENTIAL MADE GROUND) 0.60 - 0.60 becoming dark grey medium to coarse sand with occasional black stained mottling and slight hydrocarbon odour				0.50	B ES	1 J3			VOC = 122 ppm (peak)
								0.70	ES	J4			VOC = 9 ppm (peak)
1		1.00 1.02					–					–	Hydrocarbon sheen at surface of water level
								1.10	EW	1			
				Dark brown clayey SAND AND GRAVEL of angular to subrounded fine to coarse flint. Sand is fine and medium (POTENTIAL MADE GROUND)			1.25				1 1 1 1 1 1	4/300mm	
								1.50	B	2			
2							–	2.00	ES	J5	1 0 0 0 0 0	0/300mm	VOC = 0 ppm (peak)
				Black sandy CLAY with natural organic odour (ALLUVIUM)			2.70	2.70	D D ES	1 3 J6			VOC = 0 ppm (peak)
3							–				1 1 1 2 1 4	8/300mm	Piston sample failed, bulk taken of recovered soils
				3.50 band of fine to coarse subangular to subrounded flint gravel									
				3.80 becoming very sandy with depth				3.80	ES ES	2 J7			VOC = 0 ppm (peak)
4							–	4.00	UT100 EW B ES	- 2 4 J8		–	UT100 no recovery, SPT taken - sunk under weight of hammer VOC = 0 ppm (peak)
5				Light grey and grey mottled gravelly fine SAND with grey sandy clay pockets. Gravel of subangular to subrounded medium and coarse flint (ALLUVIUM)			5.00	5.00	B ES	5 J9	7 4 4 3 7 2	16/300mm	VOC = 0 ppm (peak)

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 2 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light grey and grey mottled gravelly fine SAND with grey sandy clay pockets. Gravel of subangular to subrounded medium and coarse flint (ALLUVIUM) *(continued)*				5.50	D B	3 6			
6				6.00 occasional bands of orangish brown sand							1 0 0 0 2 1	3/300mm	
				Orangish brown and grey sandy CLAY (ALLUVIUM)			6.50						
7								7.00- 7.50 7.00	P D B ES	1 4 7 J10			Piston sample: 50% recovery, soils too firm; moderate sample quality but only ~50%
				Orangish brown and greyish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			7.50	7.50	D B	5 8			
8								8.00	UT100 ES	1 11			UT100: 20% recovery; poor quality sample due to sandy component
								8.50- 9.00	B	9			
9				Possible greyish brown clayey SAND with pockets of clay (HAPPISBURGH GLACIGENIC FORMATION)			9.00	9.00	B	10			Samples very disturbed and mixed together due to blowing sands. Blowing sands encountered from 9m bgl onwards.
								9.60- 9.80	B	11			
10								10.00	B ES	12 J12			
11													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 3 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Possible greyish brown clayey SAND with pockets of clay (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B	13			
12								12.00	B	14			
13								13.00	B	15			
14								14.00	B	16			
15								15.00	B	17	1 0 0 0 1 0	1/300mm	
16								16.00	B	18	1 1 2 1 1 1	5/300mm	

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 4 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible greyish brown clayey SAND with pockets of clay (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
17							–	17.00	B	19	1 0 2 0 0 1	3/300mm	
18							–	18.00	B	20		–	
19							–	19.00-19.45	UT100	2		–	UT100: 90% recovery
								19.00	D B	7 21			
								19.50	B	22			
20							–				5 6 6 6 9 13	34/300mm	
								20.40-20.70	B	23	11 17 23 32 45	100/225mm	
21							–	21.00-21.45	UT100	3		–	UT100: 0% recovery due to sand component; environmental seal installed when casing is reduced.
								21.00	D B	8 24			
				Possible grey silty gravelly coarse SAND with clayey sand pockets and fine white shells. Gravel of subangular to subrounded fine to coarse flints. (CRAG GROUP)			21.40					
22													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 5 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Possible grey silty gravelly coarse SAND with clayey sand pockets and fine white shells. Gravel of subangular to subrounded fine to coarse flints. (CRAG GROUP) *(continued)*				22.00 22.00-22.50	B B	25 25A	2 2 2 3 2 3	10/300mm	
23								23.00	UT100 B	26			UT100: 0% recovery due to sand component
24								24.00	B	27	3 3 2 2 3 3	10/300mm	
25								25.00	B	28			
26													
27								27.00	B	29			

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 6 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
28				Possible grey silty gravelly coarse SAND with clayey sand pockets and fine white shells. Gravel of subangular to subrounded fine to coarse flints. (CRAG GROUP) *(continued)*				28.00	B	30			
29								29.00	B	31			
30								30.00	B	32			
31								31.00	B	33			
32								32.00	B	34			
33													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 7 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey very sandy CLAY with fine white shell fragments and occasional angular to subangular black flint (CRAG GROUP)			33.00	33.00	B	35			
34								34.00	B	36	7 6 6 12 11 19	48/300mm	
35								35.00	B	37	12 9 9 10 11 9	39/300mm	
36								36.00	UT100 B	4 38	(74)		UT100: 100% recovery
37								37.00	B	39	7 8 6 16 12 11	45/300mm	
38				Possible dark grey clayey fine SAND with clay pockets and fine white shell fragments (CRAG GROUP)			38.00	38.00	UT100 B	5 40	(17)		UT100: 60% recovery, poor quality sample due to sandy component

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 8 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible dark grey clayey fine SAND with clay pockets and fine white shell fragments (CRAG GROUP) *(continued)*									
39								39.00	B	41	10 00 00	0/300mm	
40											21 23 12	8/300mm	
41								41.00	B	42	44 53 46	18/300mm	
42								42.00	B	43	24 32 44	13/300mm	
43								43.00	B	44	54 24 36	15/300mm	
44													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: DrillTechnics - JD+PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 21.0m 150mm cased from 21.0 to 45.0m	**HOLE No. BHC06**
Ground Level 2.416m OD	Equipment: Dando 2500		DATES 28/07/2017 - 01/09/2017
Coordinates: E 653906.612, N 292940.279 NGR	SHEET 9 OF 9		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
44				Possible dark grey clayey fine SAND with clay pockets and fine white shell fragments (CRAG GROUP) *(continued)*				44.00	B	45	6 5 5 6 7 4	22/300mm	
45				becoming very clayey with depth			45.00				2 1 1 4 5 4	14/300mm	Borehole terminated at 45m bgl. Target depth not achieved due to blowing materials. Backfilled to ground level with bentonite grout Borehole Terminated at 45m depth.
46													
47													
48													
49													

Remarks: Hand inspection pit excavated by GEL;
Blowing sands encountered from 9m, sands backfilled the hole to 4.2m bgl on 23-8-17, backfilled to 21m bgl on 31-8-17, back to 33m on 1-9-17. BH progress halted between 23-8-17 and 31-8-17 due to blowing sands.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 2.9m	**HOLE No. BHC06A**
Ground Level 2.382m OD	Equipment: Dando 2500		DATES 28/03/2018 - 28/03/2018
Coordinates: E 653895.611, N 292943.41 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Dark brown gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint, brick and occasional pottery (MADE GROUND)			0.20	0.30		B1			
								0.50	ES	1			VOC = 0ppm(peak)
1		1.10					–					–	
		1.10		Dark brown slightly gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint (MADE GROUND)			1.10	1.20	S	B3	1 0 1 0	2/300mm	No sample recovery from SPT
								1.30	ES	2	0 1		VOC = 0ppm(peak)
				Dark grey silty fine SAND (MADE GROUND)			1.70	1.70		B4			
2							–		S		1 0 1 0 1 0	2/300mm –	No sample recovery from SPT
													Obstruction at 2.1m depth - casing at angle. Casing left in-situ until examination by utilities company
								2.30	ES	3			VOC = 0ppm(peak)
				Black sandy CLAY (MADE GROUND)			2.60	2.60		B6			
								2.80	ES	4			VOC = 0ppm(peak)
							2.90						Borehole terminated at 2.9m bgl due to large obstruction. Target depth not achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 2.9m depth.
3							–					–	
4							–					–	
5							–					–	

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE + SUB-BASE (Orange brown sand and gravel. Gravel of angular to subrounded flint)			0.00						
				Dark greyish brown and black silty fine to coarse SAND with moderate natural organic odour			0.30	0.30	B	1			
									B	1			
								0.45	ES	J1			VOC = 0ppm
		0.90											
1		0.90					–					–	Bentonite seal installed between 1.9m and 1.0m bgl
				Grey gravelly CLAY with occasional orange brown sandy clay pockets. Gravel of subangular to rounded fine to coarse chalk (ALLUVIUM)			1.10	1.10	B	2			
									B	2			
								1.20	D	3	1 0	0/300mm	
								1.20-1.65	D	3	0 0		
								1.20	S	3	0 0		VOC = 1ppm (peak)
								1.30	S	4			
								1.30	B	4			
				Greyish brown fine SAND with pockets of grey clay (ALLUVIUM)			1.50	1.30-1.90	B	J2			
									ES				
								1.35	ES	J3			VOC = 1ppm (peak)
								1.60					
2				Dark grey sandy CLAY with moderate to strong natural organic odour (ALLUVIUM)			2.00	2.00	D	5	1 0	0/300mm	
								2.00-2.50	S	5	0 0		
									B	6	0 0		
									B	6			
									S				
								2.60	ES	J4			VOC = 1ppm (peak)
3							–	3.00	D	7	1 0	0/300mm	
									S	7	0 0		
									S		0 0		
								3.40	B	8			
								3.40-3.90	B	8			
								3.60	ES	J5			VOC = 1ppm (peak)
4							–	4.00	D	9	1 0	1/300mm	
									S	9	0 0		
									S		0 1		
				Dark yellowish brown mottled orangish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			4.60	4.60	B	10			VOC = 1ppm (peak)
								4.70	ES	J6			
5							–	5.00	D	11	1 0	5/300mm	
									S	11	0 1		
									S		1 3		
								5.40	B	12			

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark yellowish brown mottled orangish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.40-5.90	B	12			
								5.60	ES	J7			VOC = 0ppm
6				6.00 Becoming pale grey mottled with depth			–	6.00	D	13	1 3	25/300mm	
									S	13	5 5		
									S		7 8		
								6.40	B	14			
								6.60	ES	J8			VOC = 2ppm (peak)
7							–	7.00	D	15	3 6	35/300mm	
									S	15	7 7		
									S		10 11		
								7.40	B	16			
								7.40-7.90	B	16			
								7.60	ES	J9			VOC = 3ppm (peak)
8							–	8.00	D	17	4 8	50/285mm	
									S	17	11 15		
									S		14 10		
								8.40	B	18			
								8.60	ES	J10			VOC = 2ppm (peak)
9				Dark grey mottled orangish brown slightly sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			9.00	9.00	D	19	3 5	36/300mm	
									S	19	7 9		
									S		9 11		
								9.40	B	20			
								9.40-9.90	B	20			
								9.60	ES	J11			VOC = 2ppm (peak)
10				Dark yellowish brown very silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.90 –	9.90	B	21			
								10.00	D	22	1 1	7/300mm	
									S	22	1 2		
								10.10	B	23	2 2		VOC = 0ppm
									S	J12			
									ES				
11													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Dark yellowish brown very silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	D	24	1 2	7/300mm	
								11.00-11.50	S	24	2 2		
									B	25	1 2		
									B	25			
									S				
12							–		S		6 9 12 14 18 6	50/235mm	
								12.40	B	27			
13							–	13.00	D	28	5 6	10/300mm	
									S	28	4 2		
									S		2 2		
				Dark grey mottled light grey CLAY (CRAG GROUP)			13.40	13.40	B	29			
								13.40-13.90	B	29			
14							–	14.00	D	30	7 9	41/300mm	
									S	30	10 10		
									S		12 9		
				Dark brown coarse SAND (CRAG GROUP)			14.30						
								14.40	B	31			
15							–	15.00	D	32	4 7	48/300mm	
									S	32	7 11		
									S		14 16		
								15.40	B	33			
								15.40-15.90	B	33			
				Dark grey silty fine SAND (CRAG GROUP)			15.60						
16							–	16.00	D	34	3 7	39/300mm	
									S	34	7 10		
									S		11 11		
								16.40	B	35			

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND (CRAG GROUP) *(continued)*									
17							–	17.00	D S S	36 36	3 5 7 14 19 10	50/245mm	
								17.40	B	37			
18							–	18.00	D S S	38 38	7 12 16 19 15	50/200mm	
								18.40 18.40- 18.90	B B	39 39			
19							–	19.00	D S S	40 40	7 9 11 14 18 7	50/235mm	
								19.40	B	41			Environmental seal installed from 19.5m and 18.5m bgl
20							–	20.00	D S S	42 42	8 11 18 22 10	50/180mm	
				Dark grey slightly sandy CLAY (CRAG GROUP)			20.60	20.60 20.60- 21.00	B B	43 43			
21							–	21.00- 21.45 21.00	UT UT100	44 44	(38)	–	UT100: 100% Recovery
								21.60	D	45			
				Dark grey silty fine SAND (CRAG GROUP)			21.70	21.70	B	46			
22													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey silty fine SAND (CRAG GROUP) *(continued)*				22.00	D	47	4 6	33/300mm	
									S	47	6 7		
									S		9 11		
								22.40	B	48			
								22.40-22.90	B	48			
23							–	23.00	D	49	4 9	40/300mm	
									S	49	8 9		
									S		12 11		
								23.50	B	50			
				Dark grey silty sandy CLAY (CRAG GROUP)			23.60	23.50-23.90	B	50			
24							–	24.00	D	51	6 7	47/300mm	
									S	51	8 9		
									S		12 18		
								24.40-24.90	B	52			
								24.60	B	52			
25							–	25.00	D	53	5 7	38/300mm	
									S	53	8 10		
									S		10 10		
								25.40	B	54			
26							–	26.00-26.45	UT	55	(52)	–	UT100: 100% Recovery
									UT100	55			
								26.00					
				Dark grey fine silty SAND with shell fragments (CRAG GROUP)			26.40						
								26.60	D	56			
									B	57			
27							–	27.00	D	58	7 11	50/155mm	
									S	58	19 24		
									S		7		
								27.40	B	59			

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey fine silty SAND with shell fragments (CRAG GROUP) *(continued)*				27.40-27.90	B	59			
28							–	28.00	D S S	60 60	8 14 27 23	50/95mm	
								28.40	B	61			
29							–	29.00	D S S	62 62	11 14 29 21	50/105mm	
								29.40	B	63			
30							–	30.00-30.45 30.00	D S S	64 64	14 11 22 28	50/105mm	
								30.40 30.40-30.90	B B	65 65			
31							–	31.00	D S S	66 66	19 6 27 23	50/125mm	
								31.40	B	67			
32							–	32.00	D S S	68 68	25 32 18	18/20mm	
								32.40	B	69			
33													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey fine silty SAND with shell fragments (CRAG GROUP) *(continued)*				33.00	D S S	70 70	18 7 43 7	50/80mm	
								33.40	B	71			
								33.40-33.90	B	71			
34							–	34.00	S S	72	21 4 50	50/60mm	
								34.40	B	73			
35							–	35.00	D S S	74 74	16 9 38 12	50/80mm	
								35.40	B	75			
36							–	36.00	D S S	76 76	20 5 25 25	50/115mm	
								36.40	B	77			
								36.40-36.90	B	77			
37							–	37.00	S S	78	11 13 18 24 8	50/160mm	
								37.40	B	79			
38							–	38.00	D S S	80 80	20 5 50	50/30mm	
								38.40	B	81			

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.4m	**HOLE No. BHC06B**
Ground Level 2.365m OD	Equipment: Dando 2500		DATES 29/03/2018 - 10/04/2018
Coordinates: E 653901.924, N 292941.632 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey fine silty SAND with shell fragments (CRAG GROUP) *(continued)*									
39								39.00	D S S	82 82	25 41 9	9/5mm	
								39.40 39.40- 39.40	B B	83 83			
40							40.00	40.00	D S S	84 84	22 3 38 12	50/80mm	Borehole terminated at 40.0mbgl. Target depth achieved. Backfilled to ground level with betonite grout Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE (5mm rebar at the base)			0.00						
				Dark brown and black gravelly fine to coarse SAND with pockets of visually desiccated clay and moderate natural organic odour. Gravel of angular to subangular fine to coarse brick, concrete, charcoal and flint (MADE GROUND)			0.30	0.30	B	1			
								0.40	ES	J1			VOC = 1 ppm (peak)
				Orangish brown slightly gravelly fine to medium SAND. Gravel of subangular to subrounded fine to coarse flint. (ALLUVIUM)			0.60	0.60	B	2			
		0.75 0.75						0.60- 1.00	B ES	2 J2			VOC = 0 ppm (peak)
								0.70					
1								1.15-	EW	W2			
								1.40	D	3	1 1	2/300mm	
								1.20	S	3	0 1		
									B	4	0 1		
								1.40	ES	J3			VOC = 0 ppm (peak)
								1.41	EW	W3			
								1.65	EW	W4			
								1.70	EW	W5			
								1.72	EW	W1			
									EW	W6			Environmental seal installed from 1.80m to 1.00m bgl
2				Dark brown slightly gravelly medium SAND with weak natural organic odour. Gravel of angular to subrounded fine to medium flint. (ALLUVIUM)			2.00	2.00	D	5	1 1	4/300mm	
									S	5	1 1		
											1 1		
								2.40	B	6			
								2.40-	B	6			
								2.90	ES	J4			VOC = 0 ppm (peak)
								2.50					
3								3.00	D	7	3 3	20/300mm	
								3.00-	S	7	3 5		
								3.45	B	8	5 7		
									B	8			
								3.20	ES	J5			VOC = 0 ppm (peak)
				Dark grey mottled black CLAY with moderate natural organic odour (ALLUVIUM)			3.70	3.70	B	9			
								3.70-	B	9			
								4.00	ES	J6			VOC = 0 ppm (peak)
								3.80					
4								4.00-	UT	10	(11)		UT100: 100% Recovery
								4.45	UT100	10			
								4.00					
				Dark grey very clayey medium and coarse SAND with weak to moderate natural organic odour (ALLUVIUM)			4.60	4.60	D	11			
								4.60-	D	11			
								5.00	B	12			VOC = 0 ppm (peak)
								4.70	B	12			
									ES	J7			
5				Black slightly sandy CLAY with strong natural organic odour and occasional white shell fragments. (ALLUVIUM)			5.00	5.00	D	13	1 1	3/300mm	
									S	13	0 1		
											1 1		

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Black slightly sandy CLAY with strong natural organic odour and occasional white shell fragments. (ALLUVIUM) *(continued)*									
				Greyish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			5.80	5.80	B ES	14 J8			VOC = 0 ppm (peak)
6								6.00- 6.45 6.00	UT UT100	15 15	(14)		Standpipe installed at 6m
								6.60 6.70	D B ES	16 17 J9			VOC = 0 ppm (peak)
7								7.00	D S	18 18	1 1 3 2 4 5	14/300mm	
								7.40 7.40- 7.90	B B	19 19			
								7.70	ES	J10			VOC = 0 ppm (peak)
				Dark grey with occasional brown pockets slightly sandy silty CLAY (HAPPISBURGH GLACIGENIC FORMATION)			7.90						
8								8.00	D S	20 20	2 2 4 7 6 6	23/300mm	
								8.40 8.40- 9.00	B B	21 21			
								8.70	ES	J11			VOC = 0 ppm (peak)
9								9.00	D S	22 22	4 6 9 9 8 10	36/300mm	
				Greyish brown slightly silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.70	9.70	B	23			
								9.80	ES	J12			VOC = 0 ppm (peak)
10								10.00- 10.45 10.00	D S	24 24	3 3 7 12 14 16	49/300mm	
								10.40	B	25			
				Dark brown coarse SAND (HAPPISBURGH GLACIGENIC FORMATION)			10.60						
11													

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Dark brown coarse SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	D S	26 26	2 3 5 8 9 8	30/300mm	
								11.40 11.40-11.90	B B	27 27			
12							–	12.00	D S	28 28	2 2 5 7 12 16	40/300mm	
				Light grey CLAY (CRAG GROUP)			12.10						
				Light grey fine SAND (CRAG GROUP)			12.30						
				Dark brown coarse SAND (CRAG GROUP)			12.40						
				Dark grey fine silty slightly gravelly SAND. Gravel is fine angular to subangular flint (CRAG GROUP)			12.60	12.60	B	29			
13							–	13.00	D S	30 30	4 6 9 13 18 10	50/285mm	
								13.40	B	31			
14				Greyish brown becoming grey silty SAND with occasional subangular to subrounded flint gravel (CRAG GROUP)			14.00	14.00	D S	32 32	2 3 5 7 9 11	32/300mm	
								14.40 14.40-15.00	B B	33 33			
15				Light grey silty fine SAND (CRAG GROUP)			15.00	15.00	D S	34 34	6 7 8 9 12 18	47/300mm	
								15.40	B	35			
16							–	16.00	D S	36 36	7 11 14 21 15	50/200mm	
								16.40	B	37			

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light grey silty fine SAND (CRAG GROUP) *(continued)*									
17								17.00	D S	38 38	6 9 10 9 9 11	39/300mm	
								17.40 17.40- 17.90	B B	39 39			
18								18.00	D S	40 40	8 12 18 22 10	50/180mm	
								18.40	B	41			
19								19.00	D S	42 42	7 8 15 15 13 7	50/235mm	
				Dark grey slightly sandy CLAY (CRAG GROUP)			19.60	19.60 19.60- 19.80	B B	43 43			Environmental seal installed from 19.80m to 18.00m bgl
20								20.00- 20.45 20.00	UT UT100	44 44	(21)		UT100: 100% Recovery
				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP)			20.40						
								20.60	D B	45 46			
21								21.00	D S	47 47	10 14 19 16 15	50/200mm	
								21.40	B	48			
22													

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP) *(continued)*				22.00	D S	49 49	12 13 21 29	50/135mm	
								22.40	B	50			
								22.40-22.90	B	50			
23								23.00	D S	51 51	8 13 16 18 16	50/210mm	
								23.40	B	52			
				Grey slightly clayey/silty fine SAND (CRAG GROUP)			23.80						
24								24.00	D S	53 53	14 11 18 22 10	50/160mm	
								24.40	B	54			
								24.40-24.90	B	54			
25								25.00	D S	55 55	6 12 17 23 10	50/170mm	
								25.40	B	56			
				Dark grey silty SAND with shell fragments (CRAG GROUP)			25.70						
26								26.00	D S	57 57	5 8 12 18 20	50/180mm	
								26.40	B	58			
27								27.00	D S	59 59	15 10 22 28	50/135mm	
								27.40	B	60			

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty SAND with shell fragments (CRAG GROUP) *(continued)*				27.40-27.90	B	60			
28							–	28.00	D S	61 61	18 7 19 19 12	50/180mm	
								28.40	B	62			
29							–	29.00	D S	63 63	18 7 25 25	50/125mm	
								29.40	B	64			
30							–	30.00	D S	65 65	25 32 18	18/30mm	
								30.40	B	66			
								30.40-30.90	B	66			
31							–	31.00	D S	67 67	17 8 28 22	50/115mm	
								31.40	B	68			
32							–	32.00	D S	69 69	21 4 21 29	50/125mm	
								32.40	B	70			
33													

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey silty SAND with shell fragments (CRAG GROUP) *(continued)*				33.00	D S	71 71	15 10 26 24	50/105mm	
								33.40	B	72			
								33.40- 33.90	B	72			
34							–	34.00	D S	73 73	25 31 19	– 19/20mm	
								34.40	B	74			
35							–	35.00	D S	75 75	5 8 12 21 17	– 50/200mm	Environmental seal installed from 34.90m to 34.00m bgl
								35.40	B	76			
36							–	36.00	D S	77 77	7 11 18 27 23	– 68/190mm	
								36.40	B	78			
								36.40- 36.90	B	78			
37							–	37.00	D S	79 79	8 15 22 28	– 50/135mm	
								37.40	B	80			
38							–	38.00	D S	81 81	25 33 17	– 17/20mm	
								38.40	B	82			

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 18.5m 200mm cased from 18.5 to 39.2m	**HOLE No. BHC07**
Ground Level 2.37m OD	Equipment: Dando 175		DATES 20/03/2018 - 27/03/2018
Coordinates: E 653884.174, N 292930.118 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
39				Dark grey silty SAND with shell fragments (CRAG GROUP) *(continued)*				39.00	D S	83 83	23 2 29 21	50/115mm	
								39.40 39.40-39.90	B B	84 84			
40							40.00	40.00	D S	85 85	18 7 22 28	50/125mm	Borehole terminated at 40.0m. Target depth achieved. Backfilled to 12.0m bgl with bentonite grout. Monitoring well installed Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks: 50mm HDPE pipe installed with flush cover.

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown and black silty gravelly fine to coarse SAND with occasional inactive roots. Gravel of angular to subrounded fine to coarse flint, brick, charcoal, ash and occasional metal fragments (MADE GROUND)			0.00	0.10-0.60	B	1			
								0.30	ES	J1			VOC = 1ppm (peak)
				Dark brown and dark orangish brown silty gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse flint and occasional clinker and brick (MADE GROUND)			0.60	0.60-1.10	B	2			
		0.80											
		0.80						0.80	ES	J2			**VOC = 1ppm (peak)**
1													Environmental seal installed from 1.80m to 1.00m bgl
									S		1 1 1 1 1 1	4/300mm	
				Orangish brown silty gravelly medium SAND with occasional pockets of dark brown sandy clay (ALLUVIUM)			1.40	1.40-1.90	B	4			
								1.60	ES	J3			VOC = 3ppm (peak)
2									S		1 1 1 1 1 1	4/300mm	
								2.40-2.90	B EW	6 W5			
								2.46-2.54	EW ES	W2 J4			VOC = 1ppm (peak)
								2.60					
3								2.98	EW S	W4	1 1 2 2 2 1	7/300mm	
								3.20	EW	W1			
				Black slightly sandy CLAY with moderate to strong natural organic odour and occasional wood fragments (ALLUVIUM)			3.60	3.60-4.00	B	8			
								3.70	ES	J5			VOC = 1ppm (peak)
4				Black and dark brown silty slightly gravelly fine to coarse SAND. Gravel of subangular to subrounded fine and medium flint and wood fragments (ALLUVIUM)			4.00	4.04	S EW	W6	2 3 3 3 3 3	12/300mm	
				Light greyish brown slightly silty slightly gravelly medium SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			4.20	4.28	EW	W3			
				Light grey mottled yellowish brown very sandy CLAY. Sand is fine (HAPPISBURGH GLACIGENIC FORMATION)			4.80	4.80	B ES	10 J6			VOC = 0ppm
5									S		2 3 2 4 4 4	14/300mm	
							5.40	5.40		B12			

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.60	ES	J7			VOC = 1ppm (peak)
6				Dark yellowish brown silty fine SAND with occasional grey clay pockets (HAPPISBURGH GLACIGENIC FORMATION)			6.00		S		3 4 5 3 4 4	16/300mm	
								6.40		B14			
								6.50	ES	J8			VOC = 0ppm
7							–		S		4 7 9 14 18 19	60/255mm	
								7.40-7.90	B	16			
								7.50	ES	J9			VOC = 0ppm
8							–		S		7 11 16 18 16	50/190mm	
								8.40		B18			
								8.50	ES	J10			VOC = 0ppm
9							–		S		5 11 8 8 9 11	36/300mm	
								9.40		B20			
								9.50	ES	J11			VOC = 0ppm
10							–					–	No sample recovery from 10m SPT
								10.40-10.90	B	22			
								10.50	ES	J12			VOC = 0ppm
11													

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Dark yellowish brown silty fine SAND with occasional grey clay pockets (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*					S		11 11 9 9 8 9	35/300mm	
				Dark grey slightly silty medium SAND (CRAG GROUP)			11.20						
				Dark yellowish brown silty fine SAND (CRAG GROUP)			11.45	11.40		B24			
12									S		4 3 2 4 4 8	18/300mm	
								12.40		B26			
13									S		6 7 10 11 11 7	39/300mm	
				Dark grey coarse SAND (CRAG GROUP)			13.20						
								13.40- 13.90	B	28			
14									S		4 7 7 11 14 16	48/300mm	
								14.40		B30			
15									S		9 11 16 14 18 2	50/230mm	
				Dark grey slightly silty medium SAND (CRAG GROUP)			15.40	15.40		B32			
16									S		4 6 8 10 12 17	47/300mm	
								16.40-	B	34			

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey slightly silty medium SAND (CRAG GROUP) *(continued)*				16.90					
17							–		S		5 7 8 10 10 10	38/300mm	
								17.40		B36			
18							–		S		6 9 11 14 20 5	50/230mm	Environmental seal installed from 20.00m to 18.00m bgl
								18.40		B38			
19							–		S		4 7 14 16 16 4	50/235mm	
								19.40- 19.90	B	40			
20				Dark grey slightly silty medium SAND with occasional white shell fragments (CRAG GROUP)			20.00		S		8 9 10 10 12 12	44/300mm	
								20.40		B42			
21							–		S		8 17 50	50/60mm	
								21.40		B44			
22													

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey slightly silty medium SAND with occasional white shell fragments (CRAG GROUP) *(continued)*					S		6 12 17 23 10	50/180mm	
				Dark grey CLAY (CRAG GROUP)			22.50	22.50		B46			
23							–	23.00- 23.45	UT	47		–	UT100: 100% Recovery
				Dark grey slightly sandy CLAY (CRAG GROUP)			23.50	23.60- 23.90	B	48			
24							–		S		5 7 10 14 21 5	50/230mm	
								24.40		B50			
25							–	25.00- 25.45	UT	51		–	UT100: 100% Recovery
								25.40		B52			
				Dark grey shelly coarse SAND (CRAG GROUP)			25.50						
26							–		S		11 14 31 19	50/95mm	
								26.40		B54			
27							–		S		10 9 50	50/60mm	
								27.40-	B	56			

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey shelly coarse SAND (CRAG GROUP) *(continued)*				27.90					
28							–		S		25 35 15	15/30mm	
				Dark grey silty fine SAND with occasional white shell fragments (CRAG GROUP)			28.40	28.40		B58			
29							–		S		14 11 18 22 10	50/155mm	
								29.40		B60			
30							–		S		19 6 22 28	50/135mm	
								30.40-30.90	B	62			
31							–		S		16 9 16 24 10	50/160mm	
								31.40		B64			
32							–		S		5 8 12 18 20	50/190mm	
								32.40		B66			
33													

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey silty fine SAND with occasional white shell fragments (CRAG GROUP) *(continued)*					S		7 11 19 24 7	50/155mm	
								33.40-33.90	B	68			
34							–		S		5 11 18 22 10	50/170mm	
								34.40		B70			
35							–		S		10 15 32 18	50/115mm	
								35.40		B72			
36							–		S		11 13 18 24 8	50/155mm	
								36.40-36.90	B	74			
37							–		S		14 11 19 26 5	50/155mm	
								37.40		B76			
38							–		S		11 14 50	50/10mm	
								38.40		B78			

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 20.0m 200mm cased from 20.0 to 39.6m	**HOLE No. BHC08**
Ground Level 2.727m OD	Equipment: Dando 2500		DATES 09/03/2018 - 16/03/2018
Coordinates: E 653921.761, N 292892.215 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND with occasional white shell fragments (CRAG GROUP) *(continued)*									
39									S		25 41 9	9/5mm	
								39.40-39.90	B	80			
40							40.00		S		16 9 22 28	50/115mm	Borehole completed at 40.0m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks: 50mm HDPE pipe installed with top-hat cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 1 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Multicoloured very gravelly SAND. Gravel is fine to coarse grey concrete, red brick, yellow brick and occasional pieces of cast iron (MADE GROUND)			0.13	0.30	B	1			VOC = 0ppm
								0.30-0.50	ES	J1			
				Dark brown and black gravelly SAND. Gravel is fine and medium angular red brick and rounded subrounded flints (MADE GROUND)			0.60	0.60	B	2			VOC = 0ppm
									ES	J2			
1								0.90	ES	J3			VOC = 1ppm
		1.10 1.07		Light brown silty fine SAND (ALLUVIUM)			1.10	1.10	B	3			
								1.10-1.60	B	3	3 3 3 3 3 3	12/300mm	
								1.60	B	5			
								1.60-2.00	B	5			
									ES	J4			VOC = 1ppm
				Dark brown sandy gravelly CLAY. Gravel of subrounded medium and coarse flint (ALLUVIUM)			1.80	1.70					
2											1 0 1 1 1 1	4/300mm	
				Black mottled brown organic CLAY (ALLUVIUM)			2.20	2.20	B	7			
								2.20-2.70	B	7			
								2.40	ES	J5			VOC = 1ppm
3											1 0 0 0 0 0	0/300mm	Environmental seal installed from 3.00m to 1.90m bgl
								3.06	EW	W4			
								3.12	EW	W6			
								3.40	B	9			
								3.40-3.80	B	9			
								3.56	EW	W5			
								3.80	EW	W3			
4											1 0 0 0 0 0	0/300mm	
								4.20	ES	J6			VOC = 1ppm
								4.40	B	11			
								4.40-4.90	B	11			
								4.84-10.70	EW	W1			
5											3 4 7 7 8 7	29/300mm	
				Light brown mottled orangish brown medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			5.30	5.40	B	13			

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 2 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light brown mottled orangish brown medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.40-5.90	B ES	13 J7			VOC = 0ppm
6								5.50					
								6.03	EW	W2	2 4 3 3 6 4	16/300mm	
				Dark orangish brown sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			6.40	6.40	B	15			
								6.40-6.90	B ES	15 J8			VOC = 0ppm
								6.50					
7								7.00-7.45	D DS	16 16	3 4 4 4 5 6	19/300mm	
								7.40	B	17			
								7.40-7.90	B ES	17 J9			VOC = 0ppm
				Light orangish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			7.60	7.50					
8											1 3 3 4 6 9	22/300mm	
								8.40	B	19			
								8.40-8.90	B ES	19 J10			VOC = 0ppm
								8.50					
9											3 5 7 7 6 7	27/300mm	
								9.40	B	21			
								9.40-9.90	B	21			
				Grey fine silty SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.60						
								9.80	ES	J11			VOC = 0ppm
10											2 4 7 9 9 11	36/300mm	
								10.40	B	23			
11													

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	HOLE No. BHC09
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 3 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Grey fine silty SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*							3 3 4 4 7 10	25/300mm	
				Brown coarse SAND (HAPPISBURGH GLACIGENIC FORMATION)			11.20						
								11.40 11.40- 11.90	B B	25 25			
12							–				4 8 9 10 12 18	49/300mm	
								12.40	B	27			
13							–				3 5 3 5 6 7	21/300mm	
				Grey silty CLAY (CRAG GROUP)			13.10						
								13.40 13.40- 13.90	B B	29 29			
14				Dark grey coarse SAND (CRAG GROUP)			14.00				3 4 7 8 9 7	31/300mm	
								14.40 14.40- 14.90	B B	31 31			
15							–				7 8 10 12 12 11	45/300mm	
								15.40	B	33			
16							–				7 11 17 13 20	50/210mm	
								16.40	B	35			

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	HOLE No. BHC09
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 4 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey coarse SAND (CRAG GROUP) *(continued)*				16.40-16.90	B	35			
17							–				11 9 13 19 18	50/180mm	
								17.40	B	37			
18							–				4 6 6 6 6 10	28/300mm	
				Dark grey sandy CLAY (CRAG GROUP)			18.40	18.40	B	39			
								18.40-18.90	B	39			
19							–	19.00-19.45	UT	40	(31)		UT100: 90% Recovery
								19.00	UT100	40			
								19.60	B	42			
								19.60-19.90	B	42			
20				Dark grey silty CLAY (CRAG GROUP)			20.00	20.00	B	44	8 9 8 7 10 13	38/300mm	Environmental seal installed from 22.0m and 20.0m bgl
								20.00-20.50	B	44			
21							–	21.00-21.45	UT	45	(39)		UT100: 90% Recovery
								21.00	UT100	45			
				Dark grey silty fine sandy CLAY (CRAG GROUP)			21.60	21.60	D	46			
								21.60-21.90	B	47			
22									B	47			

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 5 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey silty fine sandy CLAY (CRAG GROUP) *(continued)*							4 6 9 9 7 11	36/300mm	
								22.40	B	49			
23								23.00-23.45	UT	50	(52)		UT100: 100% Recovery
								23.00	UT100	50			
								23.40	B	51			
24											5 14 17 19 14	50/200mm	
				Dark grey silty fine SAND with white shell fragments (CRAG GROUP)			24.20						
								24.40	B	53			
								24.40-24.90	B	53			
25											6 17 22 28	50/135mm	
								25.40	B	55			
26											18 7 41 9	50/85mm	
								26.40	B	57			
								26.40-26.90	B	57			
27											16 9 27 23	50/125mm	
								27.40	B	59			

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 6 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*									
28							–				10 15 25 25	50/135mm	
								28.40 28.40- 28.90	B B	61 61			
29							–				19 6 33 17	50/115mm	
								29.40	B	63			
30							–				25 29 21	21/75mm	
								30.40 30.40- 30.90	B B	65 65			
31							–				15 10 23 27	50/135mm	
								31.40	B	67			
32							–				11 13 22 28	50/135mm	
								32.40 32.40- 32.90	B B	69 69			
33													

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 7 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata Leg	Strata Reduced Level	Strata Depth	Sampling/In-Situ Testing Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*							14 11 21 29	50/135mm	
								33.40	B	71			
34							–				15 10 18 22 10	50/160mm	
								34.40-34.90	B	73			
								34.45	B	73			
35							–				14 11 22 28	50/125mm	
								35.40	B	75			
36							–				25 31 19	19/20mm	
								36.40	B	77			
								36.40-36.90	B	77			
37							–				11 13 27	27/75mm	
								37.40	B	79			
38							–				11 14 50	50/60mm	
								38.40	B	81			

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 8 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*				38.40-38.90	B	81			
39							–				25 50	50/110mm	
								39.40	B	83			
40							–				9 10 10 10 14 16	50/285mm	Environmental seal installed from 40.0m to 38.0m bgl
								40.40	B	85			
41							–				11 14 19 23 8	50/155mm	
								41.40	B	87			
								41.40-41.90	B	87			
42							–				6 11 11 14 25	50/210mm	
								42.40	B	89			
43							–				10 15 50	50/60mm	
								43.40	B	91			
44													

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 9 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
44				Dark grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*							14 11 36 14	50/95mm	
								44.40	B	93			
								44.40-44.90	B	93			
45							–				25 50	50/110mm	
								45.40	B	95			
46							–				25 50	50/90mm	
								46.40	B	97			
47							–				25 50	50/100mm	
								47.40	B	99			
								47.40-47.90	B	99			
48							–				25 50	50/100mm	
								48.40	B	101			
49							–				25 50	50/80mm	
								49.40	B	103			

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/FS FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 20.0m 200mm cased from 20.0 to 41.5m 150mm cased from 41.5 to 49.5m	**HOLE No. BHC09**
Ground Level 3.003m OD	Equipment: Dando 2500		DATES 03/04/2018 - 23/04/2018
Coordinates: E 653921.863, N 292840.199 NGR	SHEET 10 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*				49.40-49.90	B	103			
50							50.00				25 50	50/50mm	Borehole terminated at 50.0mbgl. Target depth achieved. Backfilled to 12.0m bgl with bentonite grout. Monitoring well installed Borehole Terminated at 50m depth.
51													
52													
53													
54													
55													

Remarks: 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD:	Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m
			HOLE No. BHC10
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 1 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				ASPHALT OVER CONCRETE			0.00						
				Dark brown becoming reddish brown very gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarser brick, concrete, metal and flint (MADE GROUND)			0.13	0.20	ES	J1			VOC = 0ppm
								0.50	ES	J2			VOC = 0ppm
				Dark brown and black gravelly medium and coarse SAND. Gravel of angular to subrounded fine to coarse brick and concrete (MADE GROUND)			0.60						
								0.80	ES	J3			VOC = 0ppm
				Greyish brown slightly gravelly fine to coarse SAND. Gravel of angular to rounded fine and medium brick and flint (MADE GROUND)			0.90	1.00	B	1			VOC = 0ppm
1								1.00-1.20	B ES	1 J4			
				Greyish brown silty fine to coarse SAND with pockets of greyish brown clay. Gravel of angular to subangular fine to coarse brick, concrete and flint (MADE GROUND)			1.10	1.00 1.20 1.20-1.50	B B S	3 3	1 1 1 1 1 1	4/300mm	
				Multicoloured gravelly sandy CLAY. Gravel of angular to subrounded fine to coarse brick and flint (MADE GROUND)			1.20	1.40	ES	J5			VOC = 1ppm (peak)
				Dark grey mottled black mottled sandy organic CLAY with black clay pockets and weak to moderate natural organic odour (ALLUVIUM)			1.60	1.70	D	4			
								1.80 1.80-2.00	B B ES	5 5 J6			VOC = 3ppm (peak)
2				Black mottled dark grey mottled sandy organic CLAY with moderate natural organic odour (ALLUVIUM)			2.00	1.80 2.00 2.00-2.50	B B S	7 7	1 1 1 1 1 1	4/300mm	
								2.20	ES	J7			VOC = 2ppm (peak)
				Dark grey silty organic CLAY with strong natural organic odour (ALLUVIUM)			2.50	2.50 2.50-3.00	B B	8 8			
3								3.00-3.45	UT B	9 12	(5)		VOC = 2ppm (peak) UT100: 75% Recovery
	3.00	3.30 3.20						3.00 3.00-3.50	B ES UT100	12 J8 UT9			
				Grey organic CLAY with occasional fibrous material (ALLUVIUM)			3.50	3.00					
4								4.00 4.00-4.50 4.00	B B ES S	14 14 J9	1 0 0 0 0 0	0/300mm	VOC = 2ppm (peak) Environmental seal installed from 4.0m to 2.5m bgl
5								5.00-5.45 5.00	UT B ES UT100	15 16 J10 UT15	(15)		VOC = 2ppm (peak), UT100: 85% Recovery

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 2 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
							5.60						
				Dark grey gravelly medium SAND with pockets of organic clay. Gravel of angular to subrounded fine and medium flint (ALLUVIUM)									
6	5.60	6.00 3.00						6.00	EW	11	4 4	24/300mm	
								6.00-6.50	B B C	18 18	5 6 6 7		
								6.50	ES	J11			VOC = 1ppm (peak)
7								7.00	B C	19	6 7 11 14 13 12	50/285mm	
									C		5 7 14 16 20	50/220mm	
8								8.00 8.00-8.50 8.00	B B ES	20 23 J12			VOC = 2ppm (peak)
				Grey slightly gravelly clayey medium SAND. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			8.80						
9								9.00 9.10	B S ES	23 J13	6 6 4 3 3 5	15/300mm	VOC = 1ppm (peak)
				Dark grey and yellowish brown mottled sandy CLAY with occasional fine gravel of flint (HAPPISBURGH GLACIGENIC FORMATION)			9.50						
10								10.00-10.45 10.00 10.00-10.50 10.00 10.10	UT B B UT100 ES	25 27 27 UT25 J14	(45)		UT100: 80% Recovery VOC = 1ppm (peak)
				Dark orangish brown mottled light brown medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			10.20						
11													

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 3 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Dark orangish brown mottled light brown medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B S	29	4 6 9 11 11 13	44/300mm	
				Brown coarse silty SAND (HAPPISBURGH GLACIGENIC FORMATION)			11.50						
12									S		3 2 3 3 6 13	25/300mm	
				Greyish brown slightly clayey medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			12.50	12.50 12.50- 12.90	B B	31 31			
				Grey sandy CLAY (CRAG GROUP)			12.90						
13								13.00 13.00- 13.50 13.10- 13.55 13.10	B B UT UT100	35 35 33 UT33	(60)		UT100: 95% Recovery
14				Grey clayey medium and coarse SAND with occasional fine subangular flint gravel (CRAG GROUP)			14.00	14.00 14.00- 14.50	B B S	37 37	1 3 5 5 8 10	28/300mm	
15								15.00	B S	39	5 4 3 5 5 5	18/300mm	
16				Grey slightly clayey fine SAND (CRAG GROUP)			16.00	16.00 16.00- 16.50	B B S	41 41	2 3 2 6 12 13	33/300mm	

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 4 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly clayey fine SAND (CRAG GROUP) *(continued)*									
17								17.00	B S	43	4 8 10 10 13 12	45/300mm	
18								18.00-18.45 18.00 18.00-18.70 18.00	UT B B UT100	44 46 46 UT44	(25)		UT100: 100% Recovery. Sample taken due to the clay content within strata
19				Grey clayey fine very thinly bedded SAND with grey clay beds (up to 30mm thick) (CRAG GROUP)			19.00	19.00 19.00-19.50	B S	48 48	5 9 10 10 14 15	49/300mm	
20								20.00-20.45 20.00 20.00-20.50 20.00	UT B B UT100	49 50 51 UT49	(55)		UT100: 100% Recovery
									S		4 5 10 16 20 3	49/230mm	
21				Grey clayey fine and medium SAND (CRAG GROUP)			21.00						Environmental seal installed between 21.0m and 19.0m
								21.50 21.50-22.00	B B	53 53			
22													

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 5 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey clayey fine and medium SAND (CRAG GROUP) *(continued)*				22.00-22.45	UT	54	(100)		UT100: 100% Recovery. Sample taken due to the clay content within strata
								22.00	B	56			
									UT100	UT54			
23								23.00	B	58	5 8	40/300mm	
								23.00-23.50	B	58	9 8		
									S		9 14		
24								24.00-24.45	UT	59	(65)		UT100: 100% Recovery
								24.00	B	61			
									UT100	UT59			
25								25.00	B	63	8 7	30/300mm	
								25.00-25.50	B	63	5 8		
									S		8 9		
				Grey silty slightly gravelly fine SAND. Gravel of fine shell fragments (CRAG GROUP)			25.30						
26								26.00	B	65	7 17	50/150mm	
									S		25 25		
27								27.00	B	67	13 13	38/300mm	
								27.00-27.50	B	67	8 9		
									S		10 11		

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 6 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty slightly gravelly fine SAND. Gravel of fine shell fragments (CRAG GROUP) *(continued)*									
28								28.00	B S	69	8 4 5 5 8 13	31/300mm	
29								29.00 29.00- 29.50	B B S	71 71	9 9 15 20 15	50/185mm	
30								30.00	B S	73	7 7 12 18 20	50/205mm	
31				Grey CLAY (CRAG GROUP)			31.20	31.00 31.00- 31.50	B B S	75 75	6 18 25 25	50/120mm	
				Grey silty fine and medium SAND (CRAG GROUP)			31.30						
32								32.00	B S	77	12 13 22 25 3	50/155mm	
33							32.90						

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 7 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty CLAY (CRAG GROUP) *(continued)*				33.00-33.45 33.00	UT B UT100	78 80 UT78	(120)		UT100: 90% Recovery
				Grey gravelly silty fine and medium SAND. Gravel of fine shell fragments (CRAG GROUP)			33.40						
34								34.00 34.00-34.50	B B S	82 82	10 14 20 30	50/150mm	
35								35.00	B S	84	12 13 31 19	50/110mm	
36								36.00 36.00-36.50	B B S	86 86	18 7 32 18	50/95mm	
37								37.00	B S	88	25 50	50/125mm	
38								38.00 38.00-38.50	B B S	90 90	21 4 50	50/60mm	

Remarks: Water (I) added = 100l (20.0m-20.8m), Water (I) added = 250l (37.0m-38.0m), Water (I) added = 200l (39.0m-42.0m), Water (I) added = 100l (43.0m-45.0m), Water (I) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 8 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey gravelly silty fine and medium SAND. Gravel of fine shell fragments (CRAG GROUP) *(continued)*									
39								39.00	B S	92	21 4 47 3	50/80mm	
40								40.00 40.00-40.50	B B S	94 94	25 50	50/135mm	Environmental seal installed between 42.5m and 40.5m bgl
41								41.00	B S	96	25 50	50/100mm	
42								42.00	B S	98	20 5 50	50/65mm	
43								43.00	B S	100	25 45 5	5/10mm	
44													

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 9 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
44				Grey gravelly silty fine and medium SAND. Gravel of fine shell fragments (CRAG GROUP) *(continued)*				44.00 44.00- 44.50	B B S	102 102	25 50	50/120mm	
45								45.00 45.00- 45.50	B B S	104 104	25 41 9	9/10mm	
				Grey slightly gravelly medium SAND. Gravel of fine shell fragments (CRAG GROUP)			45.50						
46								46.00 46.00- 46.50	B B S	106 106	25 50	50/90mm	
47								47.00	B S	108	25 40 10	10/15mm	
48								48.00 48.00- 48.50	B B S	110 110	25 50	50/125mm	
49								49.00	B S	112	25 50	50/120mm	

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FS/JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.5m 250mm cased from 2.5 to 19.5m 200mm cased from 19.5 to 40.5m 150mm cased from 40.5 to 49.5m	**HOLE No. BHC10**
Ground Level 3.038m OD	Equipment: Dando 175		DATES 03/04/2018 - 18/04/2018
Coordinates: E 653908.464, N 292840.896 NGR	SHEET 10 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly gravelly medium SAND. Gravel of fine shell fragments (CRAG GROUP) *(continued)*									
50							50.00		S		25 50	50/110mm	Borehole terminated at 50.0mbgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 50m depth.
51													
52													
53													
54													
55													

Remarks: Water (l) added = 100l (20.0m-20.8m), Water (l) added = 250l (37.0m-38.0m), Water (l) added = 200l (39.0m-42.0m), Water (l) added = 100l (43.0m-45.0m), Water (l) added = 200l (45.0m-50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DT - AS+RF, PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 6.0m 300mm cased from 6.0 to 7.0m	**HOLE No. BHC13**
Ground Level 3.08m OD	Equipment: Dando 2500		DATES 20/09/2017 - 21/09/2017
Coordinates: E 653889.183, N 292669.93 NGR	SHEET 1 OF 2		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Dark brown black fine to medium gravelly SAND with occasional cobbles of concrete. Gravel of fine to coarse subangular to rounded flint, glass, concrete and brick (MADE GROUND)			0.15	0.30	ES	J1			VOC = 1ppm (peak)
								0.50	ES	J2			VOC = 0ppm
								0.70-1.20	B	1			
1				Dark grey fine silty gravelly SAND. Gravel of fine to coarse subangular to rounded flint brick and concrete with occasional metal fragments (MADE GROUND)			1.00	1.00	D ES	1 J3		–	VOC = 1ppm (peak)
		1.20		Dark grey black fine clayey gravelly SAND with strong hydrocarbon odour. Gravel of fine to coarse subangular to rounded flint brick and concrete (MADE GROUND)			1.20	1.20	ES S	J4	1 1 0 1 2 2	5/300mm	**VOC = 2ppm (peak)**
								1.60-2.00	EW D	1 2			VOC = 2ppm (peak)
				Dark grey and black fine to coarse SAND AND GRAVEL with strong hydrocarbon odour. Gravel of fine to coarse subangular to rounded flint (MADE GROUND)			1.70	1.60 1.70-2.00	ES B	J5 2			
2							–	2.00	D ES S	3 J6	3 5 5 5 6 7	23/300mm	VOC = 34ppm (peak)
				Possible dark grey mottled orangish brown with black staining fine to coarse SAND AND GRAVEL with strong hydrocarbon odour. Gravel of fine to coarse subangular to rounded flint (MADE GROUND)			2.30						
3							–	3.00-3.50	B D	3 4	3 5 7 5	23/300mm	VOC = 19ppm (peak)
								3.00	ES S	J7	5 6		Blowing materials
				Possible orangish brown stained black fine gravelly SAND with moderate hydrocarbon odour. Gravel of fine to medium subrounded to rounded flint (MADE GROUND)			3.70						
4							–	4.00-4.50	B D	4 5	1 2 2 2	9/300mm	VOC = 5ppm (peak)
								4.00	ES S	J8	3 2		
5							–	5.00-5.50	B D	5 6	1 2 2 2	9/300mm	VOC = 5ppm (peak)
								5.00	ES S	J9	3 2		

Remarks: Coring by GEL(1.5hr on 19/09/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DT - AS+RF, PS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 6.0m 300mm cased from 6.0 to 7.0m	**HOLE No. BHC13**
Ground Level 3.08m OD	Equipment: Dando 2500		DATES 20/09/2017 - 21/09/2017
Coordinates: E 653889.183, N 292669.93 NGR	SHEET 2 OF 2		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible orangish brown stained black fine gravelly SAND with moderate hydrocarbon odour. Gravel of fine to medium subrounded to rounded flint (MADE GROUND) *(continued)*									
6							6.00		S		2 2 4 6 7 10	27/300mm	Borehole terminated at 6.0m bgl due to blowing materials. Target depth not achieved. Borehole Terminated at 6m depth.
7													
8													
9													
10													
11													

Remarks: Coring by GEL(1.5hr on 19/09/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	**HOLE No. BHC14**
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE (pale grey with occasional 2mm rebar)			0.00						
				Dark brown and black gravelly slightly clayey fine and medium SAND. Gravel is fine and medium subangular to subrounded brick and flint (MADE GROUND)			0.18	0.30	ES	J1			VOC = 0ppm
				Brown medium and coarse SAND with occasional medium subangular to subrounded flint (MADE GROUND)			0.60	0.70	ES	J2			VOC = 0ppm
1				Light brown medium SAND with occasional orangish brown mottling and fine subrounded to subangular flint gravel (MADE GROUND)			1.00	1.00	B	1			
								1.10	ES	J3			VOC = 0ppm
				Light brown mottled orangish brown slightly gravelly CLAY. Gravel of subangular fine to coarse flint, brick, charcoal and chalk (MADE GROUND)			1.60	1.80	B	2			VOC = 0ppm
									ES	J4			
								1.91	EW	W1			
2		2.20 2.00						2.00	D S	3	10 6 4 6 6 5	21/300mm	Environmental seal installed from 2.3m to 1.3m bgl
				Greyish brown gravelly fine SAND. Gravel of subangular to rounded fine to coarse flint and quartz (HAPPISBURGH GLACIGENIC FORMATION)			2.90	2.90	B	4			
3									S		5 3 5 6 6 7	24/300mm	
								3.10	ES	J5			VOC = 0ppm
				Orangish brown slightly gravelly fine SAND. Gravel of subangular to rounded fine to coarse flint and quartz (HAPPISBURGH GLACIGENIC FORMATION)			3.50						
								3.90	B	6			
4									S		4 2 2 2 2 3	9/300mm	
								4.10	ES	J6			VOC = 0ppm
								4.90	B	8			
5									S		5 7 7 9 11 11	38/300mm	
								5.10	ES	J7			VOC = 0ppm

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	**HOLE No. BHC14**
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Orangish brown slightly gravelly fine SAND. Gravel of subangular to rounded fine to coarse flint and quartz (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.80	B	10			
6							–		S		4 6 8 8 10 12	38/300mm	
								6.10	ES	J8			VOC = 0ppm
				Orangish brown very gravelly coarse SAND. Gravel of angular to subangular fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			6.60	6.60	B	12			
								6.80	ES	J9			VOC = 0ppm
7							–	7.00	D S	13	3 7 9 12 9 8	38/300mm	
				Light orangish brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			7.70	7.70	B	14			
								7.90	ES	J10			VOC = 0ppm
8							–		S		1 2 3 7 10 9	29/300mm	
				8.40 Becoming light brown with depth				8.60	B ES	16 J11			VOC = 0ppm
9							–		S		3 2 5 6 13 19	43/300mm	
								9.40	B	18			
								9.60	ES	J12			VOC = 0ppm
				9.90 Becoming dark brown with depth				9.90	B	19			
10							–		S		4 6 6 8 10 11	35/300mm	
								10.60	B	21			
11													Environmental seal installed from 10.8m to 9.0m bgl

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m); 50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	HOLE No. BHC14
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Light orangish brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*					S		3 3 5 6 6 6	23/300mm	Casing jammed at 10.90m, retracted 3 lengths of casing and redrilled from 8.0m depth
								11.70	B	23			
12							–		S		5 7 9 12 15 13	49/300mm	
								12.70	B	25			
13							–		S		6 11 14 16 20	50/190mm	
								13.70	B	27			
14							–		S		3 4 6 6 11 17	40/300mm	
								14.70	B	29			
15							–		S		4 6 9 11 12 18	50/300mm	
								15.70	B	31			
16							–		S		4 10 15 20 15 10	60/265mm	

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	HOLE No. BHC14
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light orangish brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				16.70	B	33			
17							–		S		3 8 7 11 14 16	48/300mm	
				Dark grey silty fine SAND (CRAG GROUP)			17.60	17.60	B	35			
18							–		S		1 1 3 5 9 8	25/300mm	
								18.60	B	38			
19							–	19.00	D S	39	12 17 25 25	50/150mm	
								19.60	B	40			
20							–		S		7 12 18 22 10	50/180mm	
								20.60	B	42			
21							–		S		7 7 11 14 14 18	57/300mm	
								21.60	B	44			
22													

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	**HOLE No. BHC14**
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22								22.00	D S	45	6 10 12 14 11 13	50/300mm	
				Dark grey sandy CLAY (CRAG GROUP)			22.10						
								22.60	B	46			
23								23.00	UT100	47			UT100: 100% Recovery
								23.60	B	48			
24									S		6 8 10 10 11 14	45/300mm	
				Possible dark grey slightly silty SAND (CRAG GROUP)			24.60	24.60	B	50			
25									S		12 19 29 21	50/135mm	Blowing sands encountered at 25m depth. Borehole backfilled to 18m depth
								25.70	B	52			
26									S		5 7 15 35	50/140mm	
								26.70	B	54			
27									S		15 16 22 28	50/140mm	
				27.30 Occasional shell fragments with depth									

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	**HOLE No. BHC14**
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Possible dark grey slightly silty SAND (CRAG GROUP) *(continued)*				27.60	B	56			
28							–		S		16 19 24 26	50/141mm	Environmental seal installed between 28.0m and 27.0m bgl
								28.50	B	58			
29							–		S		11 18 50	50/65mm	
								29.60	B	60			
30							–		S		10 16 24 26	50/145mm	
								30.60	B	62			
31							–		S		12 50	50/125mm	
								31.60	B	64			
32							–		S		13 34 50	50/10mm	
								32.60	B	66			
33													

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	HOLE No. BHC14
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Possible dark grey slightly silty SAND (CRAG GROUP) *(continued)*					S		20 27 50	50/50mm	
				Dark grey slightly sandy CLAY (CRAG GROUP)			33.80	33.80	B	68			
34				Dark grey slightly silty gravelly fine and medium SAND. Gravel of white shell fragments (CRAG GROUP)			34.00	34.00	UT100	69	(57)		UT100: 80% Recovery. Sample taken due to overlying clay band
								34.60	D	70			
35									S		31 50	50/105mm	
								35.60	B	72			
36									S		20 50	50/105mm	
								36.60	B	74			
37									S		26 50	50/115mm	
								37.60	B	76			
38									S		24 50	50/120mm	

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: AH/LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.6m 200mm cased from 9.6 to 27.0m 150mm cased from 27.0 to 39.7m	**HOLE No. BHC14**
Ground Level 2.948m OD	Equipment: Dando 2500		DATES 02/01/2018 - 12/01/2018
Coordinates: E 653874.811, N 292644.393 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey slightly silty gravelly fine and medium SAND. Gravel of white shell fragments (CRAG GROUP) *(continued)*				38.60	B	78			
39							–		S		19 50	50/125mm	
								39.60	B	80			
40							40.00		S		17 50	50/85mm	Borehole terminated at 40.0m depth. Target depth achieved. Backfilled to 2.5m bgl with bentonite grout. Monitoring well installed Borehole Terminated at 40m depth.
41							–					–	
42							–					–	
43							–					–	
44													

Remarks: Water (l) / Dandopol(ml) = 1700l / 50ml (8.40m - 11.45m), Water added (17.0m - 19.0m), Water (l) added = 400l (21.6m - 25.45m), Water (l) added = 200l (28.0m - 28.5m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Brown slightly gravelly clayey fine to coarse SAND with rootlets. Gravel of angular to subrounded fine to coarse flint (MADE GROUND)			0.00	0.10	B	1			
				0.30 Becoming gravelly with depth				0.25	ES	J1			VOC = 0ppm
								0.30	B	2			
				Dark brown and dark orangish brown SAND AND GRAVEL. Gravel of angular to subangular fine to coarse flint. Sand is fine to coarse			0.40	0.50	B	3			
								0.60	ES	J2			VOC = 0ppm
				Dark brown becoming black silty fine and medium SAND (MADE GROUND)			0.70						
								0.80	B	4			
								0.90	ES	J3			VOC = 0ppm
1				1.00 Becoming gravelly with depth. Gravel of clinker, flint and ash									
				Orangish brown gravelly fine and medium SAND. Gravel of angular to subangular fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			1.10	1.15	ES S	J4	7 9 11 9 11 10	41/300mm	VOC = 0ppm
								1.70	B	6			
								1.80	ES	J5			VOC = 0ppm
2				Brown becoming yellowish brown fine and medium SAND with occasional angular fine to coarse flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			2.00		S		3 6 10 12 14 14	50/300mm	Environmental seal installed from 2.0m to 1.2m bgl
				Brown gravelly medium SAND. Gravel of angular to subrounded fine to coarse flint. (HAPPISBURGH GLACIGENIC FORMATION)			2.60	2.60	B	8			
								2.70	ES	J6			VOC = 0ppm
3									S		3 5 7 9 11 16	43/300mm	
				Light brown slightly gravelly silty medium SAND. Gravel is fine and medium subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			3.60	3.60	B	10			
								3.70	ES	J7			VOC = 0ppm
				3.60 Becoming slightly clayey with depth									
4									S		3 7 9 8 11 16	44/300mm	
								4.60	B	12			
								4.70	ES	J8			VOC = 0ppm
5									S		3 7 11 13 16 10	50/245mm	

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light brown slightly gravelly silty medium SAND. Gravel is fine and medium subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.60	B	14			
								5.70	ES	J9			VOC = 0ppm
6							–		S		2 3 3 3 4 4	14/300mm	
				Dark yellowish brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			6.60	6.60	B	16			
								6.70	ES	J10			VOC = 0ppm
7							–		S		2 5 5 8 9 8	30/300mm	
								7.60	B	18			
								7.70	ES	J11			VOC = 0ppm
8							–		S		2 5 7 9 11 11	38/300mm	
								8.60	B	20			
								8.70	ES	J12			VOC = 0ppm
9							–		S		2 4 4 6 5 4	19/300mm	
													Environmental seal installed from 9.4m to 8.4m bgl
								9.60	B	22			
								9.70	ES	J13			VOC = 0ppm
				Yellowish brown medium and coarse gravelly SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.80	9.80	B	23			
10							–		S		2 4 7 9 12 9	37/300mm	
								10.60	B	25			
								10.70	ES	J14			VOC = 0ppm
11													

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Yellowish brown medium and coarse gravelly SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*					S		1 3 3 6 9 11	29/300mm	
								11.60	B	27			
12							–		S		4 6 12 16 22	50/160mm	
								12.60	B	29			
13							–		S		4 7 10 21 29 6	66/285mm	
				Orangish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			13.50	13.60	B	31			
14							–		S		6 10 21 29	50/125mm	
								14.60	B	33			
15							–		S		5 9 18 22 10	50/210mm	
								15.60	B	35			
16							–		S		4 8 12 9 10 19	50/245mm	

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Orangish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				16.60	B	37			
17							–		S		6 11 20 22 8	50/220mm	
								17.60	B	39			
18							–		S		9 22 21 19 10	50/210mm	
				Dark grey slightly clayey fine SAND (CRAG GROUP)			18.20						
				Dark grey silty fine SAND (CRAG GROUP)			18.60	18.60	B	41			
19							–		S		10 14 13 20 17	50/190mm	
								19.60	B	43			
20							–		S		11 19 24 26	50/130mm	
								20.60	B	45			
21							–		S		18 23 30 20	50/140mm	Environmental seal installed from 21.0m to 20.0m bgl
								21.60	B	47			
22													

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey silty fine SAND (CRAG GROUP) *(continued)*					S		4 4 9 13 28	50/160mm	
				Dark grey CLAY (CRAG GROUP)			22.40						
								22.60	B	49			
23								23.00	UT	50			
								23.60	D	51			
24								24.00	UT	52			
				Dark grey coarse SAND with occasional shell fragments (CRAG GROUP)			24.40						
								24.60	B	53			
25									S		6 10 10 10 15 14	49/300mm	
								25.60	B	55			
26									S		7 9 13 16 21	50/160mm	
								26.60	B	57			
27									S		16 29 50	50/30mm	

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey coarse SAND with occasional shell fragments (CRAG GROUP) *(continued)* 27.60 Sand becoming fine in grain size with depth				27.60	B	59			
28							–		S		22 28	50/85mm	
								28.60	B	61			
29							–		S		15 50	50/105mm	
								29.60	B	63			
30							–		S		25 50	50/110mm	
								30.60	B	65			
31							–		S		19 6 26 24	50/105mm	
								31.60	B	67			
32							–		S		25 38 12	12/35mm	
								32.60	B	69			
33													

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey coarse SAND with occasional shell fragments (CRAG GROUP) *(continued)*					S		19 6 35 15	50/100mm	
								33.60	B	71			Environmental seal installed from 33.5m to 32.5m bgl
34									S		18 7 27 23	50/105mm	
								34.60	B	73			
35									S		25 50	50/120mm	
								35.60	B	75			
36									S		16 9 45 5	50/135mm	
								36.60	B	77			
37									S		25 50	50/130mm	
								37.60	B	79			
38									S		22 3 50	50/30mm	

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - JK + ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.3m 250mm cased from 1.3 to 9.4m 200mm cased from 9.4 to 21.0m 150mm cased from 21.0 to 36.8m	**HOLE No. BHC15**
Ground Level 3.652m OD	Equipment: Dando 2500		DATES 16/01/2018 - 26/01/2018
Coordinates: E 653871.483, N 292629.652 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey coarse SAND with occasional shell fragments (CRAG GROUP) *(continued)*				38.60	B	81			
39							–		S		15 10 32 18	50/105mm	
								39.60	B	83			
40							40.00		S		11 14 21 19 10	50/185mm	Borehole terminated at 40.0m depth. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41							–					–	
42							–					–	
43							–					–	
44													

Remarks: Water (l) added = 250l (1.20m - 2.45m), Water (l) added = 500l (2.6m - 11.0m), Water (l) added = 300l (27.0m - 33.00m), Water (l) added = 200l (33.6m - 37.8m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown silty slightly gravelly fine SAND with rootlets. Gravel of subangular to subrounded fine and medium flint			0.00						
								0.20	B ES	1 J1			VOC = 12ppm (peak). Weak natural organic odour
				Dark brown and black gravelly fine to coarse SAND. Gravel of subangular fine and medium brick and flexible surfacing fragments (MADE GROUND)			0.40	0.40	B ES	2 J2			VOC = 23ppm (peak)
				Brown slightly gravelly fine and medium SAND with occasional gravel of fine flint and brick fragments (MADE GROUND)			0.55	0.60	B ES	3 J3			VOC = 2ppm (peak)
				Light brown and yellowish brown fine and medium SAND with occasional fine and medium flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			0.80						
1								1.00	B ES	4 J4			VOC = 6ppm (peak)
								1.20	B S	6	1 1 2 2 2 3	9/300mm	
								1.60	ES	J5			VOC = 8ppm (peak)
				Brown and light grey mottled sandy CLAY with occasional fine flint and chalk gravel (HAPPISBURGH GLACIGENIC FORMATION)			1.70	1.80	D	7			
2								2.00	UT100	8	(42)		UT100: 75% Recovery Environmental seal installed from 2.0m to 1.0m bgl
								2.50	ES	J6			VOC = 163ppm (peak). Strong natural organic odour
								2.60	D	9			
								2.80	D	10			
3								3.00	B S	12	2 3 3 4 6 7	20/300mm	
	3.20	3.50 2.67		Yellowish brown medium SAND with occasional fine flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			3.50	3.50 3.60	W ES D	13 J7 14			**VOC = 0ppm**
4								4.00	B S	16	1 2 2 3 4 7	16/300mm	
								4.50	ES	J8			VOC = 0ppm
5								5.00	S B	19	2 3 2 4 5 6	17/300mm	
								5.30	ES	J9			VOC = 0ppm

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
6				Yellowish brown medium SAND with occasional fine flint gravel (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				6.00	B C	20	1 1 2 2 2 3	9/300mm	
								6.30	ES	J10			VOC = 0ppm
7								7.00	B S	22	4 4 5 6 7 8	26/300mm	
								7.30	ES	J11			VOC = 0ppm
8				Yellowish brown gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			8.00	8.00	B S	24	3 5 6 6 6 6	24/300mm	
								8.30	ES	J12			VOC = 0ppm
9								9.00	B S	25	1 2 1 2 2 2	7/300mm	No sample recovery from SPT
								9.30	ES	J13			VOC = 0ppm
10				Greyish brown very gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint and occasional coarse subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			10.00	10.00	B S	27	3 4 4 3 3 3	13/300mm	
								10.30	ES	J14			VOC = 0ppm
11													

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Greyish brown very gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint and occasional coarse subrounded flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B C	28	3 4 4 3 4 5	16/300mm	
12								12.00	B C	29	4 4 4 4 6 6	20/300mm	
13								13.00	B C	30	2 3 3 4 5 7	19/300mm	
14				Greyish brown slightly silty fine SAND with occasional rounded fine flint (HAPPISBURGH GLACIGENIC FORMATION)			14.00	14.00	B C	31	3 3 4 7 8 9	28/300mm	Environmental seal installed from 14.0m to 13.0m bgl
15								15.00	B C	32	6 8 7 9 9 13	38/300mm	
16								16.00	B S	34	3 3 5 7 7 10	29/300mm	

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Greyish brown slightly silty fine SAND with occasional rounded fine flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
17								17.00	B S	36	3 7 7 10 16 17	50/300mm	
18								18.00	B S	38	2 4 6 7 6 10	29/300mm	
				Grey fissured CLAY (HAPPISBURGH GLACIGENIC FORMATION)			18.50						
19								19.00	UT100 B	39 40			UT100: 100% Recovery
				Grey silty fine SAND (CRAG GROUP)			19.20						
20								20.00	B S	40	6 8 8 10 14 18	50/300mm	
21								21.00	B B S	42 44	10 14 14 17 19	50/210mm	
				Grey fissured CLAY (CRAG GROUP)			21.60						
22													

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey fissured CLAY (CRAG GROUP) *(continued)*				22.00	UT100	46			UT100: 100% Recovery
								22.60	D	47			
23								23.00	B S	49	7 10 12 14 16 8	50/260mm	
24								24.00	UT100	50			UT100: 100% Recovery
								24.60	D DS	51 51			
25				Grey silty fine SAND with occasional shell fragments (CRAG GROUP)			25.00	25.00	B S	53	6 8 10 12 15 13	50/260mm	Environmental seal installed from 25.0m to 24.0m bgl
26								26.00	B S	55	10 9 7 7 5 6	25/260mm	
27								27.00	B S	57	7 13 14 15 17 4	50/235mm	

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata Leg	Strata Reduced Level	Strata Depth	Sampling/In-Situ Testing Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine SAND with occasional shell fragments (CRAG GROUP) *(continued)*									
28								28.00	B S	59	5 18 40 10	50/110mm	
29								29.00	B S	61	12 13 15 15 20	50/190mm	
30								30.00	B S	63	5 12 30 20	50/110mm	
31								31.00	B S	65	5 20 25 25	50/125mm	
32								32.00	B S	67	7 12 23 27	50/120mm	
33				Grey silty gravelly fine SAND. Gravel of fine and medium white shell fragments (CRAG GROUP)			32.80						

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty gravelly fine SAND. Gravel of fine and medium white shell fragments (CRAG GROUP) *(continued)*				33.00	B S	69	4 10 15 21 14	50/180mm	
34								34.00	D S	71	10 15 32 18	50/95mm	
35								35.00	B S	73	12 13 18 27 5	50/160mm	
36				36.00 Becoming slightly gravelly with depth				36.00	B S	75	25 42 8	8/5mm	Environmental seal installed from 36.0m to 35.0m bgl
37								37.00	B S	77	7 17 25 25	50/135mm	
38								38.00	B S	79	15 10 28 22	50/105mm	

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.5m 200mm cased from 13.5 to 39.6m	**HOLE No. BHC17**
Ground Level 3.784m OD	Equipment: Dando 175		DATES 23/01/2018 - 31/01/2018
Coordinates: E 653871.004, N 292601.236 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty gravelly fine SAND. Gravel of fine and medium white shell fragments (CRAG GROUP) *(continued)*									
39								39.00	B S	81	25 35 15	15/20mm	
40							40.00		S		25 32 18	18/30mm	Borehole completed at 40.0m depth. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks: Water (l) added = 50l (5.0m - 6.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (6.0m - 12.0m), Water(l) / Dandopol (ml) added = 750l / 100ml (13.0m - 16.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (17.0m - 25.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (25.0m - 30.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (31.0m - 36.0m), Water(l) / Dandopol (ml) added = 300l / 100ml (36.0m - 40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Brown silty slightly clayey fine SAND with rootlets and occasional gravel of subangular to subrounded flint (TOPSOIL)			0.00	0.10	ES	J1			VOC = 0ppm
				Dark brown silty gravelly SAND. Gravel is fine and medium subangular to subrounded flint (MADE GROUND)			0.30	0.30	ES	J2			VOC = 1ppm
								0.70	ES	J3			VOC = 1ppm
1				Orangish brown and brown mottled slightly gravelly fine and medium SAND. Gravel is fine and medium subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			0.90	0.90	B	1			
								1.10	ES	J4			VOC = 0ppm
									S		1 2 3 5 5 5	18/300mm	
2				Brown very gravelly coarse SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			1.70	1.70	B ES	3 J5			VOC = 0ppm
									S		3 7 9 16 17 8	50/300mm	
								2.70	B ES	5 J6			VOC = 0ppm Environmental seal installed from 2.70m to 1.70m bgl
3									S		4 9 11 16 23	50/190mm	
				Greyish brown slighlty silty slightly gravelly fine and medium SAND. Gravel of subangular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION)			3.50	3.70	B ES	7 J7			VOC = 0ppm
4									S		2 3 5 7 7 5	24/300mm	
								4.70	B ES	9 J8			VOC = 0ppm
5									S		3 7 9 11 14 16	50/290mm	

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
								5.70	B ES	11 J9			VOC = 0ppm
6				Light orangish brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded medium to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			5.70		S		2 4 4 6 7 9	26/300mm	
								6.70	B ES	13 J10			VOC = 0ppm
7									S		3 3 6 7 11 11	35/300mm	
								7.70	B ES	15 J11			VOC = 0ppm
8									S		3 3 4 4 5 7	20/300mm	
								8.70	B ES	17 J12			VOC = 0ppm
9									S		4 6 10 15 20 15	60/255mm	
								9.70	B ES	19 J13			VOC = 0ppm
10								10.00	ES S	J14	6 9 15 20 23 2	60/235mm	
								10.70	B	21			VOC = 0ppm
11													

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD:	Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m
			HOLE No. BHC18
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Light orangish brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded medium to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B S	23	3 5 5 5 6 6	22/300mm	
12				Brown gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)				12.00	B C	24	2 8 9 8 9 9	35/300mm	
							12.50						
13				Brown SAND AND GRAVEL. Gravel of subangular to subrounded fine and medium flint. Sand is medium and coarse. (HAPPISBURGH GLACIGENIC FORMATION)				13.00	B C	25	2 1 2 5 7 7	21/300mm	
							13.80						
14				Orangish brown SAND AND GRAVEL. Gravel of subangular medium and coarse flint. Sand is medium. (HAPPISBURGH GLACIGENIC FORMATION)				14.00	B C	26	4 3 5 7 10 12	34/300mm	
				14.60 Becoming slightly cobbly with depth				14.60	B	27			
15								15.00	B S	29	4 8 9 13 13 13	48/300mm	Environmental seal installed from 15.00m to 14.20m bgl
16								16.00	B S	31	3 7 10 15 22 5	52/255mm	
							16.20						
				Light brown slightly gravelly silty fine SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)									

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light brown slightly gravelly silty fine SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
17									S		10 9 12 13 10 15	50/280mm	
				Dark grey fissured CLAY (CRAG GROUP)			17.80	17.80	B	33			
18								18.00	UT	34	(57)		UT100: 85% Recovery
								18.60	D DS	35 35			
				Dark grey silty fine SAND with occasional clay pockets (CRAG GROUP)			18.80	18.80	B	36			
19									S		8 11 18 22 10	50/185mm	
				Dark grey silty fine SAND (CRAG GROUP)			19.70	19.70	B	38			
20									S		9 14 31 19	50/115mm	
								20.70	B	40			
21									S		10 15 50	50/60mm	
								21.70	B	42			
22													

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey silty fine SAND (CRAG GROUP) *(continued)*					S		6 12 22 28	50/130mm	
								22.80	B	44			
23								23.00	UT	45			UT100: 100% Recovery. Sample taken due to increased clay content
								23.60	D	46			
				Dark grey CLAY (CRAG GROUP)			23.70	23.70	B	47			
24								24.00	UT	48			UT100: 60% Recovery
								24.60	D DS	49 49			
25								25.00	UT	50			UT100: 85% Recovery
				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP) 25.50 Sand becoming fine and medium with depth			25.30					
								25.70	B	51			
26									S		16 9 19 21 10	50/175mm	
								26.70	B	53			
27									S		22 3 24 26	50/105mm	

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP) *(continued)*				27.70	B	55			
28							–		S		8 15 16 21 13	50/190mm	
								28.70	B	57			
29							–		S		11 14 23 27	50/125mm	
								29.70	B	59			
30							–		S		16 9 32 18	50/105mm	
								30.70	B	61			
31							–		S		22 3 25 25	50/95mm	
								31.70	B	63			
32							–		S		20 5 32 15	47/100mm	
								32.70	B	65			
33													

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP) *(continued)*					S		14 11 36 14	50/85mm	
								33.70	B	67			
34							–		S		21 4 50	50/65mm	Environmental seal installed from 34.0m to 32.2m bgl
				Dark grey slightly silty fine SAND with shell fragments (CRAG GROUP)			34.40						
								34.70	B	69			
35							–		S		6 11 13 19 18	50/190mm	
								35.70	B	71			
36							–		S		8 15 21 29	50/140mm	
								36.70	B	73			
37							–		S		20 5 50	50/30mm	
								37.70	B	75			
38							–		S		20 5 50	50/40mm	

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.7m 250mm cased from 2.7 to 14.5m 200mm cased from 14.5 to 34.0m 150mm cased from 34.0 to 39.9m	**HOLE No. BHC18**
Ground Level 3.674m OD	Equipment: Dando 2500		DATES 29/01/2018 - 16/02/2018
Coordinates: E 653892.672, N 292607.315 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey slightly silty fine SAND with shell fragments (CRAG GROUP) *(continued)*				38.70	B	77			
39							–		S		7 13 20 30	50/140mm	
								39.70	B	79			
40							40.00		S		25 34 15	15/20mm	Borehole terminated at 40m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41							–					–	
42							–					–	
43							–					–	
44													

Remarks: Water added (0.90m - 2.70m), Water(l) added = 400l (3.0m - 11.0m), Water(l) added = 200l (35.0m - 38.7m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata Leg	Strata Reduced Level	Strata Depth	Sampling/In-Situ Testing Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Brown gravelly slightly silty medium SAND with rootlets. Gravel of subangular to rounded fine to coarse flint and chalk (TOPSOIL)			0.00	0.20	B	1			
								0.30	ES	J1			VOC = 7ppm (peak)
				Dark brown gravelly fine and medium SAND. Gravel of angular to subrounded fine to coarse flint, chalk, brick and concrete (MADE GROUND)			0.40	0.50	B	2			
								0.60	ES	J2			VOC = 4ppm (peak)
				Light brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION)			0.80	0.90	B	3			
1													
				1.20 Becoming gravelly with depth				1.10	ES	J3			VOC = 10ppm (peak)
				Greyish brown gravelly silty medium SAND with occasional clay pockets. Gravel of subangular to rounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			1.70	1.70	B C	4	1 1 3 3	12/300mm	
								1.80	ES	J4	3 3		VOC = 35ppm (peak) 5ppm (steady). No odour. Environmental seal installed from 1.9m to 1.0m bgl
2													
				Light brown gravelly medium and coarse SAND. Gravel of subangular to subrounded medium and coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			2.20	2.20	B S	6	4 4 4 4	18/300mm	
								2.30	ES	J5	5 5		VOC = 3ppm (peak)
3								3.00	B ES C	7 J6	3 4 2 2 3 2	9/300mm	VOC = 33ppm (peak). No odour.
4								4.00	B ES C	8 J7	2 2 3 4 7 7	21/300mm	VOC = 0ppm
5				Orangish brown gravelly silty medium SAND. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			5.00	5.00	B ES C	9 J8	2 3 4 5 6 7	22/300mm	VOC = 0ppm

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Orangish brown gravelly silty medium SAND. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
6				Orangish brown silty fine and medium SAND with occasional fine subangular flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00	B ES C	10 J9	2 3 4 5 5 5	19/300mm	VOC = 0ppm
7								7.00	B ES C	11 J10	1 2 3 3 7 8	21/300mm	VOC = 0ppm
8				Brown gravelly medium SAND with thin bands of grey brown sandy clay. Gravel of fine and medium flint with occasional coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			8.00	8.00	B ES C	12 J11	2 3 3 4 5 5	17/300mm	VOC = 0ppm
9				Brown gravelly medium SAND. Gravel of subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			9.00	9.00	B ES C	13 J12	2 3 3 4 5 7	19/300mm	VOC = 0ppm
10								10.00	B ES C	14 J13	3 4 5 5 5 6	21/300mm	VOC = 0ppm
11													

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Brown SAND AND GRAVEL. Gravel of subangular to rounded fine to coarse flint. Sand is fine and medium. (HAPPISBURGH GLACIGENIC FORMATION)			11.00	11.00	B C	15	2 4 5 6 6 7	24/300mm	
12								12.00	B C	16	6 7 6 10 11 13	40/300mm	
				Greyish brown sandy gravelly CLAY. Gravel of subrounded to rounded medium flint. Sand is medium (HAPPISBURGH GLACIGENIC FORMATION)			12.80	12.90	D	17			
13								13.00	D DS B S	18 18 19	5 5 5 9 8 8	30/300mm	
				Orangish brown sandy slightly cobbly GRAVEL. Gravel of subangular to rounded fine to coarse flint. Cobbles of flint (HAPPISBURGH GLACIGENIC FORMATION)			13.30					
14								14.00	B C	20	3 4 6 10 16 16	48/300mm	
				Brown silty slightly gravelly fine SAND. Gravel of subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			14.50						
15								15.00	B C	21	4 5 7 11 12 17	47/300mm	
16								16.00	B C	22	2 3 8 10 13 15	46/300mm	

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Brown silty slightly gravelly fine SAND. Gravel of subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
				Greyish brown silty fine SAND (CRAG GROUP)			16.80	16.80	D	23			
17								17.10	B S	25	4 5 6 9 9 10	34/300mm	Environmental seal installed from 17.5m to 16.5m bgl
18								18.00	B C	25	2 4 6 8 8 10	32/300mm	No recovery from SPT sample
19								19.00	B S	28	4 8 10 15 16 9	50/245mm	
20								20.00	B S	30	4 10 14 18 18	50/210mm	
21								21.00	B S	32	4 8 16 20 14	50/200mm	
				Grey slightly sandy silty CLAY (CRAG GROUP)			21.80						
22													

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey slightly sandy silty CLAY (CRAG GROUP) *(continued)*				22.00	B S	34	8 7 8 8 9 11	36/300mm	
23								23.00	UT B	35 37	(68)	–	UT100: 100% Recovery
								23.60	D DS	36 36			
24								24.00	B S	39	2 8 7 8 8 9	32/300mm	
				Grey slightly silty fine SAND with occasional fine shells (CRAG GROUP)			24.80						
25								25.00	B S	41	2 7 11 12 13 14	50/275mm	
26								26.00	B S	43	25 14 16 20	36/115mm	
27								27.00	B C	44	19 6 21 29	50/125mm	

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly silty fine SAND with occasional fine shells (CRAG GROUP) *(continued)*									
28								28.00	B S	46	25 32 18	18/30mm	
29								29.00	B C	48	25 50	50/85mm	
30								30.00	D DS B S	49 49 50	8 12 14 20 16	50/190mm	Environmental seal installed from 30.0m to 29.0m bgl to prevent blowing sands over the weekend
31								31.00	B S	52	6 17 18 29 3	50/155mm	
32								32.00	B S	54	10 15 31 19	50/115mm	
33													

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey slightly silty fine SAND with occasional fine shells (CRAG GROUP) *(continued)*				33.00	B S	56	12 13 30 20	50/110mm	
34							–	34.00	B S	58	10 15 20 30	50/120mm	
35							–	35.00	B S	60	9 14 24 26	50/125mm	
36				36.00 Becoming slightly gravelly with depth. Gravel of fine shell fragments			–	36.00	B S	62	9 12 17 30 3	50/155mm	
37							–	37.00	B S	64	12 13 35 15	50/95mm	
38							–	38.00	B S	66	12 13 31 19	50/105mm	

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 16.0m 200mm cased from 16.0 to 39.3m	**HOLE No. BHC19**
Ground Level 3.616m OD	Equipment: Dando 175		DATES 05/02/2018 - 16/02/2018
Coordinates: E 653885.106, N 292578.744 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly silty fine SAND with occasional fine shells (CRAG GROUP) *(continued)*									
39							–	39.00	B S	68	16 9 36 14	50/85mm	
40							40.00	40.00	B S	70	6 18 19 28 3	50/155mm	Borehole terminated at 40m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41							–					–	
42							–					–	
43							–					–	
44													

Remarks: Water(l) / Dandopol (ml) added = 250l / 50ml (3.0m - 7.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (7.0m - 14.0m), Water(l) / Dandopol (ml) added = 500l / 100ml (15.0m - 17.0m), Water(l) / Dandopol (ml) added = 500l / 150ml (18.0m - 26.0m), Water(l) / Dandopol (ml) added = 650l / 100ml (26.0m -29.0m), Water(l) / Dandopol (ml) added = 350l / 100ml (30.0m -35.0m), Water(l) / Dandopol (ml) added = 250l / 100ml (35.0m -40.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD:	Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m
			HOLE No. BHC20
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Dark grey and black slightly sandy GRAVEL of subangular to subrounded fine to coarse flint and flexible surfacing (MADE GROUND)			0.10						
				Greyish brown sandy GRAVEL of angular to subrounded fine and medium flint and clinker (MADE GROUND)			0.30	0.30	ES	J1			VOC = 4ppm (peak)
				Orangish brown silty gravelly fine and medium SAND. Gravel of subangular to rounded fine flint (MADE GROUND)			0.50	0.50 0.50-0.70 0.50	B B ES	1 1 J2			VOC = 0ppm
				Multicoloured gravelly fine and medium SAND with occasional pockets of compacted sand. Gravel of subangular to subrounded fine flints and occasional clinker (MADE GROUND)			0.85	1.00 1.00-1.20 1.00 1.20-1.65	B B ES D S	3 3 J3 4	4 6 6 6 6 7	25/300mm	VOC = 1ppm (peak)
				Orangish brown slightly silty gravelly fine and medium SAND. Gravel of subangular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION)			1.60	1.70 1.80	B ES B B	5 J4 6 6			VOC = 0ppm Environmental seal installed from 1.8m to 1.2m bgl
									S		3 5 5 4 6 5	20/300mm	
								2.80	B ES	8 J5			VOC = 0ppm
									S		4 5 6 9 12 10	37/300mm	
								3.80	B B ES	10 10 J6			VOC = 0ppm
									S		5 7 11 14 17 18	60/235mm	
				Light brown silty fine SAND with occasional fine gravel of flint (HAPPISBURGH GLACIGENIC FORMATION)			4.70	4.70	B ES	12 J7			VOC = 0ppm
				5.00 Sand becoming fine to medium with depth					S		3 3 3 5 7 9	24/300mm	

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD:	Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m
			HOLE No. BHC20
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light brown silty fine SAND with occasional fine gravel of flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.70	B B	14 14			VOC = 0ppm
									ES	J8			
6									S		5 7 9 11 15 15	50/265mm	
				6.60 Becoming slightly gravelly with depth				6.60	ES	J9			VOC = 0ppm
								6.70	B	16			
7									S		2 4 4 4 9 10	27/300mm	
								7.70	B B	18 18			VOC = 0ppm
									ES	J10			
8									S		2 4 6 6 7 11	30/300mm	
				Greyish brown silty fine SAND with occasional fine gravel of flint and small pockets of grey clay (HAPPISBURGH GLACIGENIC FORMATION)			8.60	8.60	B ES	20 J11			VOC = 0ppm
9									S		2 3 4 6 6 9	25/300mm	
								9.60	ES	J12			VOC = 0ppm
								9.70	B B	22 22			
10									S		3 7 11 13 13 13	50/275mm	
								10.60	B ES	24 J13			VOC = 0ppm
11													

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m	HOLE No. BHC20
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Greyish brown silty fine SAND with occasional fine gravel of flint and small pockets of grey clay (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*					S		2 2 3 3 4 8	18/300mm	
				Grey mottled orange brown slightly sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			11.60	11.70	B	26			
									B	26			
12								12.00-12.45	D	27	2 2 2 3 5 7	17/300mm	
									S				
				Light grey slightly gravelly medium and coarse SAND. Gravel of angular to subrounded fine to coarse flint (CRAG GROUP)			12.50	12.60	B	28			
13									S		3 5 9 13 18 10	50/265mm	
								13.70	B	30			
									B	30			
14									S		2 7 15 25 10	50/170mm	
								14.60	B	32			
15									S		6 11 18 22 10	50/160mm	
								15.70	B	34			
									B	34			
16									S		8 12 21 29	50/135mm	

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m	HOLE No. BHC20
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light grey slightly gravelly medium and coarse SAND. Gravel of angular to subrounded fine to coarse flint (CRAG GROUP) *(continued)*				16.70	B	36			
17							–		S		4 5 4 6 6 7	23/300mm	
				Dark grey silty fine SAND (CRAG GROUP)			17.50	17.60	B	38			
									B	38			
18							–		S		3 5 5 7 6 7	25/300mm	
				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP)			18.60	18.70	B	40			
19							–		S		19 6 22 28	50/125mm	
								19.70	B	42			
									B	42			
20							–		S		21 4 20 25 5	50/155mm	
								20.70	B	44			
21							–		S		12 13 26 24	50/125mm	
								21.70	B	46			
									B	46			
22													

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD:	Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m
			HOLE No. BHC20
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey silty fine SAND with occasional shell fragments (CRAG GROUP) *(continued)*					S		16 9 22 28	50/135mm	
				Dark grey slightly shelly medium and coarse SAND (CRAG GROUP)			22.50	22.60	B	48			
23								23.00	UT	48	(92)		UT100: 100% Recovery, UT100 taken due to clay band within the soils from 22.5mbgl - 23.4mbgl.
								23.00- 23.45	D UT	49 49			
								23.00					
								23.80	B	51			
24									S		15 10 21 27 2	50/155mm	
								24.60	B B	53 53			
25									S		21 4 24 26	50/90mm	
								25.70	B	55			
26									S		20 5 20 23 4	47/200mm	
								26.70	B B	57 57			
27									S		19 6 27 23	50/105mm	

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m	**HOLE No. BHC20**
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey slightly shelly medium and coarse SAND (CRAG GROUP) *(continued)*				27.70	B	59			
28									S		22 3 22 24	46/115mm	Environmental seal installed from 28.0m to 27.0m bgl
								28.70	B	61			
									B	61			
29									S		16 9 50	50/60mm	
								29.70	B	63			
30									S		22 3 39 11	50/85mm	
				Dark grey silty fine SAND with shell fragments (CRAG GROUP)			30.50						
								30.70	B	65			
									B	65			
31									S		25 42 8	8/5mm	
								31.70	B	67			
32									S		17 8 31 19	50/105mm	
								32.70	B	69			
									B	69			
33													

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m	HOLE No. BHC20
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey silty fine SAND with shell fragments (CRAG GROUP) *(continued)*					S		18 7 24 26	50/115mm	
								33.70	B	71			
34							–		S		22 3 28 22	50/105mm	
								34.70	B	73			
									B	73			
35							–		S		15 10 31 19	50/95mm	
								35.70	B	75			
36							–		S		17 8 25 25	50/135mm	
								36.70	B	77			
									B	77			
37							–		S		22 3 27 23	50/115mm	
								37.70	B	79			
38							–		S		25 50	50/90mm	

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: FIELDWORK BY: J&M - JK+ND	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 11.5m 200mm cased from 11.5 to 27.0m 150mm cased from 27.0 to 39.6m	**HOLE No. BHC20**
Ground Level 3.424m OD	Equipment: Dando 2500		DATES 14/02/2018 - 08/03/2018
Coordinates: E 653908.954, N 292570.707 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine SAND with shell fragments (CRAG GROUP) *(continued)*				38.70	B	81			
									B	81			
39							–		S		18 7 32 18	50/105mm	
								39.70	B	83			
40							40.00		S		12 13 22 28	50/135mm	Borehole terminated at 40.0m depth. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41							–					–	
42							–					–	
43							–					–	
44													

Remarks: Water(l) added = 50l / 100ml (2.0m -7.0m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.5m 200mm cased from 1.5 to 9.0m 150mm cased from 9.0 to 24.6m	**HOLE No. BHC22**
Ground Level 3.03m OD	Equipment: Dando 175		DATES 16/01/2018 - 22/01/2018
Coordinates: E 653939.029, N 292467.009 NGR	SHEET 1 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Brown medium and coarse SAND			0.15						
				Brown gravelly fine to coarse SAND. Gravel of angular to subrounded fine and medium brick, flint and flexible surfacing fragments (MADE GROUND)			0.20	0.20	B ES	1 J1			VOC = 53ppm (peak)
								0.50-0.80 0.50	B ES	2 J2			VOC = 98ppm (peak)
1													
				Orangish brown slightly clayey fine and medium SAND with occasional fine and medium flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			1.10	1.20	B ES S	4 J3	1 2 2 3 3 4	12/300mm	VOC = 6ppm (peak)
2				Orangish brown clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			2.00	2.00	U UT ES	5 5 J4	(17)		VOC = 2ppm (peak) UT100: 100% Recovery. Sample taken due to high clay content Environmental seal installed from 2.0m to 1.0m bgl
								2.60	D	6			
3								3.00	D B ES S	7 8 J5	1 0 1 1 1 1	4/300mm	VOC = 1ppm (peak)
4								4.00	D B ES S	9 10 J6	1 1 2 2 3 4	11/300mm	VOC = 0ppm
	4.40	4.50 3.74		Brown silty SAND with occasional thin bands of grey clay (HAPPISBURGH GLACIGENIC FORMATION)			4.50						
5				5.00 Becoming greyish brown with depth				5.00	B ES S	12 J7	1 1 1 1 2 2	6/300mm	VOC = 0ppm

Remarks: Water(l) added = 100l (8.5m -11.5m), Water(l) / Dandopol (ml) added = 250l / 100ml(11m -19m), Water (l) added = 100l (19.0m - 25.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.5m 200mm cased from 1.5 to 9.0m 150mm cased from 9.0 to 24.6m	**HOLE No. BHC22**
Ground Level 3.03m OD	Equipment: Dando 175		DATES 16/01/2018 - 22/01/2018
Coordinates: E 653939.029, N 292467.009 NGR	SHEET 2 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Brown silty SAND with occasional thin bands of grey clay (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
6								6.00	B ES S	14 J8	2 3 6 7 8 8	29/300mm	VOC = 0ppm
7								7.00	B ES C	15 J9	1 1 2 1 2 2	7/300mm	VOC = 0ppm
8								8.00	B ES C	16 J10	1 1 1 1 2 2	6/300mm	VOC = 0ppm
9				Grey brown silty SAND with occasional fine and medium flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			9.00	9.00	D B ES S	17 18 J11	2 3 4 7 7 8	26/300mm	VOC = 0ppm Environmental seal installed from 9.0m to 8.0m bgl
10								10.00	B ES S	20 J12	2 2 2 2 2 2	8/300mm	VOC = 0ppm
11				Grey sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			10.70	10.80	D	22			

Remarks: Water(l) added = 100l (8.5m -11.5m), Water(l) / Dandopol (ml) added = 250l / 100ml(11m -19m), Water (l) added = 100l (19.0m - 25.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.5m 200mm cased from 1.5 to 9.0m 150mm cased from 9.0 to 24.6m	**HOLE No. BHC22**
Ground Level 3.03m OD	Equipment: Dando 175		DATES 16/01/2018 - 22/01/2018
Coordinates: E 653939.029, N 292467.009 NGR	SHEET 3 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Grey brown medium and coarse SAND (HAPPISBURGH GLACIGENIC FORMATION)			11.00	11.00	B	24			
12								12.00	B S	26	2 3 4 7 7 6	24/300mm	
13				Greyish brown mottled brown slightly clayey medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			13.00	13.00	B S	28	8 12 13 12 12 14	51/300mm	
14								14.00	B S	30	2 8 7 12 13 14	46/300mm	
15				Grey slightly clayey fine SAND (CRAG GROUP)			15.10	15.00	B S	32	3 4 6 6 7 7	26/300mm	
16				16.00 Becoming clayey with depth				16.00	B S	34	2 4 6 6 8 9	29/300mm	

Remarks: Water(l) added = 100l (8.5m -11.5m), Water(l) / Dandopol (ml) added = 250l / 100ml(11m -19m), Water (l) added = 100l (19.0m - 25.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.5m 200mm cased from 1.5 to 9.0m 150mm cased from 9.0 to 24.6m	**HOLE No. BHC22**
Ground Level 3.03m OD	Equipment: Dando 175		DATES 16/01/2018 - 22/01/2018
Coordinates: E 653939.029, N 292467.009 NGR	SHEET 4 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly clayey fine SAND (CRAG GROUP) *(continued)*									
17							–	17.00	UT B	35 37	(40)	–	UT100: 75% Recovery. Sample taken due to high clay content
								17.70	D	36			
18							–	18.00	B S	39	5 6 8 7 10 10	35/300mm	
				Grey silty fine SAND with occasional pockets of grey clay (CRAG GROUP)			18.50						
19							–	19.00	B S	41	10 20 25 20 5	50/160mm	
20							–	20.00	B	43		–	
21							–	21.00	B	45		–	
22													

Remarks: Water(l) added = 100l (8.5m -11.5m), Water(l) / Dandopol (ml) added = 250l / 100ml(11m -19m), Water (l) added = 100l (19.0m - 25.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.5m 200mm cased from 1.5 to 9.0m 150mm cased from 9.0 to 24.6m	**HOLE No. BHC22**
Ground Level 3.03m OD	Equipment: Dando 175		DATES 16/01/2018 - 22/01/2018
Coordinates: E 653939.029, N 292467.009 NGR	SHEET 5 OF 5		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey silty fine SAND with occasional pockets of grey clay (CRAG GROUP) *(continued)*				22.00	B	47			
23				23.10 Occasional subangular to subrounded fine flint present with depth				23.00	B	48			
24								24.00	B	50			
25							25.00						Borehole terminated at 25.0m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 25m depth.
26													
27													

Remarks: Water(l) added = 100l (8.5m -11.5m), Water(l) / Dandopol (ml) added = 250l / 100ml(11m -19m), Water (l) added = 100l (19.0m - 25.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 1.5m 150mm cased from 1.5 to 14.8m	**HOLE No. BHC23**
Ground Level 3.324m OD	Equipment: Dando 175		DATES 26/02/2018 - 27/02/2018
Coordinates: E 653917.759, N 292430.741 NGR	SHEET 1 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown silty fine and medium SAND with occasional flint gravel (TOPSOIL)			0.00						
								0.30	B ES	1 J1			VOC = 0ppm
				Dark brown gravelly fine to coarse SAND with occasional pockets of orangish brown and black sand and occasional cobbles of concrete. Gravel of angular to subrounded fine to coarse flint, concrete and occasional brick (MADE GROUND)			0.60						
								0.70- 1.00 0.70	B ES	2 J2			VOC = 1ppm (peak)
1							–					–	
				Orangish brown fine and medium SAND with occasional rounded flint (HAPPISBURGH GLACIGENIC FORMATION)			1.20	1.20	D	3			
								1.40	B C	4	1 2 2 2	9/300mm	
								1.50	ES	J3	2 3		VOC = 2ppm (peak)
2				Orangish brown slightly clayey fine and medium SAND with occasional pale grey mottling and bands of clay (HAPPISBURGH GLACIGENIC FORMATION) 2.20 Bands of clay becoming more frequent with depth			2.00	2.00- 2.50	B S	6	1 2 2 3 3 3	11/300mm	Environmental seal installed from 2.0m to 1.0m bgl
								2.30	ES	J4			VOC = 1ppm (peak)
3							–	3.00	B S	8	1 1 3 3 4 7	17/300mm	
								3.30	ES	J5			VOC = 2ppm (peak)
4				Orangish brown silty fine and medium SAND with occasional fine flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			4.00	4.00	B S	10	6 7 9 14 21 15	59/265mm	
								4.30	ES	J6			VOC = 1ppm (peak)
5							–	5.00- 5.50	B S	12	1 2 9 10 12 13	44/300mm	
								5.30	ES	J7			VOC = 1ppm (peak)

Remarks: Water(l) added = 100l (8.5m -11.0m), Water(l) added = 50l (11m -15m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 1.5m 150mm cased from 1.5 to 14.8m	**HOLE No. BHC23**
Ground Level 3.324m OD	Equipment: Dando 175		DATES 26/02/2018 - 27/02/2018
Coordinates: E 653917.759, N 292430.741 NGR	SHEET 2 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Orangish brown silty fine and medium SAND with occasional fine flint gravel (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
6				Yellowish brown silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00	B C	13	8 13 12 15 16 7	50/235mm	
								6.30	ES	J8			VOC = 0ppm
7								7.00-7.50	B S	15	2 4 6 6 9 11	32/300mm	
								7.30	ES	J9			VOC = 0ppm
8								8.00	B S	17	1 0 1 4 5 8	18/300mm	
								8.30	ES	J10			VOC = 0ppm
9								9.00	B S	19	2 2 5 7 10 13	35/300mm	
								9.30	ES	J11			VOC = 0ppm
				9.80 Band of grey clay				9.90	D	20			
10								10.00-10.50	B S	22	2 6 8 14 13 12	47/300mm	
								10.50	ES	J12			VOC = 1ppm (peak)
11													

Remarks: Water(l) added = 100l (8.5m -11.0m), Water(l) added = 50l (11m -15m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M - RW + SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 1.5m 150mm cased from 1.5 to 14.8m	**HOLE No. BHC23**
Ground Level 3.324m OD	Equipment: Dando 175		DATES 26/02/2018 - 27/02/2018
Coordinates: E 653917.759, N 292430.741 NGR	SHEET 3 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Yellowish brown silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)* 11.00 Becoming greyish brown with depth				11.00	B S	24	1 3 6 7 8 9	30/300mm	
12				Yellowish brown silty medium and coarse SAND with occasional dark orangish brown sand pockets and rounded flint (HAPPISBURGH GLACIGENIC FORMATION)			12.00	12.00	B S	26	3 6 7 11 12 14	44/300mm	
				Grey CLAY (HAPPISBURGH GLACIGENIC FORMATION)			12.60	12.80	D DS	27 27			
13				Greyish brown silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			13.00	13.00	B S	29	3 7 12 12 15 11	50/275mm	
14								14.00- 14.50	B S	31	5 6 7 11 12 14	44/300mm	
15							15.00		S		2 2 4 7 9 11	31/300mm	Borehole terminated at 15.0m. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 15m depth.
16													

Remarks: Water(l) added = 100l (8.5m -11.0m), Water(l) added = 50l (11m -15m),

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 1.9m 150mm cased from 1.9 to 14.6m	**HOLE No. BHC24**
Ground Level 2.994m OD	Equipment: Dando 175		DATES 14/02/2018 - 23/02/2018
Coordinates: E 653973.415, N 292410.445 NGR	SHEET 1 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE (Pale grey, no rebar)			0.00						
				Intact bricks and cobbles of brick (MADE GROUND)			0.15						
				Orangish brown and dark orangish brown silty gravelly fine to coarse SAND with occasional pockets of black / dark brown silty sand (MADE GROUND) 0.35 Becoming greyish brown in colour with depth			0.23	0.25	ES	J1			VOC = 1ppm (peak)
								0.45	ES	J2			VOC = 1ppm (peak)
								0.50	B	1			
								0.60-1.00	B	1			
				Black silty slightly gravelly fine and medium SAND with moderate natural organic odour. Gravel of angular to subrounded fine and medium flint and clinker (MADE GROUND)			0.70						Standpipe installed at 0.8m
1								1.00	ES	J3			VOC = 1ppm (peak)
								1.20	D	2			
								1.43	EW	W1			
								1.50-1.90	B ES	4 J4	1 2 2 2	7/300mm	VOC = 0ppm
								1.50 1.52	S EW	W2	1 2		
								1.84	EW	W3			
				Greyish brown silty slightly gravelly fine and medium SAND with weak natural organic odour to 2.5m. Gravel of subangular to rounded fine flint. (HAPPISBURGH GLACIGENIC FORMATION)			1.90	1.92	EW	W1			
2								2.00	D	5			
								2.02	EW	W3			
								2.10-2.30	B ES	6 J5			VOC = 2ppm (peak)
								2.10	EW	W4			
													Environmental seal installed from 2.30m to 1.70m bgl
								2.50	B ES S	8 J6	2 3 4 5 6 6	21/300mm	VOC = 2ppm (peak)
								2.74	EW	W2			
3				3.00 Becoming silty with depth									
								3.50	B ES S	10 J7	3 4 5 5 4 5	19/300mm	VOC = 1ppm (peak)
4													Standpipe installed at 4m
								4.50-5.00	B ES	12 J8	1 2 2 2	9/300mm	VOC = 5ppm (peak)
								4.50	S		3 2		
5													

Remarks: Water (l) / Dandopol (ml) added = 50l / 10ml (2.3m - 7.5m), Water (l) / Dandopol (ml) added = 50l / 10ml (2.3m - 7.5m);
Dual 50mm HDPE pipes installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 1.9m 150mm cased from 1.9 to 14.6m	**HOLE No. BHC24**
Ground Level 2.994m OD	Equipment: Dando 175		DATES 14/02/2018 - 23/02/2018
Coordinates: E 653973.415, N 292410.445 NGR	SHEET 2 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light greyish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			5.50	5.50	B ES S	14 J9	3 6 6 8 14 14	42/300mm	VOC = 3ppm (peak)
6							–					–	
								6.50	B ES S	16 J10	1 3 5 11 13 14	43/300mm	VOC = 1ppm (peak)
7							–					–	
									S		2 3 4 5	19/300mm	
								7.50- 8.00 7.50	B ES	18 J11	4 6		VOC = 2ppm (peak)
8							–					–	
				Light greyish brown slightly silty slightly gravelly fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			8.10						
								8.50	B ES S	20 J12	5 4 6 7 7 8	28/300mm	VOC = 2ppm (peak) / CO = 4ppm (peak)
9							–					–	
								9.50	B ES S	22 J13	2 4 5 5 6 8	24/300mm	VOC = 1ppm (peak)
10							–	10.00	ES	J14		–	
									S		3 4 5 5 10 12	32/300mm	
								10.50- 11.00	B	24			VOC = 1ppm (peak) / CO = 4ppm (peak)
11													

Remarks: Water (l) / Dandopol (ml) added = 50l / 10ml (2.3m - 7.5m), Water (l) / Dandopol (ml) added = 50l / 10ml (2.3m - 7.5m);
Dual 50mm HDPE pipes installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 200mm cased from 0.0 to 1.9m 150mm cased from 1.9 to 14.6m	**HOLE No. BHC24**
Ground Level 2.994m OD	Equipment: Dando 175		DATES 14/02/2018 - 23/02/2018
Coordinates: E 653973.415, N 292410.445 NGR	SHEET 3 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Light greyish brown slightly silty slightly gravelly fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
				Greyish brown slightly gravelly medium SAND. Gravel is fine subangular flint (HAPPISBURGH GLACIGENIC FORMATION)			11.30	11.50	B S	26	1 2 4 5 9 11	29/300mm	
12				Grey silty CLAY (HAPPISBURGH GLACIGENIC FORMATION)			12.10						
				Grey silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			12.30	12.50	B S	29	2 6 10 10 12 13	45/300mm	
13				Greyish brown silty SAND with occasional fine subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			13.00	13.50-14.00	B S	31	5 5 5 5 6 6	22/300mm	
14				Grey silty fine SAND (CRAG GROUP)			14.50	14.50	B S	33	5 4 5 5 7 9	26/300mm	
15							15.00						Borehole terminated at 15.0m depth. Target depth achieved. Backfilled to 11.5m bgl with bentonite grout. Dual monitoring well installed Borehole Terminated at 15m depth.
16													

Remarks: Water (l) / Dandopol (ml) added = 50l / 10ml (2.3m - 7.5m), Water (l) / Dandopol (ml) added = 50l / 10ml (2.3m - 7.5m);
Dual 50mm HDPE pipes installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.2m 200mm cased from 1.2 to 14.7m	**HOLE No. BHC26**
Ground Level 3.229m OD	Equipment: Dando 175		DATES 05/03/2018 - 07/03/2018
Coordinates: E 653733.76, N 292665.01 NGR	SHEET 1 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Dark brown gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, brick, clinker and occasional charcoal (MADE GROUND)			0.25	0.30	B	1			
								0.40	ES	J1			VOC = 0ppm
				Dark brown and orangish brown fine to coarse SAND with occasional subrounded flint and occasional black sand pockets (MADE GROUND)			0.50						
								0.70-1.00	B	2			
								0.80	ES	J2			VOC = 0ppm
1													
				Dark yellowish brown slightly silty / clayey fine to coarse SAND with occasional fine flint (HAPPISBURGH GLACIGENIC FORMATION)			1.10	1.30	B S	4	2 2 4 6 6 6	22/300mm	
								1.50	ES	J3			VOC = 0ppm
2								2.00-2.25	B ES	6 J4	2 4 4 5	21/300mm	VOC = 0ppm
								2.00	S		6 6		
				Yellowish brown gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) 2.50 Becoming gravelly with depth			2.50						
								2.80	D	7			
3								3.00	B ES C	8 J5	2 2 2 3 4 5	14/300mm	VOC = 0ppm
4								4.00	B ES C	9 J6	1 1 2 2 4 4	12/300mm	VOC = 0ppm
5								5.00	B ES C	10 J7	1 2 4 4 3 4	15/300mm	VOC = 0ppm

Remarks: Water (l) added =75l / (9.0m - 15m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.2m 200mm cased from 1.2 to 14.7m	**HOLE No. BHC26**
Ground Level 3.229m OD	Equipment: Dando 175		DATES 05/03/2018 - 07/03/2018
Coordinates: E 653733.76, N 292665.01 NGR	SHEET 2 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Yellowish brown gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
6								6.00-6.50 6.00	B ES C	11 J8	1 1 3 2 3 3	11/300mm	VOC = 0ppm
7								7.00	B ES C	12 J9	2 3 3 3 4 3	13/300mm	VOC = 0ppm
8				Brown silty slightly gravelly medium SAND. Gravel of subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			8.00	8.00	B ES C	13 J10	2 3 4 4 6 7	21/300mm	VOC = 0ppm
				8.00 Becoming dark orangish brown									
9								9.00	B ES C	14 J11	1 4 4 5 4 8	21/300mm	VOC = 0ppm
				9.50 Becoming less gravelly with depth									
10								10.00-10.50 10.00	B ES C	15 J12	2 4 7 10 11 13	41/300mm	VOC = 0ppm
11													

Remarks: Water (I) added =75l / (9.0m - 15m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 1.2m 200mm cased from 1.2 to 14.7m	**HOLE No. BHC26**
Ground Level 3.229m OD	Equipment: Dando 175		DATES 05/03/2018 - 07/03/2018
Coordinates: E 653733.76, N 292665.01 NGR	SHEET 3 OF 3		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Brown silty slightly gravelly medium SAND. Gravel of subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B C	16	3 6 9 9 10 12	40/300mm	
12				Greyish brown fine and medium SAND with occasional fine flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			12.00	12.00	B C	17	4 9 10 10 13 14	47/300mm	
13								13.00	B C	18	2 4 7 7 12 10	36/300mm	
14								14.00- 14.50	B S	20	4 5 9 9 11 12	41/300mm	
				14.80 Becoming slightly silty/clayey with depth				14.80	B	21			
15									S		2 2 5 6 6 7	24/300mm	
				Greyish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			15.30						
							15.50						Borehole terminated at 15.5m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 15.5m depth.
16													

Remarks: Water (l) added =75l / (9.0m - 15m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 1 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Greyish brown and reddish brown gravelly fine to coarse SAND. Gravel of fine and medium angular to subrounded brick and occasional rebar (MADE GROUND).			0.20	0.20	ES	J1			
								0.60	ES	J2			
1				CONCRETE (Pale grey, no rebar)			0.90						
				Brown sandy CLAY. Sand is fine to coarse (MADE GROUND)			1.50	1.50	B	1IP			
								1.60	ES	J3			
				Brown SAND AND GRAVEL. Gravel of angular to subrounded fine to coarse flint. Sand is fine to coarse (MADE GROUND)			1.80						
2				Brown clayey gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse brick, flint and clinker. (MADE GROUND)			2.00	2.00	B	1	1 1	10/300mm	
								2.00	EW	W1	2 2		
								2.10	C	J4	3 3		VOC = 0ppm
								2.13	ES	W2			
								2.16	EW	W3			
								2.18	EW	W6			
								2.22	EW	W4			
									EW	W5			
									EW				
3				Grey brown slightly clayey sandy GRAVEL. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			3.00	3.00	D	2	2 2	8/300mm	Environmental seal installed from 3.0m to 2.0m bgl
									B	3	2 2		
									S		2 2		
								3.20	ES	J5			VOC = 0ppm
4				Grey sandy GRAVEL. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			4.00	4.00	B	4	5 6	26/300mm	
									C		7 6		
											6 7		
								4.20	ES	J6			VOC = 0ppm
5				Greyish brown silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			5.00	5.00	B	5	3 4	28/300mm	
									C		6 7		
											7 8		
								5.20	ES	J7			VOC = 0ppm

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 2 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Greyish brown silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
6								6.00	B S	7	2 3 3 3 5 7	18/300mm	
								6.20	ES	J8			VOC = 0ppm
7								7.00	B S	9	5 5 5 7	26/300mm	
								7.10	ES	J9	7 7		VOC = 0ppm
8								8.00	B C	10	2 3 4 5	26/300mm	
								8.10	ES	J10	8 9		VOC = 0ppm
9								9.00	B C	11	3 4 5 5	22/300mm	
								9.10	ES	J11	5 7		VOC = 0ppm
10								10.00	B S	13	3 2 3 3	14/300mm	
								10.10	ES	J12	4 4		VOC = 0ppm
				Yellowish brown slightly silty gravelly SAND. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			10.20						
11													

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 3 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Yellowish brown slightly silty gravelly SAND. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	B S	14	2 3 4 6 7 8	25/300mm	
12								12.00	B S	16	4 4 5 7 8 9	29/300mm	
13								13.00	B C	17	3 4 9 9 8 12	38/300mm	
				Yellowish brown and grey sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			13.60	13.70	D	18			
14				Dark yellowish brown medium SAND with occasional fine to medium flint gravel and occasional bands of sandy clay (HAPPISBURGH GLACIGENIC FORMATION)			14.10	14.00	UT	19	(50)		UT100: 60% Recovery. Sample taken due to a band of clay within the strata
15								15.00	B S	22	6 7 9 9 8 9	35/300mm	
16				Dark grey silty fine and medium SAND with occasional light brown mottling (HAPPISBURGH GLACIGENIC FORMATION)			16.00	16.00	B S	24	7 7 6 6 8 9	29/300mm	

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 4 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
17				Dark grey silty fine and medium SAND with occasional light brown mottling (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				17.00	B S	26	4 5 7 9 10 12	38/300mm	
18								18.00	B S	28	2 4 6 8 12 14	40/300mm	
19								19.00	B S	30	3 10 18 24 8	50/170mm	
20								20.00	B S	32	7 8 12 13 15 10	50/240mm	
				Dark yellowish brown medium and coarse SAND (HAPPISBURGH GLACIGENIC FORMATION)			20.30						
				Dark grey silty medium SAND (CRAG GROUP)			20.40						
21								21.00	B S	34	7 10 10 8 10 12	40/300mm	
				Dark grey sandy CLAY. Sand is fine (CRAG GROUP)			21.60						
22								21.80	D	35			

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 5 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata Leg	Strata Reduced Level	Strata Depth	Sampling/In-Situ Testing Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Dark grey sandy CLAY. Sand is fine (CRAG GROUP) *(continued)*				22.00	B UT	36 36			UT100: 100% Recovery
				22.45 Becoming thinly laminated with depth									
23								23.00	UT B	39 40			UT100: 95% Recovery
24								24.00	B S	42	5 5 6 7 7 8	28/300mm	
				Dark grey slightly gravelly clayey medium SAND. Gravel of subangular fine shell fragments (CRAG GROUP)			24.10						
25				Dark grey silty fine and medium SAND (CRAG GROUP)			25.00	25.00	UT B	43 44	(105)		UT100: 90% Recovery. Sample taken due to a band of clay within the strata
26								26.00	B S	46	5 7 13 16 17 4	50/235mm	
27								27.00	B S	48	10 15 16 21 13	50/185mm	

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 6 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine and medium SAND (CRAG GROUP) *(continued)*									
28							–	28.00	B S	50	7 19 21 29	50/150mm	
29							–	29.00	B S	52	10 16 35 15	50/95mm	Environmental seal installed from 29.5m to 27.0m bgl
30							–	30.00	B S	54	4 15 23 27	50/125mm	
31							–					–	
								31.50	B S	56	12 17 24 26	50/135mm	
32							–					–	
								32.50	B S	58	8 13 19 24 4	47/160mm	
33													

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 7 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Dark grey silty fine and medium SAND (CRAG GROUP) *(continued)*									
								33.50	B S	60	8 10 13 17 20	50/210mm	
34							–					–	
								34.50	B S	62	6 17 20 27 3	50/155mm	
35							–					–	
								35.50	B S	64	20 27 36 14	50/85mm	
36							–					–	
								36.50	B S	66	5 12 24 26	50/105mm	
37							–					–	
								37.50	B S	68	17 20 25 25	50/120mm	
38							–					–	

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 8 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine and medium SAND (CRAG GROUP) *(continued)*				38.50	B S	70	8 18 35 15	50/80mm	
39							–					–	
								39.50	D B S	71 72	13 30 50	50/35mm	
40							–					–	
								40.50	B S	74	15 18 35 15	50/95mm	
41							–					–	
								41.50	B S	76	12 20 25 25	50/115mm	
42							–					–	
								42.50	B S	78	5 15 50	50/65mm	
43							–					–	
								43.50	B S	80	15 30 50	50/60mm	
44													

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 9 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
44				Dark grey silty fine and medium SAND (CRAG GROUP) *(continued)* 44.20 White shell fragments present with depth				44.20	B	81			
								44.50	B S	83	12 15 26 24	50/115mm	
45							–					–	
								45.50	B S	85	18 25 40 10	50/80mm	
46							–					–	
								46.50	B S	87	14 25 25 50	75/50mm	
47							–					–	
								47.50	B S	89	12 17 27 23	50/105mm	
48							–					–	
													Environmental seal installed from 48.3m to 47.5m
								48.50	B S	91	10 28 50	50/60mm	
49							–	49.00	B	92		–	

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 2.6m 250mm cased from 2.6 to 27.5m 200mm cased from 27.5 to 48.5m	**HOLE No. BHC27**
Ground Level 3.005m OD	Equipment: Dando 175		DATES 02/01/2018 - 15/01/2018
Coordinates: E 653890.088, N 292697.395 NGR	SHEET 10 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Dark grey silty fine and medium SAND (CRAG GROUP) *(continued)*									
50							50.00	50.00	D S	93	8 28 45 5	50/80mm	Borehole completed at 50.0m depth. Target depth achieved. Backfilled to 12.0m bgl with bentonite grout. Monitoring well installed Borehole Terminated at 50m depth.
51													
52													
53													
54													
55													

Remarks: Coring by GEL (2hr on 19/09/17);
Water (l) added = 250l (gl - 5m), Water (l) / Dandopol (ml) added = 1450l / 250ml (5m- 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (15m- 22m), Water (l) / Dandopol (ml) added = 1000l / 300ml (23m- 29m), Water (l) added = 450l (30m- 33.5m), Water (l) added = 200l (34.5m- 39.5m), Water (l) / Dandopol (ml) added = 350l / 150ml (39.5m- 44.2m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m- 48.5m), Water (l) added = 250l (48.5 - 50m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 1 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE (reinforced)			0.00						
				Brown gravelly medium SAND. Gravel of fine to medium subrounded to angular flint and fine to medium subrounded concrete (MADE GROUND)			0.15						
				CONCRETE			0.36						
				Brown medium slightly clayey to gravelly SAND. Gravel of fine to medium subrounded to angular flint with occasional fine to cobble sized subrounded to subangular concrete (MADE GROUND)			0.52	0.60	D	1			VOC=0ppm (peak)
								0.60-1.00	ES	J1			
							0.75						
1				Brown firm sandy slightly gravelly CLAY. Gravel of fine angular flint (ALLUVIUM)			–	1.00	D	2		–	
								1.20-1.65	D	3	1 1	3/300mm	
									B	4	1 0		
								1.20-1.70			1 1		
								1.50	ES	J2			VOC=0ppm (peak)
								1.70	D	5			
2							–	2.00-2.45	D	6	1 0	5/300mm	
									B	7	1 1		
								2.00-2.50			1 2		
								2.50	ES	J3			VOC=0ppm (peak)
				Greyish brown medium to coarse slightly clayey organic SAND with occasional fine to medium subrounded to rounded flint (ALLUVIUM)			2.60	2.60	D	8			
								2.70-23.00	B	56			
								2.90	D	9			
3				Dark grey brown medium to coarse slightly organic gravelly SAND. Gravel is fine to coarse angular flint (ALLUVIUM)			3.00	3.00-3.30	B	10	1 1	13/300mm	VOC=0ppm (peak)
									B	11	3 3		
								3.00	ES	J4	4 3		
				Light greyish brown medium slightly gravelly SAND. Gravel is fine to coarse subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			3.30						Environmental seal installed from 3.50m to 2.50m bgl
4				Light greyish brown SAND AND GRAVEL. Gravel of fine to coarse with rare cobble sized subangular flint (HAPPISBURGH GLACIGENIC FORMATION)			4.00	4.00-4.45	D	12	1 6 8 8 13 15	44/300mm	
								4.20	ES	J5			VOC=0ppm (peak)
								4.30-4.50	B	13			
5				Light brown medium slightly gravelly SAND. Gravel of fine to medium subangular flint and quartz (HAPPISBURGH GLACIGENIC FORMATION)			5.00	5.00	CPT		3 4	32/300mm	
									D		5 6		
								5.10	D	14	8 13		
								5.20	ES	J6			VOC=0ppm (peak)
								5.30-5.70	B	15			

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 2 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Light brown medium slightly gravelly SAND. Gravel of fine to medium subangular flint and quartz (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
6							–	6.00	CPT		2 3	37/300mm	
								6.10	D D	16	7 7 11 12		
								6.20	ES	J7			VOC=0ppm (peak)
								6.40-6.60	B	17			
7							–					–	
								7.20	D D ES	18 J8	3 4 5 6 10 13	34/300mm	VOC=0ppm (peak)
								7.60-7.80	B	19			
8							–					–	
								8.10	CPT D		3 3 2 3	25/300mm	
								8.20	D ES	20 J9	8 12		VOC=0ppm (peak)
								8.50-8.80	B	21			
9				Light brown SAND AND GRAVEL. Sand is medium and gravel is fine to medium with occasional coarse subangular flint (HAPPISBURGH GLACIGENIC FORMATION)			9.00	8.90	CPT D		3 4 11 15 15 9	50/300mm –	
								9.10	D	22			
								9.50-9.90	B	23			
10							–	10.00	CPT D		1 3 3 4 7 15	29/300mm	
								10.20	D	24			
								10.50-11.00	B	25			
11													

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 3 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Light brown SAND AND GRAVEL. Sand is medium and gravel is fine to medium with occasional coarse subangular flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00	D D	26	4 4 4 5 7 10	26/300mm	
				Greyish brown medium to coarse gravelly SAND with clay laminae (HAPPISBURGH GLACIGENIC FORMATION)			11.80	11.80- 12.00	B	27			
12				Grey clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			12.00	12.00- 12.45 12.10	D D	28 29	2 4 6 6 6 6	24/300mm	
				Grey sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			12.20	12.20- 12.50	B	30			
13				Grey fine slightly gravelly SAND (HAPPISBURGH GLACIGENIC FORMATION)			13.00	13.00- 13.45	UT100	31	(52)		
				Light orangish brown coarse slightly gravelly SAND. Gravel of fine to medium subrounded to rounded flint (HAPPISBURGH GLACIGENIC FORMATION)			13.20						
				Grey brown SAND and GRAVEL. Sand is coarse and gravel is fine to medium rounded flint. (HAPPISBURGH GLACIGENIC FORMATION)			13.50	13.50 13.50- 14.00	D B	32 33			
14				Brown slightly clayey SAND and GRAVEL. Sand is medium to coarse and gravel is fine to medium subrounded flint. (HAPPISBURGH GLACIGENIC FORMATION)			14.00	14.00 14.20 14.50- 15.00	D D B	 34 35	4 5 8 7 8 7	30/300mm	
15								15.00	D	36	1 1 3 5 10 15	33/300mm	
				Orangish brown medium SAND with occasional fine subrounded flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			15.50	15.50- 16.00	B	37			
16								16.00- 16.45	D	38	5 7 7 10 12 10	39/300mm	
				Grey brown medium SAND with occasional fine subrounded flint gravel (HAPPISBURGH GLACIGENIC FORMATION)			16.30						

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 4 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey brown medium SAND with occasional fine subrounded flint gravel (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				16.50 16.50- 17.00	D B	39 40			
17							–	17.00- 17.45	D B	41 42	3 3 7 7	30/300mm	
								17.00- 17.50			8 8		
				Grey brown slightly clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			17.20						
				Grey sandy CLAY (CRAG GROUP)			17.70						
								17.90	D	43			
18							–	18.00- 18.45	UT100	44		–	
				Grey slightly clayey fine and medium SAND (CRAG GROUP)			18.20						
								18.70 18.70- 19.00	D B	45 46			
19							–	19.00- 19.45	D B	47 48	1 5 10 10	42/300mm	
								19.00- 19.50			10 12		
20				Grey silty fine SAND (CRAG GROUP)			20.00	20.00- 20.45 20.00- 20.50	D B	49 50	5 9 12 22 14	48/185mm	
21				Brown coarse SAND (CRAG GROUP)			21.00					–	Environmental seal installed from 21.0m to 19.0m bgl
				Grey silty fine SAND (CRAG GROUP)			21.10						
				Grey clayey SILT (CRAG GROUP)			21.30	21.40- 21.85 21.50- 21.70	D B	51 52	4 6 5 6 7 7	25/300mm	
22													

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 5 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey clayey SILT (CRAG GROUP) *(continued)*				22.00	D	53			
								22.30-22.75	UT100	54			
								22.70-23.00	B	56			
23							–	23.00	D	55			–
								23.00-23.50	B	58			
								23.10-23.55	D	57	2 5 6 6 6 7	25/300mm	
				Grey silty medium to coarse SAND with occasional shell fragments (CRAG GROUP)			23.80						
24							–	24.00-24.60	B	60			–
								24.10-24.55	D	59	3 3 8 10 16 15	49/300mm	
				Grey CLAY (CRAG GROUP)			24.50						
				Grey silty fine SAND (CRAG GROUP)			24.70						
25							–	25.00-25.45	D	61	8 16 21 29 31 19	100/135mm	–
								25.00-25.50	B	62			
				Grey silty fine and medium SAND (CRAG GROUP)			25.50						
26							–	26.00	D	63			–
								26.50-27.00	B	65	5 5 10 11 20 7	48/235mm	
27							–						–

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 6 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine and medium SAND (CRAG GROUP) *(continued)*				27.50-28.00	B	67	5 8 12 18 12	42/175mm	
28							–					–	
											3 6 8 12 16 12	48/285mm	
								28.80-29.00	B	69			
29							–					–	
								29.50-30.00	B	71	5 10 15 23 12	50/165mm	
30							–					–	
				Grey sandy SILT (CRAG GROUP)			30.30						
								30.40	D	72			
				Grey silty fine and medium SAND (CRAG GROUP)			30.50				5 10 15 15 20	50/185mm	
31							–					–	
								31.50-31.95	UT UT100	75 75	(90)		UT100 sample taken due to a band of clay within the strata
32							–					–	
								32.20	D	76			
								32.50-33.00	B	78	5 10 20 30	50/135mm	
33													

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 7 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty fine and medium SAND (CRAG GROUP) *(continued)*				33.50-34.50	B	80	5 9 14 12 11 20	57/300mm	
34							–					–	
								34.50-35.50	B	82	6 11 16 29 5	50/155mm	
35							–					–	
								35.50-36.00	B	84	9 16 20 30	50/150mm	
36							–					–	
								36.50-37.00	B	86	4 10 30 20	50/105mm	
37							–					–	
								37.50-38.00	B	88	10 10 15 16 19	50/185mm	
38							–					–	

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 8 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine and medium SAND (CRAG GROUP) *(continued)*				38.50-39.50	B	90	8 20 50	50/20mm	
39							–					–	
								39.50-40.00	B	92	9 27 50	50/40mm	
40							–					–	
				Grey silty fine SAND (CRAG GROUP)			40.50	40.50-41.00	B	94	13 23 50	50/60mm	
41							–					–	
								41.50-42.00	B	96	13 28 50	50/45mm	
42							–					–	
								42.50-42.80	B	98	10 18 35 15	50/85mm	
43							–					–	
											7 16 40 10	50/90mm	
								43.80-44.00	B	100			
44													

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 9 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
44				Grey silty fine SAND (CRAG GROUP) *(continued)*									
				Grey slightly gravelly silty fine SAND. Gravel is occasional fine shell fragments (CRAG GROUP)			44.30						
								44.50-45.00	B	102	12 25 20	20/50mm	Environmental seal installed between 44.5m and 42.0m bgl to prevent blowing
45							–					–	
								45.50-46.00	B	104	7 15 50	50/70mm	
46							–					–	
								46.50-47.00	B	106	8 20 50	50/60mm	
47							–					–	
								47.50-48.00	B	108	11 50 50	50/75mm	
48							–					–	
								48.50-49.00	B	110	18 25 50	50/45mm	
49							–					–	

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF/SG FIELDWORK BY: J&M-RW+PG/RD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 380mm cased from 0.0 to 2.5m 300mm cased from 2.5 to 19.4m 250mm cased from 19.4 to 47.5m	**HOLE No. BHC28**
Ground Level 3.002m OD	Equipment: Dando 175		DATES 31/10/2017 - 14/11/2017
Coordinates: E 653880.382, N 292700.891 NGR	SHEET 10 OF 10		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly gravelly silty fine SAND. Gravel is occasional fine shell fragments (CRAG GROUP) *(continued)*				49.50-50.00	B	112	11 14 18 21 30	69/220mm	
50							50.00	50.00	D	113		–	Borehole terminated at 50.0mbgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 50m depth.
51							–					–	
52							–					–	
53							–					–	
54							–					–	
55													

Remarks: Water (l) added = 1000l (3.5m - 9m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 1500l / 250ml (15m - 20m), Water (l) / Dandopol (ml) added = 1500l / 150ml (9.1m - 14.5m), Water (l) / Dandopol (ml) added = 100l / 10ml (21.4m - 25.5m), Water (l) / Dandopol (ml) added = 1000l / 100ml (26.0m - 32.2m), Water (l) / Dandopol (ml) added = 500l / 200ml (32.5m - 37m), Water (l) / Dandopol (ml) added = 1000l / 250ml (36.5m - 40.5m), Water (l) / Dandopol (ml) added = 800l / 200ml (40.5m - 43.8m), Water (l) / Dandopol (ml) added = 600l / 100ml (44.5m - 47.5m), Water (l) / Dandopol (ml) added = 200l / 50ml (48.5m - 50.0m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown gravelly coarse sand. Gravel is subangular to rounded flints and clinker (MADE GROUND)			0.00	0.30	B ES	1 J1			VOC=1ppm (peak)
				Yellowish brown and dark brown silty slightly gravelly medium to coarse SAND. Gravel is angular to rounded fine flint and occasional clinker (MADE GROUND)			0.50	0.50 0.60	B ES	2 J2			VOC=1ppm (peak)
1				Yellowish brown slightly gravelly silty/clayey SAND. Gravel is fine and occasional medium flint (MADE GROUND)			1.00	1.10- 1.30 1.10 1.20 1.30	B ES ES B	3 J3 W1 5			VOC=1ppm (peak) **VOC=1ppm (peak)**
		1.20 0.85 0.75 0.65 0.58 1.20		Greyish brown slightly silty fine to medium SAND with rare fine rounded to angular flint gravel (ALLUVIUM)			1.30	1.50	ES	J4			VOC=1ppm (peak)
								1.70- 2.15	B S	6	1 0 1 0 1 1	3/300mm	Environmental seal installed from 1.6m to 0.8m bgl
2								2.00	ES	J5			VOC=0ppm (peak)
				Dark grey mottled black medium fine SAND with occasional small clay pockets and fine rounded to angular flint (ALLUVIUM)			2.50	2.50	B ES S	7 J6	1 0 0 1 1 1	3/300mm	VOC=1ppm (peak)
3													
				Dark grey mottled black silty organic CLAY with moderate to strong natural organic odour (ALLUVIUM)			3.50	3.50- 3.95 3.50	D B ES S	8 9 J7	1 0 0 1 0 1	2/300mm	VOC=1ppm (peak)
4				Dark grey mottled black clayey fine to medium SAND with moderate strong natural organic odour (ALLUVIUM)			4.00	4.00- 4.38 4.00	UT B	10 12			
								4.50- 4.95 4.50- 5.00 4.50	D B ES S	11 13 J8	4 3 2 3 2 3	10/300mm	VOC=1ppm (peak)
				Grey brown sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			4.60						
5								5.00- 5.34 5.00	UT B	14 15			
								5.34- 5.39	D	14			

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey brown sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.50	ES	J9			VOC=1ppm (peak)
6				Light grey silty sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00 6.00- 6.50	D B S	16 17	1 2 2 4 3 4	13/300mm	
								6.30	ES	J10			VOC=0ppm (peak)
7				Greyish brown very clayey fine to medium SAND with occasional fine subangular flint (HAPPISBURGH GLACIGENIC FORMATION)			7.00	7.00 7.00- 7.50	D B S	19 20	2 4 6 6 10 11	33/300mm	
								7.30	ES	J11			VOC=0ppm (peak)
8								8.00	D B S	21 22	2 2 3 4 3 4	14/300mm	
								8.30	ES	J12			VOC=0ppm (peak)
9				Grey brown slightly silty slightly sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			9.00	9.00- 9.41 9.00- 9.50	UT B	23 25			
								9.30	ES	J13			VOC=0ppm (peak)
								9.41	D	24			
				Grey silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.80	9.80	D	26			
10				Grey silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)				10.10 10.10- 10.60	D B S	27 28	1 1 2 2 2 3	9/300mm	
								10.30	ES	J14			VOC=0ppm (peak)
11													

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Grey silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*			11.00	11.00-11.45 11.00	D B S	29 30	1 0 2 2 7 1	12/300mm	
				Black and brown very sandy CLAY. Sand is fine and medium (HAPPISBURGH GLACIGENIC FORMATION)			11.30						
12				Dark brown and grey medium and coarse silty slightly gravelly SAND. Gravel of angular to subrounded medium flint (CRAG GROUP)			12.00	12.00	D B S	21 32	4 4 4 6 7 10	27/300mm	
13				Grey silty fine SAND (CRAG GROUP)			13.10	13.00	D B S	33 34	4 3 4 6 11 11	32/300mm	
14								14.00 14.00-14.50	D B S	35 36	5 6 8 10 15 16	49/300mm	
15								15.00	D B S	37 38	4 6 8 12 16 14	50/300mm	
16				Grey clayey fine SAND (CRAG GROUP)			16.00	16.00	D B S	39 40	3 4 4 5 6 7	22/300mm	

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey clayey fine SAND (CRAG GROUP) *(continued)*									
17								17.00-17.45	UT100	41			
													Environmental seal installed from 17.5m to 16.0m bgl
18								18.00-18.50	B S	43	3 4 8 12 14 16	50/285mm	
				Grey silty sandy CLAY. Sand is fine (CRAG GROUP)			18.50						
19								19.00-19.45 19.00-19.50	UT100 B	44 46			
								19.70	D	45			
20								20.00	B S	58	4 6 7 9 10 12	38/300mm	
				Grey clayey fine SAND with clay bands (c. 20mm in thickness) (CRAG GROUP)			20.60						
21								21.00-21.50	B S	49	4 5 6 6 6 4	22/300mm	
22													

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey clayey fine SAND with clay bands (c. 20mm in thickness) (CRAG GROUP) *(continued)*				22.00	B S	51	4 6 8 10 9 10	37/300mm	
23							–	23.00-23.45 23.00	UT100 B	52 59		–	
								23.70	D	53			
24							–	24.00-24.50	B S	55	8 8 12 20 18	50/200mm	
25							–	25.00-25.45 25.00-25.50	UT100 B	56 60		–	UT100 sample taken due to a clay band within strata
				Grey silty fine SAND with white shell fragments (CRAG GROUP)			25.60	25.70	D	57			
26				26.00 White shell fragments becoming less frequent with depth			–	26.00	B S	62	8 12 12 15 16 7	50/255mm	
27							–	27.00	B S	64	6 7 6 8 18 18	50/295mm	

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*									
28							–	28.00-28.50	B S	66	10 12 18 22 10	50/185mm	
29							–	29.00	B S	68	8 16 25 25	50/120mm	
30							–	30.00	B S	70	9 16 28 22	50/115mm	
31							–	31.00-31.50	B S	72	4 14 15 16 19	50/200mm	
32							–	32.00	B S	74	25 27 23	23/40mm	
33													

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty fine SAND with white shell fragments (CRAG GROUP) *(continued)*				33.00	B S	76	10 15 15 16 19	50/200mm	Environmental seal installed from 33.0m to 32.0m bgl to prevent the sands blowing overnight
34								34.00-34.50	B S	78	18 7 28 22	50/125mm	
35				Grey silty fine SAND with occasional white shell fragments (CRAG GROUP)			35.00	35.00	B S	80	25 32 18	18/30mm	
36								36.00-36.50	B C	81	8 17 29 21	50/120mm	
37								37.00	B S	83	25 50	50/130mm	
38								38.00	B S	85	12 13 20 30	50/125mm	

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG/LF FIELDWORK BY: J&M-RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.2m 250mm cased from 1.2 to 16.0m 200mm cased from 16.0 to 38.5m	**HOLE No. BHC32**
Ground Level 2.534m OD	Equipment: Dando 175		DATES 07/03/2018 - 15/03/2018
Coordinates: E 653908.556, N 292891.376 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine SAND with occasional white shell fragments (CRAG GROUP) *(continued)*									
39								39.00-39.50	B S	87	5 14 23 27	50/135mm	
40							40.00		S		15 10 18 25 7	50/160mm	Borehole completed at 40.0m bgl. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks: Hand inspection pit excavated by GEL;
Water (l) added = 50l (6m - 9m), Water (l) / Dandopol (ml) added = 150l / 50ml (12m - 17m), Water (l) / Dandopol (ml) added = 250l / 50ml (18m - 23m), Water (l) / Dandopol (ml) added = 150l / 50ml (24m - 33m), Water (l) / Dandopol (ml) added = 500l / 50ml (33m - 39m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Greyish brown becoming grey concrete recovered as a sandy GRAVEL with some subbase/degraded concrete throughout. Sand is fine to coarse. Gravel is angular to subrounded concrete, red brick and occasional rounded flints. Hydrocarbon odour. (MADE GROUND) 0.30 Layers of concrete throughout the strata; ranging from degraded crumbly state to solid 0.70 Three disused 6 inch pipes entering the pit from the southern wall, all filled with soils			0.20	0.30	ES	J1			VOC = 1ppm (peak)
1								0.90	ES	J2			VOC = 4ppm (peak)
	2.40	1.50						1.40	ES	J3			VOC = 6ppm (peak)
2				Greyish brown slightly sandy GRAVEL with strong hydrocarbon odour. Gravel is rounded to slightly angular fine and medium flint (MADE GROUND)			2.00	2.10	ES EW	J4 W1			VOC = 3ppm (peak) Water sample taken as water flowed into the excavation. Groundwater exhibited a hydrocarbon irridescence
								2.40	ES	J5			VOC = 4ppm (peak)
				Grey becoming greyish brown silty gravelly fine SAND with moderate hydrocarbon odour. Gravel of angular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION)			2.50	2.50- 3.00	B	1			
3								3.00	ES C	J6	2 3 3 4 3 4	14/300mm	VOC = 1ppm (peak)
				3.50 Gravel becoming less frequent with depth				3.50	ES	JJ7			VOC = 1ppm (peak)
4				4.00 Becoming greyish brown and hydrocarbon odour no longer present with depth				4.00	ES C	J8	2 1 1 0 1 1	3/300mm	VOC = 1ppm (peak)
5								5.00- 5.50 5.00	B ES C	4 J9	1 2 3 4 5 7	19/300mm	VOC = 1ppm (peak)

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey becoming greyish brown silty gravelly fine SAND with moderate hydrocarbon odour. Gravel of angular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
6				6.00 - 7.00 Band of angular to subrounded fine and medium gravel				6.00	ES C	J10	1 2 2 3 5 6	16/300mm	VOC = 0ppm
7								7.00	ES C	J11	4 7 7 8 9 8	32/300mm	VOC = 0ppm
8								8.00-8.45 8.00-8.50 8.00	D B ES	7 8 J12	2 3 4 6 8 12	30/300mm	VOC = 0ppm
9								9.00	ES S	J13	1 2 2 3 3 4	12/300mm	VOC = 0ppm No sample recovery from 9.0m SPT
10								10.00	ES	J14	7 14 10 9 8 9	36/300mm	VOC = 0ppm
11													

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Grey becoming greyish brown silty gravelly fine SAND with moderate hydrocarbon odour. Gravel of angular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00-11.50	B ES	13 J15	10 12 25 25	50/145mm	VOC = 0ppm
								11.00					
12								12.00	ES	J16	1 6 8 9 15 15	47/300mm	VOC = 0ppm
				Greyish brown slightly gravelly sandy CLAY. Gravel of angular to subrounded fine flint (HAPPISBURGH GLACIGENIC FORMATION)			12.20	12.20-12.40	B	15			
				Orangish brown gravelly fine to medium SAND. Gravel of angular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			12.40						Environmental seal installed from 12.5m to 11.5m bgl
13								13.00	D B	17 18	3 2 5 8 8 11	32/300mm	
14				Brown gravelly silty slightly gravelly fine to medium SAND. Gravel of angular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION)			14.00	14.00	D B	19 20	6 10 10 10 15 15	50/265mm	
15								15.00 15.00-15.50	D B	21 22	9 9 12 20 18	50/175mm	
16								16.00	D B	23 24	8 8 11 15 17 7	50/235mm	

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Brown gravelly silty slightly gravelly fine to medium SAND. Gravel of angular to subrounded flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
17				Grey slightly clayey silty fine and medium SAND (CRAG GROUP)			17.00	17.00	D B	25 26	3 4 5 8 9 11	33/300mm	
18								18.00-18.45 18.00-18.50	D B	27 28	8 10 14 8 10 11	43/300mm	
19								19.00	D B	29 30	10 17 35 15	50/110mm	
20								20.00	D B	31 32	8 12 25 25	50/115mm	
21								21.00-21.45 21.00-21.50	D B	33 34			
22													

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey slightly clayey silty fine and medium SAND (CRAG GROUP) *(continued)*				22.00-22.45	UT	36			
								22.60-23.00	B	38			
23								23.00-23.45	D	39			
								23.00-23.50	B	40			
24								24.00-24.45	UT	41			
25											7 10 12 12 20 6	50/250mm	Environmental seal installed from 25.0m to 23.0m bgl
26								26.00	D	46	12 13	46/300mm	
									B	47	10 10 12 14		
27								27.00	D	48	6 11	50/160mm	
									B	49	18 27 5		

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey slightly clayey silty fine and medium SAND (CRAG GROUP) *(continued)*									
28							–	28.00-28.45	D B	50 51	12 15 26 24	50/125mm	
								28.00-28.50					
29							–	29.00	D B	52 53	9 15 34 16	50/95mm	
30							–	30.00	D B	54 55	9 14 11 27 23	61/200mm	
31							–	31.00	D B	56 57	10 17 30 20	50/105mm	
32							–	32.00-32.45	D B	58 59	9 20 41 9	50/85mm	
								32.00-32.50					
33													

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey slightly clayey silty fine and medium SAND (CRAG GROUP) *(continued)*				33.00	B	60			
34								34.00	D B	61 62	5 7 9 11 12 16	48/300mm	
35								35.00	B	63			
36								36.00	D B	64 65	8 9 12 12 15 11	50/265mm	
37				Grey silty slightly gravelly fine SAND. Gravel of subangular fine shell fragments (CRAG GROUP)			37.00	37.10-37.60	B	66			
38								38.00	D B	67 68	15 20 28 22	50/105mm	

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 250mm cased from 0.0 to 13.8m 200mm cased from 13.8 to 23.5m 150mm cased from 23.5 to 38.4m	**HOLE No. BHC101**
Ground Level 3.095m OD	Equipment: Dando 175		DATES 06/12/2017 - 07/12/2017
Coordinates: E 653871.223, N 292665.851 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty slightly gravelly fine SAND. Gravel of subangular fine shell fragments (CRAG GROUP) *(continued)*									
39								39.00	B	69			
40							40.00	40.00	D	70	17 20 22 28	50/135mm	Borehole terminated at 40m. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks: Water (l) added = 300l / 50ml (gl - 5.5m), Water (l) / Dandopol (ml) added = 900l / 200ml (6m - 12.2m), Water (l) / Dandopol (ml) added = 1400l / 400ml (12.5m - 20m), Water (l) / Dandopol (ml) added = 1250l / 250ml (21m - 24m), Water (l) / Dandopol (ml) added = 500l / 100ml (26m - 32m), Water (l) / Dandopol (ml) added = 700l / 200ml (32m - 40m).

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 1 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00	0.00	EW	W1			
				Dark brown gravelly fine to coarse SAND. Gravel of fine and medium brick and concrete with a weak hydrocarbon odour (MADE GROUND)			0.17						
				CONCRETE			0.30	0.30	ES	J1			VOC = 62 ppm (peak)
1				Dark brown mottled black very gravelly coarse SAND with weak hydrocarbon odour. Gravel of fine and medium brick and concrete (MADE GROUND)			1.00	1.00	ES	J2			VOC = 3 ppm (peak)
				Brown slightly clayey very gravelly medium and coarse SAND. Gravel is fine and medium rounded to subangular flint (HAPPISBURGH GLACIGENIC FORMATION)			1.40	1.50	ES	J3			VOC = 2 ppm (peak)
								1.60	B	B1			
								1.80-2.00	B	1			
2				Grey slightly sandy fine and medium GRAVEL with moderate to strong hydrocarbon odour. Sand is medium coarse and gravel is subrounded to angular flint (HAPPISBURGH GLACIGENIC FORMATION)			2.00	2.00-2.50	B	2			
								2.09	EW	W2			
								2.12	EW	W3			
								2.15	EW	W4			
								2.23	EW	W5			
								2.24	EW	W6			
								2.50	ES	J4			VOC = 40ppm (peak) and 6 ppm (two tests)
3								3.00-3.50	B C	4	5 7 8 10 12 15	45/300mm	
								3.50	ES	J5			VOC = 2ppm and 4ppm (peak) (two tests)
4								4.00-4.50	B C	6	6 8 12 11 8 9	40/300mm	
								4.50	ES	J6			VOC = 1 ppm (peak)
				Brown silty gravelly medium SAND with weak to moderate hydrocarbo odour. Gravel is fine and medium subrounded to angular flint (HAPPISBURGH GLACIGENIC FORMATION)			4.80						
5								5.00-5.50	B C	8	3 6 4 5 5 6	20/300mm	

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 2 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Brown silty gravelly medium SAND with weak to moderate hydrocarbo odour. Gravel is fine and medium subrounded to angular flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.50	ES	J7			VOC = 1 ppm (peak)
6				Brown slightly gravelly fine and medium SAND with weak hydrocarbon odour and occasional greyish brown clay bands. Gravel is fine and medium subrounded to angular flint (HAPPISBURGH GLACIGENIC FORMATION)			6.00	6.00-6.50	B C	10	2 4 5 7 7 8	27/300mm	
								6.50	ES	J8			VOC = 1 ppm (peak)
7								7.00-7.50	B C	12	3 3 4 6 7 10	27/300mm	
								7.50	ES	J9			VOC = 0 ppm
8								8.00-8.45 8.00-8.50	D B S	14 15	2 3 4 5 5 5	19/300mm	
								8.50	ES	J10			VOC = 2 ppm (peak)
9								9.00-9.45 9.00-9.50	D B S	17 18	3 4 5 7 10 11	33/300mm	
								9.50	ES	J11			VOC = 0 ppm
10								10.00-10.50	B S	20	2 3 4 5 7 7	23/300mm	
								10.50	ES	J12			VOC = 33ppm and 75ppm (peak) (two tests)
11													

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 3 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Brown slightly gravelly fine and medium SAND with weak hydrocarbon odour and occasional greyish brown clay bands. Gravel is fine and medium subrounded to angular flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				11.00-11.50	B C	22	4 6 6 7 10 12	35/300mm	
									C		2 2 8 9 10 7	34/300mm	
12							–					–	
				Brown gravelly CLAY. Gravel is fine angular to subrounded flint. (HAPPISBURGH GLACIGENIC FORMATION)			12.20	12.20-12.60	B	23			
				Brown gravelly silty SAND. Gravel is fine and medium subangular to rounded flint. (HAPPISBURGH GLACIGENIC FORMATION)			12.60						
13							–	13.00-13.50	B C	24	2 5 5 5 5 7	22/300mm	Environmental seal installed from 13.5m to 12.5m bgl
14				Brown silty slightly gravelly medium SAND. Gravel is fine and medium subangular to rounded flint. (HAPPISBURGH GLACIGENIC FORMATION)			14.00	14.00-14.50	B C	25	5 7 9 9 9 9	36/300mm	
15							–	15.00-15.45 15.00-15.50	D B S	26 27	4 5 7 7 10 11	35/300mm	
16							–	16.00-16.45 16.00-16.50	D B S	28 29	3 4 8 8 11 13	40/300mm	
				Greyish brown slightly clayey medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			16.20						

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 4 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Greyish brown slightly clayey medium SAND (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*									
17							–	17.00-17.45	D	30	3 4	42/300mm	
								17.00-17.50	B	31	8 11		
									S		11 12		
				Grey clayey fine and medium SAND (CRAG GROUP)			17.40						
18							–	18.00-18.45	D	32	2 3	19/300mm	
								18.00-18.50	B	33	4 5		
									S		5 5		
19							–	19.00-19.45	UT100	34	(60)	–	UT100 taken due to clay content of strata
								19.00-19.50	B	35			
20							–	20.00-20.45	D	36	6 8	50/295mm	
								20.00-20.50	B	37	12 12		
									S		14 12		
21							–	21.00-21.45	UT100	38	(110)	–	UT100 taken due to clay content of strata
								21.00-21.50	B	43			
				Grey silty CLAY (CRAG GROUP)			21.50						
								21.70	D	39			
22								21.80-22.25	UT100	40			

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 5 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey silty CLAY (CRAG GROUP) *(continued)*				22.00-22.50	B	42			
								22.50	D	41			
23								23.00-23.45	D	44	2 5	35/300mm	
								23.45	B	45	7 7		
								23.00-23.50	S		10 11		
24								24.00-24.45	UT100	46	(120)		UT100 taken due to clay content of strata
								24.00-24.50	B	48			
				Grey gravelly SAND. Gravel is fine subangular shells (CRAG GROUP)			24.50	24.60	D	47			
25				Grey silty fine and medium SAND with occasional thin clay bands (CRAG GROUP)			25.00	25.00-25.45	D	49	4 8	48/300mm	
								25.45	B	50	10 11		
								25.00-25.50	S		12 15		
26								26.00-26.45	D	51	5 10	50/220mm	
								26.45	B	52	15 16		
								26.00-26.50	S		19		
27								27.00-27.45	D	53	4 14	50/200mm	
								27.45	B	54	16 20		
								27.00-27.50	S		14		

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 6 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty fine and medium SAND with occasional thin clay bands (CRAG GROUP) *(continued)*									
28								28.00-28.45	D	55	8 14	50/190mm	
								28.00-28.50	B	56	16 22		
									S		12		
				Grey silty clayey SAND (CRAG GROUP)			28.60						
29								29.00-29.45	U100	57			UT100 taken due to clay content of strata
								29.00-29.50	B	59			
								29.00-29.45	D	59			
				Grey silty fine and medium SAND with occasional small clay pockets (CRAG GROUP)			29.50						
								29.60	D	58			
30								30.00-30.45	D	61	3 8	50/210mm	
								30.00-30.50	B	62	16 17		
									S		17		
31								31.00-31.45	D	63	8 25	50/160mm	
								31.00-31.50	B	64	24 20		
									S		6		
32								32.00-32.45	D	65	10 24	50/125mm	
								32.00-32.50	B	66	27 23		
									S				
33													

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M- RW+SP	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.5m 250mm cased from 1.5 to 13.0m 200mm cased from 13.0 to 36.6m	**HOLE No. BHC102**
Ground Level 3.05m OD	Equipment: Dando 175		DATES 01/12/2017 - 11/12/2017
Coordinates: E 653889.87, N 292662.329 NGR	SHEET 7 OF 7		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty fine and medium SAND with occasional small clay pockets (CRAG GROUP) *(continued)*				33.00-33.45 33.00-33.50	D B S	67 68	5 7 19 15 16	50/185mm	
34								34.00-34.45 34.00-34.50	D B S	69 70	3 25 28 22	50/95mm	
35								35.00-35.45 35.00-35.50	D B S	71 72	5 7 12 20 18	50/190mm	
36								36.00-36.45 36.00-36.50	D B S	73 74	6 12 10 12 14 14	50/245mm	
37							37.00						Borehole terminated at 37.0m bgl due to "sinker bar" shearing off and dropping to the bottom of the hole. Unable to proceed. Target depth not achieved. Backfilled to 12.0m bgl with bentonite grout. Monitoring well installed Borehole Terminated at 37m depth.
38													

Remarks: Water (l) / Dandopol (ml) added = 1000l / 200ml (2.0m - 10m), Water (l) / Dandopol (ml) added = 1000l / 200ml (10.0m - 14m), Water (l) / Dandopol (ml) added = 1000l / 200ml (14.0m - 21.0m), Water (l) / Dandopol (ml) added = 950l / 250ml (23.0m - 30.0m), Water (l) / Dandopol (ml) added = 950l / 200ml (30.0m - 36.0m);
50mm HDPE pipe installed with flush cover

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 1 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown silty fine to coarse SAND			0.00						
				Dark grey coarse sandy fine GRAVEL of flexible surfacing fragments (MADE GROUND) 0.18 Cobble of brick			0.18	0.30	ES	J1			VOC = 0ppm
				Dark greyish brown gravelly clayey SAND with fine to coarse gravel and cobbles of brick and mortar (MADE GROUND)			0.40	0.50- 0.70 0.50	B ES	1 J2			VOC = 0ppm
1				Dark orangish brown slightly gravelly medium to coarse SAND. Gravel is angular to rounded flint (MADE GROUND)			0.90	1.00	ES	J3			VOC = 0ppm
				Dark orangish brown mottled yellowish brown fine and medium SAND with occasional medium gravel of quartz and flint (HAPPISBURGH GLACIGENIC FORMATION)			1.20	1.20	ES	J4			VOC = 0ppm
				Grey brown clayey slightly silty gravelly SAND. Gravel of fine subangular to subrounded flint. Mild to moderate hydrocarbon odour, with moderate staining and hydrocarbon sheen. (HAPPISBURGH GLACIGENIC FORMATION)			1.50	1.50- 2.00	B S	4	5 6 7 8 10 8	33/300mm	Environmental seal installed from 0.5m to 1.5m bgl
2								2.00	ES	J5			VOC = 1ppm (peak)
				Brownish grey gravelly slightly clayey fine SAND. Gravel of fine and medium subrounded to subangular flint (HAPPISBURGH GLACIGENIC FORMATION) 2.50 - 3.50 Weak to moderate hydrocarbon odour			2.50	2.50- 3.00 2.50	B ES C	5 J6	5 4 5 5 6 8	24/300mm	VOC = 0ppm
3													
								3.50- 4.00 3.50	B ES C	6 J7	4 6 6 6 3 4	19/300mm	VOC = 4ppm (peak)
4													
								4.50- 5.00 4.50	B ES C	7 J8	1 4 4 3 4 3	14/300mm	VOC = 25ppm (peak) & 7ppm (two tests)
5													
							5.30	5.30	D	8			

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 2 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Orangish brown slightly silty fine SAND with occasional fine subangular to subrounded flint gravel (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*				5.50-6.00	B	9	4 3	20/300mm	VOC = 0ppm
								5.50	ES	J9	4 4		
									C		6 6		
6							–	6.00-6.45	D	10	3 3	16/300mm	VOC = 0ppm
								6.00-6.50	B	11	4 5		
								6.00	ES	J10	4 3		
									C				
7				Brown slightly gravelly SAND. Gravel of fine and medium rounded subangular flint (HAPPISBURGH GLACIGENIC FORMATION)			7.00	7.00-7.45	D	12	7 8	46/300mm	VOC = 13ppm (peak) & 6ppm (two tests)
								7.00-7.50	B	13	12 12		
								7.00	ES	J11	10 12		
									S				
8							–	8.00-8.45	D	14	1 3	15/300mm	
								8.00-8.50	B	15	3 4		
									S		4 4		
								8.50	ES	J12			VOC = 0ppm
9				Brown gravelly medium and coarse SAND (HAPPISBURGH GLACIGENIC FORMATION)			9.00	9.00-9.45	D	16	5 6	33/300mm	
								9.00-9.50	B	17	7 7		
									S		9 10		
								9.50	ES	J13			VOC = 0ppm
10							–	10.00-10.45	D	18	8 12	50/225mm	VOC = 0ppm
								10.00-10.50	B	19	15 16		
								10.00	ES	J14	19		
									S				
								10.80-11.25	B	20	5 10	50/235mm	
									C		12 15		
11											18 5		

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 3 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
11				Greyish brown becoming orangish brown gravelly SAND. Gravel is subrounded to subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			11.00						
12								12.00-12.45	B C	21	6 7 7 12 12 14	45/300mm	
13								13.00-13.45	B C	22	6 13 19 31	50/135mm	
								13.60	D	23			
14								14.00-14.50	B C	24	10 12 14 16 20	50/190mm	
15								15.00-15.50	B C	25	10 15 15 20 15	50/180mm	
								15.80	D	26			
16								16.00-16.50	B C	27	3 8 9 12 13 15	49/300mm	

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 4 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Greyish brown becoming orangish brown gravelly SAND. Gravel is subrounded to subangular fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION) *(continued)*								
17								17.00-17.45	D B	28 29	1 2 3 7	27/300mm	
								17.00-17.50	S		8 9		
				Grey slightly silty fine SAND with occasional small bands of clay (CRAG GROUP)			17.20						
								17.80	D	20			
18								18.00-18.45	UT100	31	(65)		UT100 taken due to the clay content of strata
								18.60	D	32			
19				Grey silty fine SAND (CRAG GROUP)			19.00	19.00-19.45	D B	33 34	5 4 10 20	50/200mm	
								19.00-19.50	S		20		
20								20.00-20.45	UT100 B	35 36	(85)		UT100 taken due to the cohesive content of strata
								20.00-20.50					
21								21.00-21.45	D B	37 38	8 15 16 34	50/115mm	Environmental seal installed from 21.0m to 18.5m bgl
								21.00-21.50	S				
				Grey silty CLAY (CRAG GROUP)			21.60						
22								21.80	D	39			

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 5 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
22				Grey sandy SILT/ CLAY (CRAG GROUP)			22.00	22.00-22.45	UT100	40			
								22.60	D	41			
								22.60-23.00	D B	41 42			
23								23.00-23.45	D B	43 44	7 8 9 10	46/300mm	
								23.00-23.50	B S	44	12 15		
24								24.00-24.45	UT100	45			UT100 taken due to the clay content of strata
				Grey clayey slightly gravelly fine SAND. Gravel is fine subangular light grey shells (CRAG GROUP)			24.50	24.60	D	46			
25				Grey silty SAND with occasional fine shell fragments (CRAG GROUP)			25.00	25.00-25.45	D B	47 48	6 8 9 10	46/300mm	
								25.00-25.50	S		12 15		
26								26.00-26.45	D B	49 50	5 8 12 38	50/145mm	
								26.00-26.50	S				
27								27.00-27.45	D B	51 52	5 7 11 20	50/210mm	
								27.00-27.50	S		19		
							27.40						

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 6 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey clayey silty fine SAND with occasional fine shells (CRAG GROUP) *(continued)*				27.70	D	53			
28							–	28.00-28.45	UT100	54	(60)	–	UT100 taken due to the clay content ofstrata
				Grey silty fine and medium SAND (CRAG GROUP)			28.20						
								28.60	D	55			
29							–	29.00-29.45 29.00-29.50	D B S	56 57	8 9 15 24 11	50/170mm	
30							–	30.00-30.45 30.00-30.50	D B S	58 59	10 16 21 29	50/145mm	
31							–	31.00-31.45 31.00-31.50	D B S	60 61	8 14 50	50/65mm	
				Grey silty SAND with occasional fine shell fragments and clayey bands (CRAG GROUP)			31.50						
32							–	32.00-32.45 32.00-32.50	D B S	62 63	7 12 16 25 9	50/165mm	
33													

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 7 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
33				Grey silty SAND with occasional fine shell fragments and clayey bands (CRAG GROUP) *(continued)*				33.00-33.45	D	64	7 13	51/300mm	
								33.00-33.50	B	65	13 10		
									S		12 16		
34							–					–	
								34.20-34.65	D	66	8 19	50/225mm	
									S		14 15 21		
								34.50-35.00	B	67			
35							–	35.00-35.45	D	68	6 8	50/210mm	
								35.00-35.50	B	69	12 20		
									S		18		
36							–	36.00-36.45	D	70	10 12	44/300mm	
								36.00-36.50	B	71	15 9		
									S		9 11		
37							–	37.00-37.50	B	73		–	
								37.20-37.65	D	72	7 13	50/125mm	
									S		23 27		
38				Grey silty SAND with occasional fine shell fragments (CRAG GROUP)			38.00	38.00-38.45	D	74	6 8	50/225mm	
									B	75	10 15		
								38.00-38.50	S		25		

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: JG FIELDWORK BY: J&M - RW+SP/PG	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Cable percussion (shell and auger) 300mm cased from 0.0 to 1.4m 250mm cased from 1.4 to 18.5m 200mm cased from 18.5 to 38.8m	**HOLE No. BHC103**
Ground Level 3.17m OD	Equipment: Dando 175		DATES 21/11/2017 - 29/11/2017
Coordinates: E 653890.012, N 292643.097 NGR	SHEET 8 OF 8		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
				Grey silty SAND with occasional fine shell fragments (CRAG GROUP) *(continued)*									
39								39.00-39.50	B S	76	10 15 50	50/40mm	No sample recovery from SPTs at 39.0m and 40.0m bgl
								39.50-40.00	B	77			
40							40.00	40.00	D S	78	15 50	50/125mm	Borehole terminated at 40.0m. Target depth achieved. Backfilled to ground level with bentonite grout Borehole Terminated at 40m depth.
41													
42													
43													
44													

Remarks: Water (l) added = 250l (1.20m - 1.50m), Water (l) / Dandopol (ml) added = 1500l / 200ml (1.50m - 10.0m), Water (l) / Dandopol (ml) added = 1500l / 100ml (11.0m - 19.0m), Water (l) / Dandopol (ml) added = 850l / 100ml (19.0m - 25.0m), Water (l) added = 500l (25.0m - 31.5m), Water (l) added = 350l (32.0m - 37.0m), Water (l) added = 500l (38.0m - 40m)

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

APPENDIX 5 – CABLE PERCUSSIVE BOREHOLE HAND PITS

Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 27-09-17 27-09-17	Ground Level (m OD): 2.53	Coordinates (): E 653922.5, N 292870.4 NGR
Fieldwork By: GEL - AH+LF	Logged By: LF		Sheet: 1 of 1

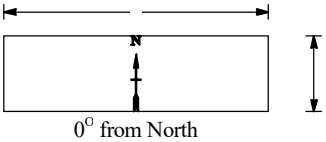
Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

HAND PIT

BHC30 (HP)

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.15 0.15-0.70	Dark grey and black silty fine SAND with weak natural organic odour, occasional cobbles of concrete and fine to coarse flint gravel (MADE GROUND)		0.10	ESJ1	
	Dark grey and black slightly gravelly fine SAND with occasional partings of light brown silty fine sand. Gravel of subrounded fine to coarse flint and occasional medium brick fragments (MADE GROUND)		0.35	ESJ2	
0.70-1.30	Dark grey becoming dark grey brown slightly gravelly silty fine SAND with occasional pockets of light yellowish brown silty fine sand. Gravel of angular to subronded fine to coarse flint, brick and chalk (MADE GROUND) 1.15 Becoming damp with depth		0.70	ESJ3	
			1.15	ESJ4	Inspection pit backfilled with arisings. Borehole cancelled.

Hand inspection pit excavated by GEL;



0° from North

Shoring/Support:
Stability:

All dimensions in metres Scale 1:41.044776119403	Method Inspection pit	Plant Used HAND	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 27-09-17 27-09-17	Ground Level (m OD): 2.53	Coordinates (): E 653901.74, N 292884.43 NGR
Fieldwork By: GEL - AH+LF	Logged By:		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

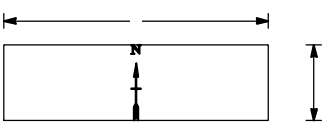
HAND PIT

BHC31 (HP)

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.75	Dark brown and black silty slightly gravelly fine SAND. Gravel of subrounded to rounded fine to medium flint (MADE GROUND)		0.05	ESJ1	
	0.35 Charcoal fragments present with depth 0.50 Gravel becoming fine to coarse with depth		0.40	ESJ2	
0.75-1.20	Dark yellow brown silty slightly gravelly SAND. Gravel of rounded fine and medium flint		0.85	ESJ3	
					Inspection pit backfilled with arisings. Borehole cancelled.

Hand inspection pit excavated by GEL;



0° from North

Shoring/Support:
Stability:

All dimensions in metres Scale 1:41.044776119403	Method Inspection pit	Plant Used HAND	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

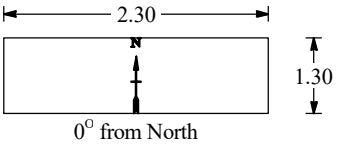
APPENDIX 6 – TRIAL PIT LOGS

Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing, Lowestoft	Geosphere Environmental Ltd	

Job No	Date	Ground Level (m OD)	Coordinates ()	TRIAL PIT No
2543,GI	03-08-17 03-08-17	4.46	E 653744.491, N 293039.9 NGR	TPC01

Fieldwork By	Logged By	Sheet
Holmes Plant	LF	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.40	Dark brown very silty gravelly fine and medium SAND. Gravel of angular to subangular fine to coarse flint, brick, concrete and occasional wood (TOPSOIL)				No significant collapse of sidewalls during excavation
			0.20	ESJ1	VOC = 0ppm
0.40-3.00	Yellowish brown and pale yellowish brown mottled gravelly fine and medium SAND. Gravel of angular to subrounded fine to coarse flint (MADE GROUND)		0.55	B1	Plate Bearing Test undertaken at 0.55m bgl
			0.60	ESJ2	VOC = 0ppm
			1.70	ESJ3	VOC = 0ppm
			1.80	B2	
			2.60	B3	VOC = 0ppm
			2.60	ESJ4	
					VOC = 0ppm. Trial pit terminated at 3.0m bgl. Target depth achieved. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3DX	Checked By SG

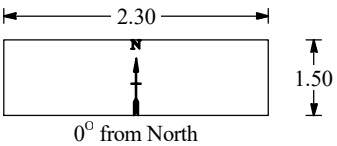
Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 17-08-17 17-08-17	Ground Level (m OD): 2.93	Coordinates (): E 653818.623, N 293019.738 NGR
Fieldwork By: Holmes Plant	Logged By: AH/LF		Sheet: 1 of 1

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC02

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.15	FLEXIBLE SURFACING				
0.15-0.70	Dark brown slightly cobbly very silty SAND AND GRAVEL. Gravel of angular to subangular fine to coarse brick, flint and concrete (MADE GROUND)		0.30	ESJ1	VOC = 0ppm
			0.50	B1	Plate Load Test undertaken at 0.5m depth
0.70-0.80	Red brick (MADE GROUND)				
0.80-1.20	Black, dark grey and dark brown mottled gravelly medium SAND. Gravel of subangular to rounded flint, brick and concrete with occasional cobbles of concrete. (MADE GROUND)		1.00	ESJ3	Services encountered in pit - confirmed redundant telecommunications cable and drain VOC = 0ppm
1.20-1.40	Dark brown gravelly fine and medium SAND with occasional gravel of subangular to rounded fine to coarse flint, brick and concrete (MADE GROUND)		1.30	ESJ4	VOC = 0ppm
1.40-1.60	Pale yellow and pale brown fine and medium SAND (MADE GROUND)		1.50	ESJ5	VOC = 0ppm
1.60-2.70	Yellowish brown fine SAND with occasional wood fragments (HAPPISBURGH GLACIGENIC FORMATION)		1.70	ESJ6	
			1.80	B2	
			2.50	ESJ7	
			2.70	B3	Trial pit terminated at 2.70 bgl due to severe collapse and groundwater infiltration. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

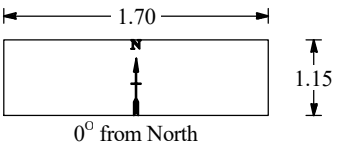
Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 03-08-17 03-08-17	Ground Level (m OD): 2.80	Coordinates (): E 653798.418, N 292994.041 NGR
Fieldwork By: Holmes Plant	Logged By: LF		Sheet: 1 of 1

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC03

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.15	CONCRETE				
0.15-0.35	Dark brown silty SAND AND GRAVEL with cobbles of brick. Gravel of angular to subangular fine to coarse brick, concrete and flint. (MADE GROUND)				VOC = 0ppm
0.35-0.60	Dark brown silty very gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse brick and concrete (MADE GROUND)		0.40 0.50	ESJ1 B1	Plate Bearing Test undertaken at 0.55m bgl
0.60-1.00	Light brown fine and medium SAND (MADE GROUND)		0.80	ESJ2	VOC = 0ppm
1.00-2.10	Light yellowish brown slightly gravelly fine and medium SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)		1.10 1.10 1.20	B1 B2 ESJ3	VOC = 0ppm
			1.80 1.80	B1 B3	Collapse of sidewalls from 2.1m to 1.8m bgl during excavation
			2.10 2.10	D1 ESJ4	VOC = 0ppm Trial pit terminated at 2.1m depth due to severe collapse of side walls and groundwater infiltration. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

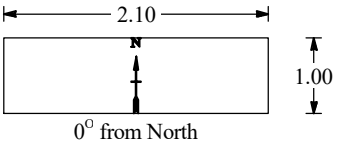
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 03-08-17 03-08-17	Ground Level (m OD): 2.45	Coordinates (): E 653840.39, N 292977.296 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC04

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.15	Pale grey CONCRETE with 5mm rebar				
0.15-0.50	Brown silty gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse brick, concrete and occasional flint (MADE GROUND)		0.30 0.30	B1 ESJ1	VOC = 0ppm
0.50-1.10	Dark brown and black silty gravelly fine to coarse SAND with weak natural organic odour. Gravel of angular to subrounded fine to coarse brick, flint and concrete (MADE GROUND)		0.55 0.55	B2 ESJ2	VOC = 0ppm
1.10-2.00	Orangish brown silty slightly gravelly SAND. Gravel of fine and medium subangular to rounded flint (HAPPISBURGH GLACIGENIC FORMATION) 1.80 - 1.80 becoming grey with depth		1.20 1.20	B3 ESJ3	VOC = 0ppm
2.00-2.70	Grey mottled black sandy CLAY with moderate natural organic odour (HAPPISBURGH GLACIGENIC FORMATION)		2.20 2.20	B4 ESJ4	Collapse of sidewalls from 2.1m to 1.1m bgl during excavation VOC = 0ppm
			2.70 2.70	B5 ESJ5	VOC = 0ppm Trial pit terminated at 2.7m due to significant collapse of sidewalls. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

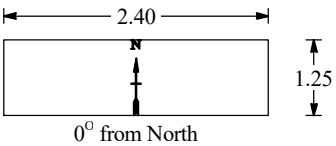
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 31-07-17 31-07-17	Ground Level (m OD): 2.62	Coordinates (): E 653878.612, N 292972.398 NGR
Fieldwork By: Holmes Plant	Logged By: JG		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC05

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.15	CONCRETE				
0.15-0.25 0.25-1.10	Orangish brown gravelly coarse SAND. Gravel of subangular to subrounded flint and concrete (MADE GROUND)		0.30	ESJ1	VOC = 1ppm (peak)
	Blackish grey very gravelly coarse SAND. Gravel of subangular to subrounded medium clinker and concrete with occasional cobbles of brick (MADE GROUND) 0.50 - 0.50 Moderate organic odour		0.50 0.50	B1 ESJ2	VOC = 5ppm (peak)
			1.00	B2	VOC = 2ppm (peak)
1.10-2.30	Greenish brown sandy CLAY with natural organic odour (ALLUVIUM)		1.00 1.10 1.10 1.30	ESJ3 B3 ESJ4 ESJ5	VOC = 1ppm (peak) VOC = 1ppm (peak) Continued collapse of sidewalls from 1.5m bgl during excavation
2.30-2.80	Dark grey silty CLAY with occasional gravel of fine and medium iron stained chalk (HAPPISBURGH GLACIGENIC FORMATION)		2.30 2.30	B4 ESJ6	VOC = 1ppm (peak)
2.80-3.10	Grey and locally dark grey slightly gravelly medium and coarse SAND. Gravel of subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)		2.90	B5	VOC = 0ppm
					Trial pit terminated at 3.1m. Target depth achieved. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method: Trial pit	Plant Used: JCB 3CX	Checked By: SG

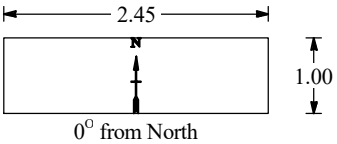
Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No	Date	Ground Level (m OD)	Coordinates ()
2543,GI	01-08-17 01-08-17	2.41	E 653853.288, N 292948.07 NGR
Fieldwork By	Logged By		Sheet
Holmes Plant	JG		1 of 1

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC06

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.20	CONCRETE				
0.20-0.70	Brownish grey gravelly coarse SAND. Gravel of angular fine and medium brick and flint (MADE GROUND)		0.30	ESJ1	VOC = 0ppm
	0.60 - 0.60 20mm pipe encountered				Unspecified redundant pipe encountered, 20mm diameter ceramic pipe
0.70-0.90	Dark brown slightly gravelly silty SAND. Gravel of subangular fine brick (MADE GROUND)		0.70 0.70	B1 ESJ2	VOC = 6ppm (peak)
0.90-1.90	Greenish brown silty fine SAND (MADE GROUND - FILL)		1.10 1.10	B2 ESJ3	VOC = 0ppm
1.90-3.20	Black and grey slightly silty CLAY. Black staining and moderate hydrocarbon odour (MADE GROUND)		2.00 2.00	B3 ESJ4	VOC = 0ppm
					VOC = 0ppm Collapse of sidewalls from 3.2m to 1.5m bgl during excavation Trial pit terminated at 3.2m bgl. Target depth achieved. Backfilled with arisings
			3.20 3.20	B4 ESJ5	



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

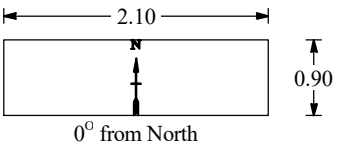
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 21-09-17 21-09-17	Ground Level (m OD): 2.39	Coordinates (): E 653870.002, N 292934.589 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC07

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.20	CONCRETE (Pale grey, 5mm diameter rebar)				
0.20-0.40	Orangish brown silty SAND AND GRAVEL. Gravel of angular to subrounded fine to coarse flint and occasional brick (MADE GROUND)		0.30	ESJ1	VOC = 0ppm
0.40-0.55	Black silty SAND AND GRAVEL. Gravel of angular to subrounded fine to coarse brick, clinker and flint (MADE GROUND)		0.45	ESJ2	VOC = 0ppm
0.55-1.40	Orangish brown slightly gravelly fine to medium SAND with occasional brown mottling. Gravel of subangular to subrounded fine to coarse flint and occasional brick fragments (MADE GROUND)		0.90	ESJ3	VOC = 0ppm
			1.00	B1	Continued collapse of sidewalls from 1.0m bgl during excavation
1.40-1.55	Dark grey sandy slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse flint (ALLUVIUM)		1.50	D1	VOC = 0ppm
			1.50	ESJ4	Trial pit terminated at 1.55m depth due to significant collapse of sidewalls. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

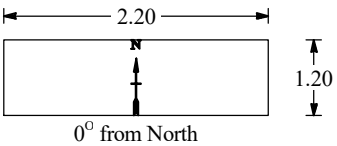
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 21-09-17 21-09-17	Ground Level (m OD): 2.67	Coordinates (): E 653918.913, N 292926.108 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC08

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.20	CONCRETE (Pale grey, 5mm diameter rebar)				
0.20-0.30	Orangish brown silty SAND AND GRAVEL. Gravel of angular to subrounded fine to coarse flint, concrete and occasional brick (MADE GROUND)		0.25	ESJ1	VOC = 0ppm
0.30-0.40			0.30	ESJ2	VOC = 0ppm
0.40-0.80	Black and dark grey gravelly clayey fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint, brick and concrete (MADE GROUND)		0.50	ESJ3	VOC = 0ppm
0.80-2.50	Yellowish brown and brown mottled fine to coarse SAND with occasional flint gravel (MADE GROUND)				
	Dark brown and black mottled fine to coarse SAND with occasional fine to coarse subrounded to rounded flint gravel and moderate natural organic odour (MADE GROUND)		1.00	B1	VOC = 0ppm
			1.00	ESJ4	
			1.60	ESJ5	VOC = 0ppm Continued collapse of sidewalls from 1.6m bgl during excavation
			2.00	B2	VOC = 0ppm
			2.00	ESJ6	
					Trial pit terminated at 2.5m depth due to significant collapse of sidewalls. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

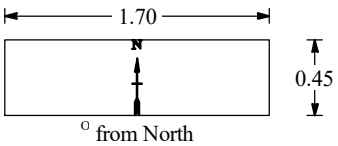
Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No	Date	Ground Level (m OD)	Coordinates ()
2543,GI	24-04-18 24-04-18	2.72	E 292885.158, N 653912.995 NGR
Fieldwork By	Logged By		Sheet
Holmes Plant	JG		1 of 1

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC09

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.50	Dark brown and black gravelly SAND with rootlets (1-2mm). Sand is fine and medium. Gravel is subrounded to subangular fine and medium clinker, brick and flint (MADE GROUND)		0.20	ESJ1	VOC = 0ppm
0.50-1.40	Orangish brown mottled yellowish brown gravelly fine and medium SAND. Gravel is rounded to subangular flint and rare clinker (MADE GROUND)		0.60	ESJ2	VOC = 0ppm
1.40-2.00	Grey and black organic CLAY with moderate natural organic odour (POSSIBLE MADE GROUND)		1.50	ESJ3	VOC = 0ppm
					Trial pit terminated at 2.0m bgl due to severe collapse and unsafe conditions. Backfilled with arisings



Shoring/Support:
Stability: Collapsed from 1.4m depth and 1.2m in wi

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

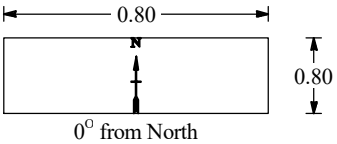
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 22-08-17 22-08-17	Ground Level (m OD): 3.30	Coordinates (): E 653881.636, N 292631.546 NGR
Fieldwork By: GEL	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC10

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.10	CONCRETE (Pale grey, reinforced with 10mm diameter rebar)				No significant collapse of sidewalls during excavation
0.10-0.55	Dark brown silty gravelly slightly cobbly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint, brick and concrete. Cobbles of concrete (MADE GROUND)		0.40	ESJ1	VOC = 0ppm
			0.50	B1	Hand dug to 0.5m depth. Plate Load Test undertaken at 0.5m depth
					Trial pit terminated at 0.6m depth following the plate load testing due to concentration of active services and positive CAT response



Shoring/Support:
Stability:

All dimensions in metres Scale 1:7.46268656716418	Method Trial pit	Plant Used HAND	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

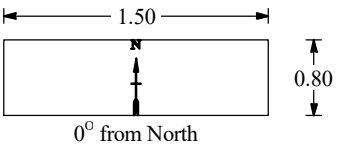
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 17-08-17 17-08-17	Ground Level (m OD): 3.31	Coordinates (): E 653781.059, N 292652.798 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC21

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.05	FLEXIBLE SURFACING				No significant collapse of sidewalls during excavation
0.05-0.15 0.15-0.70	Black and dark brown silty SAND AND GRAVEL. Gravel of angular to subangular fine to coarse flint, clinker and brick (MADE GROUND)		0.10	ESJ1	VOC = 0ppm
			0.25	ESJ2	VOC = 0ppm
	Light brown silty gravelly fine and medium SAND. Gravel of angular to subangular fine to coarse brick, flint, concrete and clinker (MADE GROUND)		0.50	B1	Plate Load Test undertaken at 0.5m depth
0.70-1.40	Dark brown very sandy CLAY with natural organic odour (MADE GROUND)		0.80	ESJ3	VOC = 0ppm
			1.20	B2	
1.40-3.10	Yellowish brown and bluish grey mottled slightly sandy gravelly CLAY with clayey sand pockets. Gravel of subangular to subrounded fine to coarse chalk and flint (LOWESTOFT FORMATION CLAY AND SILT)		1.45	ESJ4	VOC = 0ppm
			1.60	D1	
	2.00 - 2.00 Becoming dark yellow brown and blue grey mottled with depth		2.00	B3	
			2.30	ESJ5	VOC = 0ppm
			2.50	D2	
			3.00	B4	
					Trial pit terminated at 3.1m depth. Target depth achieved. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

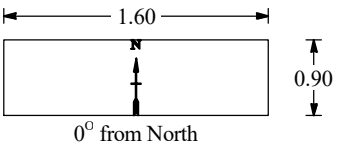
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 17-08-17 17-08-17	Ground Level (m OD): 3.87	Coordinates (): E 653825.53, N 292618.062 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC22

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.35	Dark brown gravelly silty fine sand. Gravel of angular to subrounded fine to coarse flint, clinker, brick and fragments of clay pipe (MADE GROUND)				No significant collapse of sidewalls during excavation
			0.25	ESJ1	VOC = 0ppm
0.35-1.10	Light brown gravelly fine and medium SAND. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)		0.50	B1	Plate Load Test undertaken at 0.5m depth
			0.60	ESJ2	VOC = 0ppm
1.10-3.00	Orangish brown mottled light brown gravelly fine and medium SAND with occasional pockets of dark orange brown sand. Gravel of angular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)		1.20	ESJ3	VOC = 0ppm
			1.50	B2	
			2.10	ESJ4	VOC = 0ppm
			2.60	B3	
			3.00	B4	VOC = 0ppm
			3.00	ESJ5	Trial pit completed at 3.0m depth. Target depth achieved. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

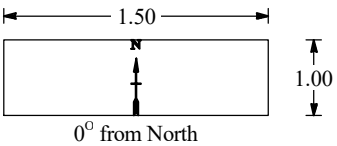
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 17-08-17 17-08-17	Ground Level (m OD): 3.96	Coordinates (): E 653820.086, N 292581.622 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC23

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-2.00	Pale brown very gravelly very silty fine and medium SAND. Gravel of angular to subangular fine to coarse brick, concrete, flint and glass. Fragment of potential asbestos containing material encountered (MADE GROUND)				No significant collapse of sidewalls during excavation
			0.30	ESJ1	VOC = 0ppm
	0.40 - 0.40 Becoming dark brown with depth				
			0.50	B1	Plate Load Test undertaken at 0.5m depth
	0.60 - 0.60 Cobbles of concrete with rebar (20mm diameter) and brick		0.60	ESJ2	VOC = 0ppm
	0.70 - 0.70 Layers of ash, clinker and burnt ground				
			1.00	ESJ3	VOC = 0ppm
			1.10	ESJ1	
			1.50	B2	
2.00-2.50	Dark brown slightly gravelly slightly clayey fine and medium SAND. Gravel of angular to subrounded fine to coarse brick, concrete, flint, glass and wood (MADE GROUND)		2.00	ESJ4	VOC = 0ppm
			2.40	B3	
2.50-3.10	Orange brown fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)		2.60	ESJ5	VOC = 0ppm
			3.00	B4	
					Trial pit completed at 3.1m depth. Target depth achieved. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

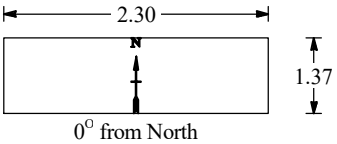
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 01-08-17 01-08-17	Ground Level (m OD): 2.56	Coordinates (): E 653743.035, N 292985.932 NGR
Fieldwork By: Holmes Plant	Logged By: JG		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC101

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.20	CONCRETE (Concrete with 20mm rebar)				
0.20-0.60	Orangish brown becoming greyish brown gravelly SAND. Gravel of angular to subangular brick, concrete and flint (MADE GROUND)		0.30 0.30 0.30	B1 D1 ESJ1	VOC = 0ppm
0.60-2.05	Light yellowish brown gravelly fine and medium SAND. Gravel of angular to subrounded fine to medium flint (HAPPISBURGH GLACIGENIC FORMATION)		0.80 0.80 0.80	B2 D2 ESJ2	VOC = 0ppm
			1.80 1.80 1.80	B3 D3 ESJ3	Collapse of sidewalls from 1.8m to 1.6m bgl during excavation VOC = 0ppm Trial pit terminated at 2.05m due to severe collapse. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method: Trial pit	Plant Used: JCB 3CX	Checked By: SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

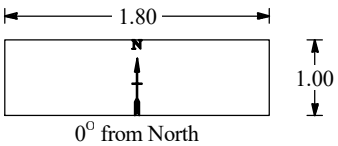
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 04-08-17 04-08-17	Ground Level (m OD): 4.18	Coordinates (): E 653786.151, N 293031.773 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC102

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.30	Dark brown silty slightly gravelly fine to coarse SAND with rootlets. Gravel of subrounded and angular fine to coarse flint		0.20	ESJ1	VOC = 0ppm
0.30-1.40	Orangish brown with occasional light brown mottling slightly gravelly fine and medium SAND. Gravel of subrounded to subangular fine to coarse flint		0.50 0.50	BB1 ESJ2	VOC = 0ppm
1.40-2.80	Light yellowish brown slightly gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)		1.60 1.60	BB2 ESJ3	VOC = 0ppm
			2.40 2.40	BB3 ESJ4	VOC = 0ppm Continued collapse of sidewalls from 2.4m bgl during excavation
			2.80 2.80	BB4 ESJ5	VOC = 0ppm Trial pit terminated at 2.90m depth. Target depth achieved. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

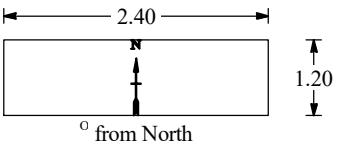
Project	Client		
Lake Lothing, Lowestoft	Geosphere Environmental Ltd		
Job No: 2543,GI	Date: 31-07-17 31-07-17	Ground Level (m OD): 2.56	Coordinates (): E 292959.324, N 653810.502 NGR
Fieldwork By: Holmes Plant	Logged By: LF		

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

TRIAL PIT No
TPC103

Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.20	CONCRETE (pale grey with rebar)				
0.20-0.30	Orangish brown silty SAND AND GRAVEL of subangular to subrounded fine and coarse flint and brick (MADE GROUND)				
0.30-1.20	Black silty gravelly fine to coarse SAND with moderate natural organic odour and possible burnt odour. Gravel of angular to subangular fine to coarse flint, brick concrete and occasional slate (MADE GROUND)		0.30	ESJ1	VOC = 0ppm
			0.50	B1	VOC = 1ppm (peak)
			0.50	ESJ2	
			1.10	B2	VOC = 0ppm
1.20-1.90	Dark brown fine and medium SAND with moderate to strong sulphurous odour (ALLUVIUM)		1.10	ESJ3	
			1.50	B3	Continued collapse of sidewalls from 1.4m bgl during excavation
			1.50	ESJ4	VOC = 0ppm
			1.78	EWW1	
1.90-2.23	Light brown fine SAND (saturated) with weak to moderate sulphurous odour (ALLUVIUM)		2.00	B4	VOC = 0ppm
			2.00	ESJ5	
					Trial pit terminated at 2.23m depth due to severe collapse. Backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:29.8507462686567	Method Trial pit	Plant Used JCB 3CX	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

APPENDIX 7 – WINDOWLESS SAMPLER BOREHOLE LOGS

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: SG FIELDWORK BY: DrillTechnics - IC	CHECKED BY: LF DATE: 16/07/2018	EXCAVATION METHOD: Dynamic (windowless) sampler 150mm cased from 0.0 to 5.0m	**HOLE No. WSC05**
Ground Level 2.363m OD	Equipment: Windowless Sampler		DATES 17/10/2017 - 17/10/2017
Coordinates: E 653858.723, N 292942.869 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown gravelly silty fine SAND. Gravel of subangular to subrounded fine to coarse concrete, flint and brick (MADE GROUND)			0.00	0.30	B ES	1 J1			
								0.60	ES	J2			
				Brown slightly gravelly silty fine SAND. Gravel of subangular to subrounded fine to coarse concrete and flint (MADE GROUND)			0.80	0.90	ES	J3		–	
1		1.15					–	1.20	ES	J4			
				Light greyish brown silty fine and medium SAND (ALLUVIUM)			1.30	1.50	ES	J5			VOC = 7ppm (peak)
				Black mottled light grey organic CLAY (ALLUVIUM)			1.95					–	
2								2.50	ES	J6			VOC = 486ppm (peak). Natural organic odour and discolouration noted in sample
				3.35 - 3.35 Parting of silty fine sand (50mm)			–						
3				Dark reddish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			3.50	3.50	ES	J7			VOC = 72ppm (peak). Weak natural organic odour in sample
				3.80 - 3.80 Becoming dark greyish brown with depth									
4				4.00 - 4.00 Becoming light grey with depth			–	4.00	B	2		–	
5							5.00					–	Borehole terminated at 5.0m bgl due to soils being too dense and possible blowing sands Borehole Terminated at 5m depth.

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DrillTechnics - IC	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 5.0 m	**HOLE No. WSC14**
Ground Level 3.692m OD	Equipment: Windowless Sampler		DATES 02/11/2017 - 02/11/2017
Coordinates: E 653927.118, N 292508.687 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown slightly silty gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint, concrete and brick (MADE GROUND)			0.00	0.30	ES	J1			VOC = 0ppm
1								1.00	ES	J2			VOC = 0ppm
				Light yellowish brown mottled brown slightly gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint, brick and occasional tile (MADE GROUND)			1.50	1.70	ES	J3			VOC = 0ppm
2				Light yellowish brown fine and medium SAND with occasional orange brown horizons (HAPPISBURGH GLACIGENIC FORMATION)			2.00	2.30	ES	J4			VOC = 0ppm
3													
				3.80 - 3.80 Pocket of dark grey sand with moderate natural organic odour				3.80	ES	J5			VOC = 0ppm
4				Orangish brown slightly clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			4.00	4.20	ES	J6			VOC = 0ppm
				Orangish brown fine and medium SAND with bands of gravel of subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			4.50						
				Orangish brown very sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			4.90						
5							5.00						Borehole terminated at 5.0m depth due to contined collapse of borehole between 5.0m and 4.0m depth Borehole Terminated at 5m depth.

Remarks: Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DrillTechnics - JD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Inspection pit Uncased to 1.1 m	**HOLE No. WSC16**
Ground Level 2.867m OD	Equipment: HAND		DATES 31/10/2017 - 31/10/2017
Coordinates: E 653915.614, N 292544.169 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Orangish brown gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint, concrete and brick (MADE GROUND)			0.05						
								0.40	ES	J1			VOC = 0ppm
				Orangish brown mottled light brown fine and medium SAND (MADE GROUND)			0.70	0.80	ES	J2			VOC = 0ppm
1				CONCRETE			1.00					–	
							1.10						Hand pit terminated at 1.1m bgl due to concrete obstruction. Windowless sampler borehole not undertaken Borehole Terminated at 1.1m depth.
2							–					–	
3							–					–	
4							–					–	
5							–					–	

Remarks: Breakout by GEL(0.5hr on 31/10/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DrillTechnics - JD	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Inspection pit Uncased to 1.1 m	**HOLE No. WSC16a**
Ground Level 2.879m OD	Equipment: HAND		DATES 31/10/2017 - 31/10/2017
Coordinates: E 653915.955, N 292543.119 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Orangish brown gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint, concrete and brick (MADE GROUND)			0.05						
								0.40	ES	J1			VOC = 0ppm
				Orangish brown mottled light brown fine and medium SAND (MADE GROUND)			0.70	0.70	ES	J2			VOC = 0ppm
1				CONCRETE			1.00					–	
							1.10						Hand pit terminated at 1.1m bgl due to concrete obstruction. Windowless sampler borehole not undertaken Borehole Terminated at 1.1m depth.
2							–					–	
3							–					–	
4							–					–	
5							–					–	

Remarks: Breakout by GEL(0.5hr on 31/10/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DT - AS	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 4.0 m	**HOLE No. WSC17**
Ground Level 3.433m OD	Equipment: Windowless Sampler		DATES 30/10/2017 - 30/10/2017
Coordinates: E 653861.006, N 292599.09 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown slightly gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse flint and occasional brick (MADE GROUND)			0.00	0.10	ES	J1			VOC = 0ppm
				Dark orangish brown slightly gravelly fine to coarse SAND. Gravel of subangular to rounded fine to coarse flint (MADE GROUND)			0.30						
				Orangish brown slightly gravelly fine and medium SAND with occasional light orangish brown pockets. Gravel of subangular to rounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			0.45	0.40	ES	J2			VOC = 0ppm
								0.60	ES	J3			VOC = 0ppm
1				Orangish brown mottled light grey slightly clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			1.10	1.10	ES	J4			VOC = 0ppm
				Orangish brown mottled light brown slightly clayey fine and medium SAND with frequent pockets of sandy clay (HAPPISBURGH GLACIGENIC FORMATION)			1.40	1.60	ES	J5			VOC = 0ppm
2				Dark greyish brown CLAY (HAPPISBURGH GLACIGENIC FORMATION)			1.90						
				Dark grey very gravelly CLAY. Gravel of subangular to subrounded fine to coarse chalk and occasional flint (HAPPISBURGH GLACIGENIC FORMATION)			2.50	2.50	ES	J6			VOC = 0ppm
3								3.50	ES	J7			VOC = 0ppm
		3.70 2.90		Orangish brown fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			3.70						
4							4.00						Borehole terminated at 4.0m depth due to blowing sands between 4.0m and 3.0m bgl Borehole Terminated at 4m depth.
5													

Remarks: Breakout by GEL(0.5hr on 02/01/18);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DrillTechnics - IC	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Inspection pit Uncased to 0.8 m	**HOLE No. WSC19**
Ground Level 3.958m OD	Equipment: HAND		DATES 01/11/2017 - 01/11/2017
Coordinates: E 653878.67, N 292575.454 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown silty gravelly fine to coarse SAND with rootlets. Gravel of angular to subangular fine to coarse brick, flint, concrete, metal and clinker (TOPSOIL)			0.00	0.30	ES	J1			VOC = 0ppm
				Dark brown silty gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint, brick, metal and clinker (MADE GROUND)			0.50	0.60	ES	J2			VOC = 0ppm
				CONCRETE			0.75						
							0.80						Hand pit terminated at 0.8m bgl due to obstruction. Windowless sampler borehole not undertaken Borehole Terminated at 0.8m depth.
1							–					–	
2							–					–	
3							–					–	
4							–					–	
5							–					–	

Remarks: Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DT - IC	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 5.0 m	**HOLE No. WSC19a**
Ground Level 3.794m OD	Equipment: Windowless Sampler		DATES 02/11/2017 - 02/11/2017
Coordinates: E 653879.713, N 292577.238 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown silty gravelly fine to coarse SAND with rootlets. Gravel of angular to subangular fine to coarse brick, flint, concrete, metal and clinker (TOPSOIL)			0.00						
								0.40	ES	J1			VOC = 0ppm
				Grey and dark grey silty gravelly fine SAND. Gravel of angular to subrounded fine to coarse flint, clinker, charcoal and ash (MADE GROUND)			0.65						
1								0.90	ES	J2			VOC = 0ppm
				Black and dark grey SILT with ash (MADE GROUND)			1.20						
				Orangish brown fine to coarse SAND with occasional black mottling (MADE GROUND)			1.30						
								1.50	ES	J3			VOC = 0ppm
				Light yellowish brown medium SAND with occasional subangular to subrounded fine to medium flint (HAPPISBURGH GLACIGENIC FORMATION)			1.80						
2								2.10	ES	J4			VOC = 0ppm
				2.30 - 2.40 Pocket of dark orangish brown sand									
				Light yellowish brown gravelly medium to coarse SAND becoming slightly gravelly with depth. Gravel of subangular to subrounded fine to medium flint (HAPPISBURGH GLACIGENIC FORMATION)			2.40						
								2.70	ES	J5			VOC = 0ppm
3		3.20											
				Dark orangish brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			4.00						
4								4.20	ES	J6			VOC = 0ppm
5							5.00						Borehole terminated at 5.0m bgl due to blowing sands. Borehole backfilled to 3.0m depth due to blowing sands Borehole Terminated at 5m depth.

Remarks: Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: GEL - IC	CHECKED BY: SG DATE: 16/07/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 4.0 m	**HOLE No. WSC19a(1)**
Ground Level 3.798m OD	Equipment: Windowless Sampler		DATES 02/01/2018 - 02/01/2018
Coordinates: E 653882.916, N 292579.557 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark brown silty fine to coarse SAND with occasional angular to subrounded fine and medium brick and flint (TOPSOIL)			0.00						
								0.35	ES	J1			VOC = 0ppm
				Light brown slightly gravelly fine and medium SAND. Gravel of subangular to subrounded fine and medium flint (MADE GROUND)			0.60						
								0.80	ES	J2			VOC = 0ppm
1				Light brown slightly gravelly medium and coarse SAND. Gravel of subangular to subrounded fine and medium flint (HAPPISBURGH GLACIGENIC FORMATION)			1.00						
								1.40	ES	J3			VOC = 0ppm
				1.50 - 1.60 Band of gravelly sand									
2													
								2.40	ES	J4			VOC = 2ppm (peak)
													Borehole collapsed to 2.65m bgl
				2.90 - 3.00 Band of gravelly sand									
3				Orangish brown gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION)			3.00						
		3.50		3.50 - 3.60 Band of coarse flint gravel				3.50	ES	J5			**VOC = 0ppm**
4							4.00						Borehole terminated at 4.0m bgl due to continued collapse between 4.0m and 3.0m depth Borehole Terminated at 4m depth.
5													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: GEL - IC	CHECKED BY: SG DATE: 16/07/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 3.2 m	**HOLE No. WSC21**
Ground Level 3.725m OD	Equipment: Windowless Sampler		DATES 02/01/2018 - 02/01/2018
Coordinates: E 653902.36, N 292532.138 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Brown silty gravelly fine to coarse SAND. Gravel of angular to subangular fine to coarse flint and occasional brick (MADE GROUND)			0.20	0.35	ES	J1			VOC = 0ppm
				Yellowish brown silty gravelly medium SAND. Gravel of subangular to subrounded fine to coarse flint (MADE GROUND)			0.50	0.75	ES	J2			VOC = 0ppm
1													
				Yellowish brown fine and medium SAND with bands of dark orangish brown sand (HAPPISBURGH GLACIGENIC FORMATION)			1.50	1.75	ES	J3			VOC = 0ppm
2				Brown clayey fine and medium SAND with occasional dark orangish brown bands (HAPPISBURGH GLACIGENIC FORMATION)			2.00	2.25	ES	J4			VOC = 0ppm
				Light yellowish brown fine and medium SAND with occasional dark orangish brown veining (HAPPISBURGH GLACIGENIC FORMATION)			2.40						Borehole collapsed to 2.5m bgl
								2.65	ES	J5			VOC = 0ppm
3													
							3.20						Borehole terminated at 3.2m bgl due to soils being too dense to progress Borehole Terminated at 3.2m depth.
4													
5													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: LF FIELDWORK BY: DT - IC	CHECKED BY: SG DATE: 16/10/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 4.5 m	**HOLE No. WSC22**
Ground Level 3.036m OD	Equipment: Windowless Sampler		DATES 01/11/2017 - 01/11/2017
Coordinates: E 653938.133, N 292468.737 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Dark orangish brown very gravelly fine to coarse SAND. Gravel of angular to subrounded fine to coarse brick, flint and concrete (MADE GROUND)			0.05	0.20	ES	J1			VOC = 1ppm (peak)
				Orangish brown fine and medium SAND with occasional fine to coarse flint (MADE GROUND)			0.30	0.50	ES	J2			VOC = 2ppm (peak)
1				Orangish brown mottled light brown slightly silty fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			1.10	1.20	ES	J3			VOC = 0ppm
				Orangish brown mottled light grey very sandy CLAY (HAPPISBURGH GLACIGENIC FORMATION)			1.70	1.80	ES	J4			VOC = 1ppm (peak)
2								2.50	D	1			
3		3.00 2.30		Orangish brown mottled light grey slightly clayey fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)			3.00	3.30	ES	J5			VOC = 0ppm
				3.90 - 4.00 Pocket of dark orange brown slightly gravelly medium sand			4.00						
4				Orangish brown fine and medium SAND (HAPPISBURGH GLACIGENIC FORMATION)				4.20	ES	J6			VOC = 0ppm
							4.50						Blowing sands encountered at 4.5m depth, borehole backfilled to 3.7m Borehole terminated at 4.5m bgl due to soils being too dense to progress Borehole Terminated at 4.5m depth.
5													

Remarks: Breakout by GEL(0.5hr on 01/11/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: SG FIELDWORK BY: GEL - IC	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 4.0 m	**HOLE No. WSC23**
Ground Level 3.291m OD	Equipment: Windowless Sampler		DATES 09/11/2017 - 09/11/2017
Coordinates: E 653926.397, N 292431.481 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				FLEXIBLE SURFACING			0.00						
				Black SAND and GRAVEL of flexible surfacing and flint			0.33						
				Multicoloured gravelly SAND with high cobble content. Gravel and cobbles of angular to subrounded fine to coarse red brick (MADE GROUND)			0.43	0.50	D ES	1 J1			VOC = 4ppm (peak)
				Dark reddish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			0.70	0.80	ES	J2			VOC = 2ppm (peak)
1				1.00 - 1.00 Becoming dark yellowish brown with dark reddish brown staining with depth				1.10	ES	J3			VOC = 2ppm (peak)
				1.50 - 1.65 Parting of light grey silty fine sand									
				Dark orangish brown mottled yellowish brown silty sandy CLAY with bands of sand. Sand is fine (HAPPISBURGH GLACIGENIC FORMATION)			1.65						
2		2.50						2.20	ES	J4			VOC = 1ppm (peak)
				Dark yellowish brown mottled dark orangish brown silty fine SAND (HAPPISBURGH GLACIGENIC FORMATION)			2.65						
3								3.20	ES	J5			VOC = 1ppm (peak)
				3.85 - 3.85 Dark reddish brown band									
4							4.00						Borehole terminated at 4.0m bgl. Target depth achieved Borehole Terminated at 4m depth.
5													

Remarks: Breakout by GEL(0.5hr on 09/11/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: SG FIELDWORK BY: DT - IC	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Dynamic (windowless) sampler Uncased to 4.0 m	**HOLE No. WSC28**
Ground Level 2.988m OD	Equipment: Windowless Sampler		DATES 12/10/2017 - 13/10/2017
Coordinates: E 653876.77, N 292702.877 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Orangish brown slightly clayey SAND and GRAVEL. Gravel of angular to subrounded fine to coarse flint, concrete and occasional brick fragments (MADE GROUND)			0.18 0.28						
				CONCRETE			0.45						
				CONCRETE (Recovered as a very coarse gravel of angular to subangular concrete with occasional red brick)			0.60	0.50	ES	J1			VOC = 0ppm
				Dark brown slightly clayey SAND with frequent fine to coarse gravel of brick, flint, chert, chalk and strong medium dense ironstone (MADE GROUND)				0.70	ES	J2			VOC = 1ppm (peak)
							0.90						
1				Olive brown slightly silty slightly gravelly CLAY. Gravel of fine to medium flint and chert with occasional calcarious nodules (POSSIBLE MADE GROUND)				1.00	ES	J3			VOC = 0ppm
				Dark reddish brown silty CLAY with pale grey veining			1.40	1.40	ES	J4			VOC = 0ppm
							1.90						
2				Dark yellowish brown slightly clayey silty medium SAND				2.20	ES	J5			VOC = 0ppm
				2.50 - 3.00 Becoming dark grey brown with depth				2.60	ES	J6			VOC = 0ppm
3													Blowing sands encountered on completion. Borehole backfilled from 4.0m to 3.0m depth
				Light yellowish brown silty fine to medium SAND with occasional light grey banding (20-40mm) (HAPPISBURGH GLACIGENIC FORMATION)			3.50	3.60	ES	J7			VOC = 0ppm
		3.89 3.18											
4							4.00						Borehole terminated at 4.0m depth due to blowing sands Borehole Terminated at 4m depth.
5													

Remarks: Coring by GEL (3hr on 12/10/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: SG FIELDWORK BY: DrillTechnics - IC	CHECKED BY: LF DATE: 16/10/2018	EXCAVATION METHOD: Inspection pit Uncased to 1.3 m	**HOLE No. WSC101**
Ground Level 3.064m OD	Equipment: HAND		DATES 12/10/2017 - 13/10/2017
Coordinates: E 292670.028, N 653872.382 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				CONCRETE			0.00						
				Dark brown gravelly medium and coarse SAND. Gravel of angular to subrounded fine to coarse concrete, flint and clinker (MADE GROUND)			0.15	0.20	ES	J1			VOC = 0ppm
				CONCRETE			0.28						
				Dark brown sandy gravelly CLAY. Gravel of subangular to subrounded fine to coarse brick, flint, concrete and clinker and occasional decayed wood fragments (MADE GROUND)			0.50	0.60	ES	J2			VOC = 0ppm
				CONCRETE			0.85						
1				Orangish brown sandy GRAVEL of rounded to subrounded fine to coarse flint (MADE GROUND)			1.05	1.20	ES	J3			VOC = 0ppm
							1.28						Hand pit terminated at 1.28m bgl due to concrete obstruction. Windowless sampler borehole not undertaken Borehole Terminated at 1.28m depth.
2													
3													
4													
5													

Remarks: Coring by GEL (1.5hr on 12/10/17) and subsequent break out (0.5hr on 13/10/17);
Hand inspection pit excavated by GEL;

Geosphere Environmental Ltd
Unit 11, Brightwell Barns `
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

CLIENT: Geosphere Environmental Ltd		PROJECT: Lake Lothing, Lowestoft	
LOGGED BY: SG FIELDWORK BY: DT - IC	CHECKED BY: LF DATE: 16/07/2018	EXCAVATION METHOD: Dynamic (windowless) sampler 150mm cased from 0.0 to 3.0m	**HOLE No. WSC103**
Ground Level 3.175m OD	Equipment: Windowless Sampler		DATES 17/10/2017 - 17/10/2017
Coordinates: E 653888.727, N 292643.875 NGR	SHEET 1 OF 1		PROJECT NO. 2543,GI

Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Additional Tests and Notes
0				Dark greyish brown mottled yellowish brown silty fine and medium sand with rootlets (TOPSOIL)			0.00						
				Dark grey silty gravelly coarse SAND. Gravel angular to subrounded fine to coarse flint, brick and medium clinker (MADE GROUND)			0.20	0.25	ES	J1			VOC = 1ppm (peak)
								0.50	ES	J2			VOC = 1ppm (peak)
								0.75	ES	J3			VOC = 3ppm (peak)
				Orangish brown mottled dark greyish brown gravelly fine to coarse SAND. Gravel of subangular and subrounded fine to coarse flint and chert (POSSIBLE MADE GROUND) 1.05 - 1.05 Becoming pale brown/dark orange brown mottled with depth			0.87					
1								1.00	B ES	1 J4			VOC = 2ppm (peak)
				Dark orangish brown gravelly medium and coarse SAND. Gravel of subangular and subrounded fine to coarse flint (HAPPISBURGH GLACIGENIC FORMATION) 1.60 - 1.60 Gravel becoming occasional to frequent with depth			1.35						
								1.50	ES	J5			VOC = 2ppm (peak)
2													
				Black stained slightly gravelly medium and coarse SAND with weak hydrocarbon odour (HAPPISBURGH GLACIGENIC FORMATION)			2.40	2.50	ES	J6			VOC = 8ppm (peak)
		2.80 2.16		2.80 - 2.80 Band of sandy clay									
3				3.00 - 3.00 Becoming pale grey stained with depth				3.00	B ES	2 J7			VOC = 2ppm (peak)
				Light yellowish brown silty SAND with weak hydrocarbon odour (HAPPISBURGH GLACIGENIC FORMATION)			3.10						
4							4.00						Borehole terminated at 4.0m depth due to blowing sands Borehole Terminated at 4m depth.
5													

Remarks:

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

Report ID: GEL AGS4 BH NEW || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

APPENDIX 8 – INSPECTION PIT LOGS

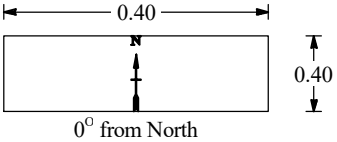
Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing, Lowestoft	Geosphere Environmental Ltd	

Job No	Date	Ground Level (m OD)	Coordinates ()	HAND PIT
2543,GI	15-08-17 15-08-17		E , N NGR	IPC01

Fieldwork By	Logged By	Sheet
GEL - JK+LF	LF	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-1.50	Dark brown and brown gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional fragments of brick and flexible surfacing (MADE GROUND)				Groundwater not encountered during drilling
			0.30- 1.00 0.30	B1 ESJ1	VOC=1ppm (peak)
	0.50 - 0.50 Becoming dark yellow brown with depth				
			0.60	ESJ2	VOC=1ppm (peak)
			0.70	D1	
					VOC=0ppm
			0.90	ESJ3	
			1.20	ESJ4	VOC=0ppm. Hand pit extended from 1.2m depth with hand auger methods
			1.30	D2	
					Excavation completed at 1.5m depth due to poor recovery with hand auger and continued collapse. Backfilled with arisings

Hand inspection pit excavated by GEL;



Shoring/Support:
Stability:

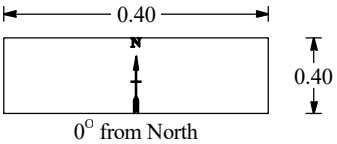
All dimensions in metres Scale 1:14.9253731343284	Method Inspection pit	Plant Used HAND	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

Project	Client	
Lake Lothing, Lowestoft	Geosphere Environmental Ltd	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Job No: 2543,GI	Date: 15-08-17 15-08-17	Ground Level (m OD):
Coordinates (): E , N NGR		HAND PIT **IPC02**
Fieldwork By: GEL - JK+LF	Logged By: LF	Sheet: 1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-1.40	MADE GROUND (Brown gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional fine brick fragments)				Groundwater not encountered during drilling
			0.30- 1.00 0.30	B1 ESJ1	VOC=0ppm
			0.60	ESJ2	VOC=0ppm
			0.90	ESJ3	VOC=0ppm
			1.20	ESJ4	VOC=0ppm. Hand pit extended from 1.2m depth with hand auger methods
					Excavation completed at 1.4m depth due to poor recovery with hand auger and continued collapse. Backfilled with arisings

Hand inspection pit excavated by GEL;



Shoring/Support:
Stability:

All dimensions in metres Scale 1:14.9253731343284	Method Inspection pit	Plant Used HAND	Checked By: SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

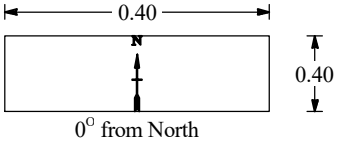
Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing, Lowestoft	Geosphere Environmental Ltd	HAND PIT **IPC03**

Job No	Date	Ground Level (m OD)	Coordinates ()
2543,GI	16-08-17 16-08-17		E , N NGR

Fieldwork By	Logged By	Sheet
GEL - JD+LG	JG	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.80	Dark brown very gravelly very silty fine SAND. Gravel of angular to subrounded fine to coarse flint and occasional concrete and brick (MADE GROUND)				Groundwater not encountered during drilling
			0.30- 1.20 0.30	B1 ESJ1	VOC=0ppm
			0.60	ESJ2	VOC=0ppm
0.80-1.20	Dark orangish brown gravelly very silty fine sand. Gravel of angular to subrounded finen to course flint and occasional concrete and brick fragments (MADE GROUND) 1.10 - 1.10 Becoming pale orange brown with depth		0.90	ESJ3	VOC=0ppm
			1.20	ESJ4	Excavation completed at 1.2m depth due to poor recovery with hand auger and continued collapse. Backfilled with arisings

Hand inspection pit excavated by GEL;



Shoring/Support:
Stability:

All dimensions in metres Scale 1:14.9253731343284	Method Inspection pit	Plant Used HAND	Checked By LF

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

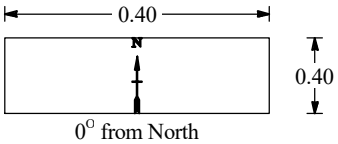
Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing, Lowestoft	Geosphere Environmental Ltd	

Job No	Date	Ground Level (m OD)	Coordinates ()	HAND PIT
2543,GI	16-08-17 16-08-17		E , N NGR	IPC04

Fieldwork By	Logged By	Sheet
GEL - JD+JG	JG	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.60	Dark brown very gravelly very silty fine sand. Gravel of angular to subrounded fine to coarse flint and occasional concrete and brick (MADE GROUND)				Groundwater not encountered during drilling
			0.30- 1.00 0.30	B1 ESJ1	VOC = 0ppm
	0.40 - 0.50 Cobbles of concrete				
0.60-1.50	Brown slightly gravelly very silty fine sand. Gravel of subangular to subrounded flint (MADE GROUND)		0.60	ESJ2	VOC = 0ppm
			0.90	ESJ3	VOC = 0ppm
			1.20	ESJ4	VOC = 0ppm. Hand pit extended from 1.2m depth with hand auger methods
					Excavation completed at 1.5m depth due to poor recovery with hand auger and continued collapse. Backfilled with arisings

Hand inspection pit excavated by GEL;



Shoring/Support:
Stability:

All dimensions in metres Scale 1:14.9253731343284	Method Inspection pit	Plant Used HAND	Checked By LF

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

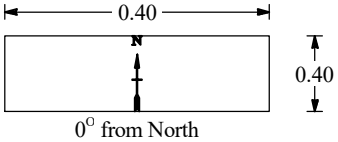
Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing, Lowestoft	Geosphere Environmental Ltd	HAND PIT

Job No	Date	Ground Level (m OD)	Coordinates ()	IPC05
2543,GI	16-08-17 16-08-17		E , N NGR	

Fieldwork By	Logged By	Sheet
GEL - JD+JG	JG	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.80	Dark brown very gravelly very silty fine SAND. Gravel of subangular to subrounded fine to coarse concrete, flint and brick (MADE GROUND)				Groundwater not encountered during drilling
			0.30- 1.00 0.30	B1 ESJ1	VOC = 0ppm
			0.60	ESJ2	VOC = 0ppm
0.80-1.30	Brown slightly gravelly silty fine SAND. Gravel of subangular to subrounded fine to coarse concrete and flint (MADE GROUND)				
			0.90	ESJ3	VOC = 0ppm
			1.20	ESJ4	VOC = 0ppm. Hand pit extended from 1.2m depth with hand auger methods Excavation completed at 1.3m depth due to poor recovery with hand auger and continued collapse. Backfilled with arisings

Hand inspection pit excavated by GEL;



Shoring/Support:
Stability:

All dimensions in metres Scale 1:14.9253731343284	Method Inspection pit	Plant Used HAND	Checked By LF

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 17-10-2018 - FINAL.GPJ || Library: GEOSPHERE AGS4 REV7.GLB || Date: 17 October 2018

APPENDIX 9 – CONE PENETROMETER TEST RESULTS

IN SITU
SITE INVESTIGATION



STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT GEOSPHERE

PROJECT LAKE LOTHING, LOWESTOFT

Project	**Lake Lothing, Lowestoft**
Project No.	**1170332**
Client	**Geosphere Environmental**
Address	**Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ**

Attention: Mr Stephen Gilchrist

Dear Mr Gilchrist,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited

[redacted]

Darren Ward

Director

Report Issue

P

Issue	Date	Description	Prepared	Sign	Checked	Sign
01	04/09/2017	Final	Rachel Cleaver	[redacted]	Darren Ward	[redacted]

Table of Contents

1.0 INTRODUCTION 5

2.0 FIELDWORK 6

2.1 CONE PENETRATION TESTS 6

2.1.1 Rig Information 6

2.1.2 CPTU Cone 6

2.1.3 CPTU Cone Calibration 7

2.1.4 CPTU Cone Saturation 7

2.1.5 Test Procedure 7

2.1.6 In Situ Pore Pressure (u_0) 8

2.2 POSITIONING 8

3.0 CONE PENETRATION MEASURED PARAMETERS 9

3.1 DATA PROCESSING 9

3.1.1 Zero Measurements 9

3.2 MEASURED PARAMETERS 9

3.2.1 Cone Resistance (q_c) 9

3.2.2 Sleeve Friction (f_s) 9

3.2.3 Porewater pressure (u_2) 10

3.2.4 Inclination (I_x, I_y) 10

3.3 ESTIMATED SOIL BEHAVIOUR TYPE 10

3.3.1 Friction Ratio (R_f) 10

3.3.2 Estimated Soil Behaviour Type (SBT) 10

3.3.3 Pore Pressure Ratio (B_q) 11

3.4 APPLIED CORRECTIONS 12

3.4.1 Corrected Cone Resistance (q_t) 12

3.4.2 Depth Correction 12

4.0 GEOTECHNICAL DERIVED PARAMETERS 13

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c) 13

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60}) 15

4.3 RELATIVE DENSITY (D_r) 15
4.4 FRICTION ANGLE (φ') 17
4.5 FINES CONTENT (*FC*) 18
4.6 UNDRAINED SHEAR STRENGTH (s_u) 18
4.7 SENSITIVITY (S_t) 19
4.8 SOIL UNIT WEIGHT (γ) 19
4.9 STATE PARAMETER (ψ) 20
4.10 IN SITU STRESS RATIO (K_0) 22
4.11 OVERCONSOLIDATION RATIO (OCR) 22
4.12 SMALL STRAIN YOUNG MODULUS (E_0) 23
4.13 CONSTRAINED MODULUS (M) 24
4.13.1 Equivalent Oedometer Coefficient of Compressibility (mv) 25
4.14 SMALL STRAIN SHEAR MODULUS (G_0) 25
4.14.1 Mass Density of Soil (ρ) 26
4.15 HIDRAULIC CONDUCTIVITY (k) 26
4.16 CONSOLIDATION CHARACTERISTICS 28
4.16.1 Rigidity Index (I_R) 28
4.16.2 Coefficients of consolidation (c_h, c_v) 28
4.17.3 Coefficients of permeability (hydraulic conductivity, k_h, k_v) 30
5.0 CPTU RESULTS APPLICATIONS 32
5.1 SOIL PROFILING AND APPLICATIONS IN GEOTECHNICAL DESIGN 32
5.1.1 Soil Behaviour Type 32
Figure 5.1: Normalized CPTU Soil Behaviour Type (SBT_n) chart, Q_{tn}-F_R using general large strain soil behaviour description (Robertson, 2012) 33
5.1.2 Soil Profiling 33
5.1.3 Applications in geotechnical design 35
6.0 REFERENCES 36
APPENDIX A 40
APPENDIX A1 – Site Map 41
APPENDIX A2 – Cone Datasheet 42
APPENDIX A3 – Cone Calibration Certificate 43
APPENDIX A4 – Project Summary Sheet 44
CPT Tests Summary Sheet 44
APPENDIX A5 – CPT Rig Datasheet 45

APPENDIX A6 – Symbol List....46
English 46
Greek 47
APPENDIX A7 – Abbreviations....48
APPENDIX A8 – Glossary....49
APPENDIX A9 – Soils Description Tables....51
APPENDIX B....52
Cone Penetration Measured Parameters....52
APPENDIX C....53
Geotechnical Derived Parameters....53

1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Lake Lothing, Lowestoft at the request of Geosphere Environmental Limited (the client). The site investigation consisted of completing 12 *Static Piezocone Penetration Tests (CPTU)* to provide information on the soil conditions and derived geotechnical parameters at:

Off the roundabout of Denmark Road
Bernards Way
NR32 2EW

All test locations were provided by the client, as shown on the site map, in *Appendix A.1*. The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in *Appendix A.2* and on each CPTU log.

The fieldwork was carried out between the 10/09/2017 and 11/09/2017 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *BS EN ISO 22475-1:2012*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Darren Hughes and Lewis Smith
Date Started	10/08/2017
Date Finished	11/08/2017
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Stephen Gilchrist

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.3*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT 001	20 Tonne Wheel Mounted CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2012*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section Area**	**Filter Position**
S15CFIIP.1186	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.4*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
12 CPTU to a maximum depth of 25.00m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters and AGS data.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2012* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.5*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test (ISO 22476-1:2012)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.2*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 2cm/s ±10% except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B* and *C*.

2.1.6 *In Situ Pore Pressure (u_0)*

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. These values are presented on the pore pressure plot, *Form 01*, which is included in *Appendix B*. For this report, the values were estimated by our client.

2.2P POSITIONINGP

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in *Appendix A.1*.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *Lunne et al. (1997)*, *Robertson (2015)* and *BS EN ISO 22475-1:2012.* Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B* and *C*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

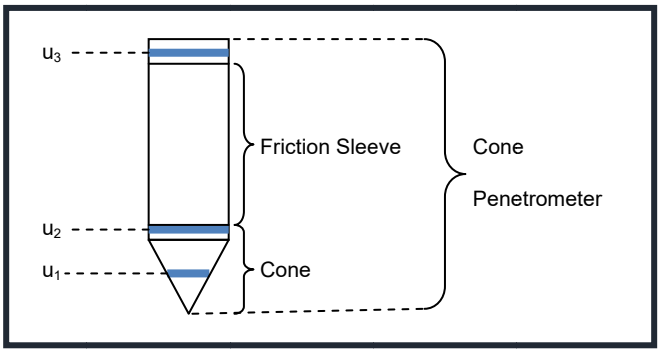


Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The

friction ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et. al. (1986)*, which is shown in Figure 3.2. The results are presented on *Log 01*, in *Appendix B*.

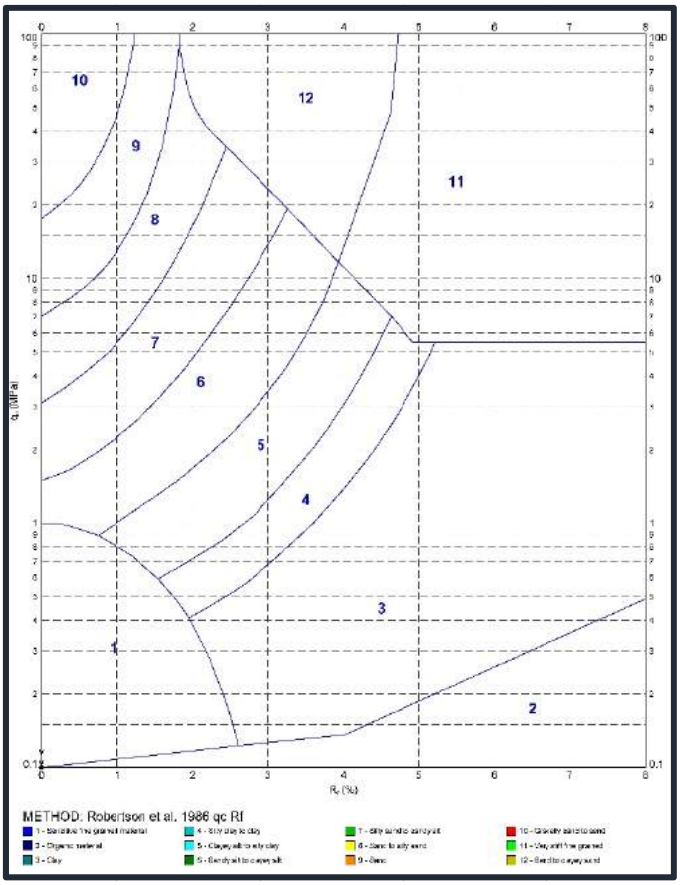


Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ''unequal area effect'' due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone used on this project has a cone area ratio of *0.79*. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2012*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*
l is penetration length, in *m*
C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *Log 02* and *Log 03* in *Appendix C*.

Please note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A6* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, `*(Lunne et al., 1997)*.

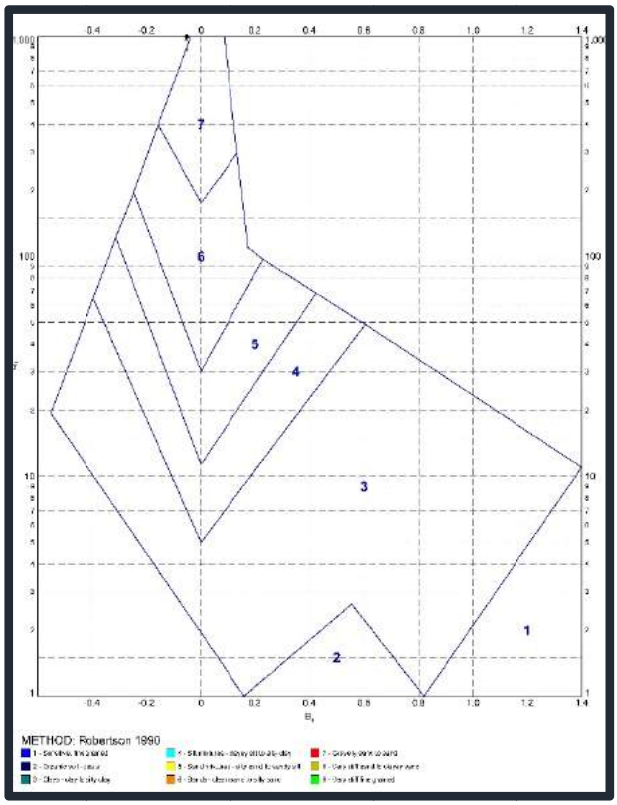


Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%***P**

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily overconsolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT*, N_{60}, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)* and *Jefferson and Davies (1998)*

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferson and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

where

q_c	is the cone resistance
p_a	is the atmospheric pressure equal to *100 kPa*
I_c	is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that this method provides a better estimation of the *N* value than the actual *SPT* test, due to its poor repeatability. But in fine grained soil with high sensitivity these methods of estimating N_{60} may overestimate it *(Jefferies and Davies, 1991).*

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamilkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ'*, is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot [0.256 + 0.336 \cdot B_q + logQ_t]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Roberston and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily overconsolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies *0.1* < B_q < *1.0*. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$

$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75 I_C^{3.25} - 3.7$$

$$3.5 < I_C: \ FC = 100\%$$

2) Suzuki et al (1998)

$$FC(\%) = 2.8 I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)
σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear direction of lading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays , $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

1) Mayne (2007)

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth
V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log(f_s) + 18.5$
G_s is the specific gravity of solids, typically between *2.40* and *2.90*

4.9 STATE PARAMETER (ψ)

The state parameter, *ψ* is defined as the difference between the current void ratio, *e* and the void ratio at critical state e_{cs}, at the same mean effective stress for granular soils.

The problem of evaluating the state parameter from CPTU response is complex and depends on several soil parameters, including shear stiffness, shear strength, compressibility and plastic hardening. (*Jefferis and Been, 2006*)

In this report, the state parameter is calculated based on five methods as follows:

1) Been et al. (1987)

$$\psi = -\frac{ln\left(\frac{Q_p}{k}\right)}{m}$$

and

$$Q_p = \left(\frac{3Q_t}{1 + 2K_0}\right)$$

where
Q_t is the normalized cone resistance
K_0 is the coefficient of lateral earth pressure

2) Shuttle and Jefferies (1998)

$$\psi = -\frac{ln\left(\frac{Q_p}{k}\right)}{m}$$

where

$$k = \left(\left(3.79 + 1.12ln(I_r)\right)\left(1 + 1.06(M - 1.25)\right)\left(1 - 0.30(N - 0.2)\right)(H/1000)^{0.326}\left(-1.55(\lambda - 0.01)\right)\right)^{1.45}$$

$$m = 1.45\left(1.04 + 0.46ln(I_r)\right)\left(1 - 0.4(M - 1.25)\right)\left(1 - 0.30(N - 0.2)\right)(H/100)^{0.15}\left(1 - 2.21(\lambda - 0.01)\right)$$

where
Q_t is the normalised cone resistance
I_r is rigidity index

K_0 is the coefficient of lateral earth pressure
M is critical state ratio
N is dilation parameter
H is plastic hardening modulus;
λ is slope *CSL* line

3) Shuttle and Jefferies (1998)

The state parameter calculated according this third method is similar to state parameter calculated as presented in the second method, except for the rigidity index that is calculated as follows:

$$I_r = I_{r100}\left(\frac{P_a}{\sigma'_{v0}}\right)^{0.5}$$

where

I_{r100} is rigidity index in reference pressure
P_a is the reference pressure equal to 100 kPa
σ'_{v0} is effective vertical overburden stress

4) Plewes (1992)

$$\psi = -\frac{ln\left(\frac{Q_p/(1-B_q)}{k'}\right)}{m'}$$

where

$$k' = M\left(3 + \frac{0.85}{\lambda}\right)$$
$$m' = 11.9 - 13.3\lambda$$
$$\lambda = \frac{F_r}{10}$$

where

Q_t is the normalized cone resistance
B_q is pore pressure ratio
K_0 is the coefficient of lateral earth pressure
F_R is normalized friction ratio
M is critical state ration

5) Been and Jefferies (1992)

$$\psi = -\frac{ln\left(\frac{Q_p/(1-B_q)}{k'}\right)}{m'}$$

where

$$k' = M\left(3 + \frac{0.85}{\lambda}\right)$$
$$m' = 11.9 - 13.3\lambda$$
$$\lambda = \frac{1}{34 - 10I_C}$$

For high-risk projects a detailed interpretation of CPTU results using laboratory results and numerical modelling can be appropriate (e.g. *Shuttle* and *Cunning*, *2007*), although soil variability can complicate the interpretation procedure. For low risk projects and in the initial screening for high-risk projects there is a need for a simple estimate of soil state.

Plewes et al (1991) provided a means to estimate soil state using the normalized soil behaviour type, *SBTn* chart suggested by *Jefferies and Davies (1991)*. *Jefferis and Been (2006)* suggested that soils with a state parameters less than *-0.05* are dilative at large strains.

4.10 IN SITU STRESS RATIO (K_0)

There are various estimations to determine in situ stress ratio, K_0, from CPTU in fine grained soils. In this report the methods suggested by *Mayne (2007)* and *Kulhawy and Mayne (1990)* are used, as given below:

1) Mayne (2007)

$$K_0 = (1 - sin\varphi')OCR^{sin\varphi'}$$

$$Max\ K_0 = K_p = \frac{(1 + sin\varphi')}{(1 - sin\varphi')}$$

$$K_0 = 0.192\left(\frac{q_t}{\sigma_{atm}}\right)^{0.22}\left(\frac{\sigma_{atm}}{\sigma_{v0}}\right)^{0.22}OCR^{0.27}$$

where

OCR is the overconsolidation ration, calculated as presented in session *4.12*

2) Kulhawy and Mayne (1990)

$$K_0 = 0.1\left(\frac{q_t - \sigma_{v0}}{\sigma_{v0}'}\right)$$

These approaches are generally limited to mechanically overconsolidated, fine grained soils. As considerable scatter exits in the database used for these correlations, in moderate to high risk projects further tests should be performed and these correlations must be considered only as a guide.

4.11 OVERCONSOLIDATION RATIO (OCR)

Overconsolidation ratio, *OCR* is defined as the ratio of the maximum past effective consolidation tress and the present effective overburden stress:

$$OCR = \frac{\sigma'_p}{\sigma'_{v0}}$$

This definition is appropriate for mechanically overconsolidated soils, where the only change has been the removal of overburden stress. For cemented and aged soils the *OCR* may represent the ratio of the yield stress and the present effective overburden stress.

In this report σ'_p is calculated based on six methods as presented below:

1) Mayne (1995)

$$\sigma'_p = 0.33(q_t - \sigma_{v0})$$

2) Chen & Mayne (1996)

$$\sigma'_p = 0.53\Delta u$$

3) Mayne (2005)

$$\sigma'_p = 0.6(q_t - u_2)$$

4) Robertson (2009)

$$\sigma'_p = 0.25(Q_t^{1.25} - \sigma'_{v0})$$

5) Mayne (2005)

$$\sigma'_p = \left[\frac{0.192\left(\frac{q_t}{\sigma_{atm}}\right)^{0.125}}{(1 - sin\varphi')\left(\frac{\sigma'_{v0}}{\sigma_{atm}}\right)^{0.31}}\right]^{\left(\frac{1}{sin\varphi' - 0.27}\right)}\sigma'_{v0}$$

6) Mayne (2007)

$$\sigma'_p = 0.101\sigma_{atm}^{0.102}(G_0)^{0.478}\sigma'^{0.420}_{v0}$$

For larger, moderate to high risk projects, where additional high quality field and laboratory data may be available, site specific correlations should be developed based in consistent and relevant values of *OCR*.

4.12 SMALL STRAIN YOUNG MODULUS (E_0)

Deriving small strain undrained Young's modulus, E_0, from CPTU is difficult. There is insufficient data available to make a direct correlation, and it is recommended that c_u should be derived, then E_U estimated, as a rough order of value from one of the available correlations between E_U and c_u (*Meigh, 1987*).

In this report the small strain Young's modulus is derived as follows:

1) Defined from elastic theory:

$$E_0 = 2(1+\nu)G_0$$

where

v is the Poisson ratio, equal to *0.2*

G_0 is the small strain shear modulus calculated by the formula given below:

$$G_0 = 1634\left(\frac{q_c}{\sqrt{\sigma'_{v0}}}\right)^{-0.75} q_c$$

2) Calculated based on the degree of loading, q_c, effective stress and reduction factor

$$E_0 = \alpha q_c$$

where

α is calculated from degree of loading, q_c, effective stress and reduction factor, given in *Figure 4.2*

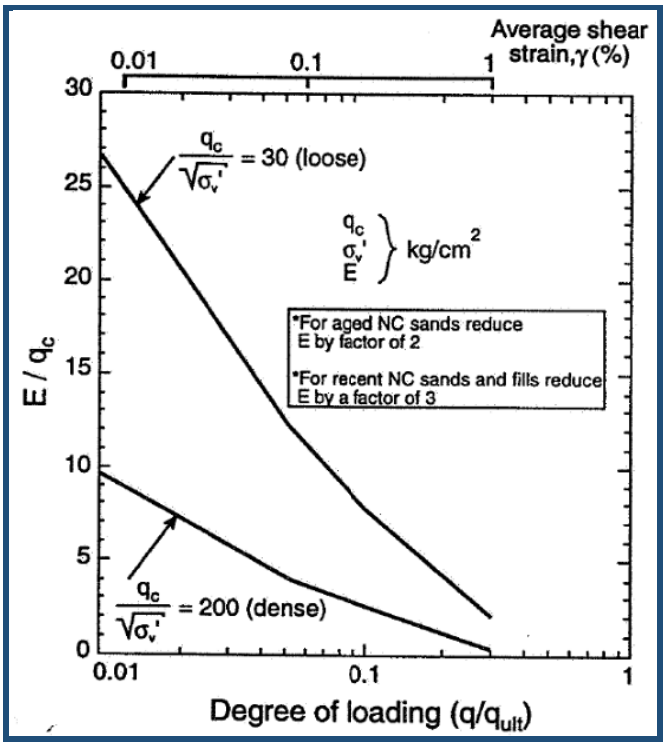


Figure 4.2: *Estimation of equivalent Young's modulus for sand based on degree of loading (Robertson, 1990)*

4.13P CONSTRAINED MODULUS (M)P

Constrained Modulus, *M*, can be estimated by CPTU using the following empirical relationship:

$$M = \alpha_M(q_t - \sigma_{v0})$$

where

α_M varies with soil plasticity and natural water content for a wide range of fine grained soils and organic soils. *Meigh (1987)* suggested that α_M lies in the range of *2 to 8*, whereas *Mayne (2001)* suggested the value of *5*.

Robertson (2001) suggested that α_M varies with Q_t, such that:

When $I_c > 2.2$ (fine grained soils) use: $\alpha_M = Q_t$ when $Q_t < 14$

$\alpha_M = 14$ when $Q_t > 14$

When $I_c < 2.2$ (coarse grained soils) use: $\alpha_M = 0.0188[10^{(0.55I_c+1.68)}]$

In this report the Constrained Modulus, *M*, is calculated after *Kulhawy and Mayne (1990)* using the equation below:

$$M = 8.25(q_t - \sigma_{v0})$$

Also an alternative method is included in the results, developed by *Burns and Mayne (2002)* using the following relationship:

$$M = 0.02G_0$$

4.13.1 Equivalent Oedometer Coefficient of Compressibility (mv)

Equivalent oedometer coefficient of compressibility, m_v can be calculated directly by the Constrained Modulus, *M*, as follows:

$$m_v = \frac{1}{M}$$

4.14 SMALL STRAIN SHEAR MODULUS (G_0)

Elastic theory states that the small strain shear modulus, G_0, can be determined from the following equation:

$$G_0 = \rho v_s^2$$

where

ρ is the mass density of the soil

v_s is the shear wave velocity

In this report the small strain shear modulus, G_0, will be presented calculated by the three methods shown below, developed by *Rix & Stoke (1992)*, *BE* and *UB Rix & Stoke (1992)*, respectively.

$$G_0 = 1634\left(\frac{q_c}{\sqrt{\sigma'_{v0}}}\right)^{-0.75} q_c$$

$$G_0 = \frac{\gamma_{bulk}}{g} v_s^2$$

where

q_c is the net cone tip resistance in kPa
σ'_{v0} is the effective initial vertical stress in kPa
γ_{bulk} is the bulk density of the soil
v_s is the shear wave velocity

This correlation of G_0 is applicable to all soil types.

4.14.1 Mass Density of Soil (ρ)

Mass density of soil, ρ, is defined as:

$$\rho = \frac{\gamma}{g}$$

where

γ is the elastic stiffness of the soils at shear strain less than 10^{-4} %, $\gamma < 10^{-4}$ %.

4.15 HIDRAULIC CONDUCTIVITY (k)

An approximate estimate of soil hydraulic conductivity of coefficient of permeability, *k*, can be made from an estimate of soil behaviour type using the CPTU *SBT chart*, and presented in the table below:

SBT Zone	SBT	Range of k (m/s)	SBT_n I_c
1	Sensitive fine grained	$3x10^{-10}$ to $3x10^{-8}$	NA
2	Organic soils-clay	$1x10^{-10}$ to $1x10^{-8}$	I_c>3.60
3	Clay	$1x10^{-10}$ to $1x10^{-9}$	2.95<I_c<3.60
4	Silt Mixture	$3x10^{-9}$ to $1x10^{-7}$	2.60<I_c<2.95
5	Sand Mixture	$1x10^{-7}$ to $1x10^{-5}$	2.05<I_c<2.60
6	Sand	$1x10^{-5}$ to $1x10^{-3}$	1.31<I_c<2.05
7	Dense sand to gravelly sand	$1x10^{-3}$ to 1	I_c<1.31
8	*Very dense/ stiff soil	$1x10^{-8}$ to $1x10^{-3}$	NA
9	*Very stiff fine grained soil	$1x10^{-9}$ to $1x10^{-7}$	NA

**Overconsolidated and/ or cemented*

Table 4.2: *Estimated soil permeability (k) based on the CPTU SBT chart by Roberston (2009)*

The average relationship between soil permeability, *k* and SBT_n I_c, shown in *Table 4.1*, can be represented by the following relationships:

When $1.0 < I_c \leq 3.27$ $\quad k = 10^{(0.952-3.04I_c)}$
When $3.27 < I_c \leq 4.0$ $\quad k = 10^{(-4.52-1.37I_c)}$

In this report, the hydraulic conductivity is given using 2 methods, *Robertson et al. (1986)* and *Robertson et al. (1990)*, considering both minimum and maximum values for each method.

The hydraulic conductivity (permeability), *k*, values, minimum and maximum, defined after soil behaviour type *Robertson et al. (1986)* are presented in *Table 4.3*, below:

SBT Zone	Soil Behaviour Type (SBT)	Range of Hydraulic Conductivity, k *(m/s)*
1	Sensitive fine grained	$3x10^{-9}$ to $3x10^{-8}$
2	Organic soils	$1x10^{-8}$ to $1x10^{-6}$
3	Clay	$1x10^{-10}$ to $1x10^{-9}$
4	Silty CLAY to CLAY	$3x10^{-9}$ to $1x10^{-8}$
5	Clayey SILT to silty CLAY	$1x10^{-8}$ to $1x10^{-7}$
6	Sandy SILT to clayey SILT	$1x10^{-7}$ to $1x10^{-6}$
7	Silty SAND to sandy SILT	$1x10^{-5}$ to $1x10^{-6}$
8	SAND to silty SAND	$1x10^{-5}$ to $1x10^{-4}$
9	SAND	$1x10^{-4}$ to $1x10^{-3}$
10	Gravelly SAND to SAND	$1x10^{-3}$ to 1
11	Very stiff fine grained	$1x10^{-8}$ to $1x10^{-6}$
12	SAND to clayey SAND	$3x10^{-7}$ to $3x10^{-4}$

Table 4.3: *Estimated soil permeability (k) based on SBT chart by Robertson et al. (1986)*

The hydraulic conductivity (permeability), *k*, minimum and maximum values, defined after soil behaviour type by *Robertson et al. (1990)* are presented in *Table 4.4*, here below:

SBT Zone	Soil Behaviour Type (SBT)	Range of Hydraulic Conductivity, k *(m/s)*
1	Sensitive fine grained	$3x10^{-9}$ to $3x10^{-8}$
2	Organic soils	$1x10^{-8}$ to $1x10^{-6}$
3	Clay	$1x10^{-10}$ to $1x10^{-9}$
4	Silt Mixture	$3x10^{-9}$ to $1x10^{-7}$
5	Sand Mixture	$1x10^{-7}$ to $1x10^{-5}$
6	Sand	$1x10^{-5}$ to $1x10^{-3}$
7	Gravelly sands to dense sands	$1x10^{-3}$ to 1

8	Very stiff sand to clayey sand	$1x10^{-8}$ to $1x10^{-6}$
9	Very stiff fine grained	$1x10^{-8}$ to $1x10^{-6}$

Table 4.4: *Estimated soil permeability (k) based on SBT chart by Robertson et al. (1990).*

4.16 CONSOLIDATION CHARACTERISTICS

All the results of consolidation characteristics calculated using the formulas below are presented in *Appendix D*.

4.16.1 Rigidity Index (I_R)

The rigidity index, I_R, for fine materials is defined using the following formula, developed by *Mayne (2001)*:

$$I_R = \exp\left[\left(\frac{1.5}{M} + 2.925\right)\left(\frac{q_t - \sigma_{v0}}{q_t - u_2}\right) - 2.925\right.$$

where

M is the Cam Clay constant, slope of the critical state line defined as:

$$M = \frac{6sin\varphi'}{3 - sin\varphi'}$$

where

φ' is the internal friction angle.

The second method used to define the rigidity index, I_R, for fine material is based on plasticity index and overconsolidation ratio, *OCR*, and calculated after the relationship developed by *Keaveny and Mitchel (1986)* as follows:

$$I_R = \frac{\exp\left(0.0435(137 - PI)\right)}{[1 + \ln\{1 + 0.385(OCR - 1)^{3.2}\}]^{0.8}}$$

where

PI is the plasticity index of the soil, equal to 20.
OCR is the overconsolidation ratio of the soil

4.16.2 Coefficients of consolidation (c_h, c_v)

The coefficient of consolidation is interlinked with the hydraulic conductivity through the formula below:

$$c = \frac{kM}{\gamma_w}$$

where

M is the 1-D constrained modulus relevant to the problem (i.e. unloading, reloading, virgin loading, etc)

γ_w is the unit weight of water
k is the hydraulic conductivity

In geotechnical practice it is very difficult to measure *c* and *k*, because due to soil anisotropy *c* and *k* have different values in the horizontal, c_h and k_h and vertical c_v and k_v direction. The relevant design values depend on drainage and loading direction.

The coefficient of consolidation can be estimated by measuring the dissipation or rate of decay of pore pressure with time after a stop in CPTU penetration. The coefficient of consolidation should be interpreted at *50%* dissipation, using the following formula:

$$c = (\frac{T_{50}}{t_{50}})r_0^2$$

where

T_{50} is theoretical time factor
t_{50} is measured time for *50%* dissipation
r_0 is penetrometer radius

In soils of very low permeability the time for dissipation can be decreased by using smaller diameter probes. A theoretical solution for this cases is given by *Teh and Houlsby (1991)* and it is compared with data from around the world by *Robertson et al. (1992)*, as shown in *Figure 4.3*.

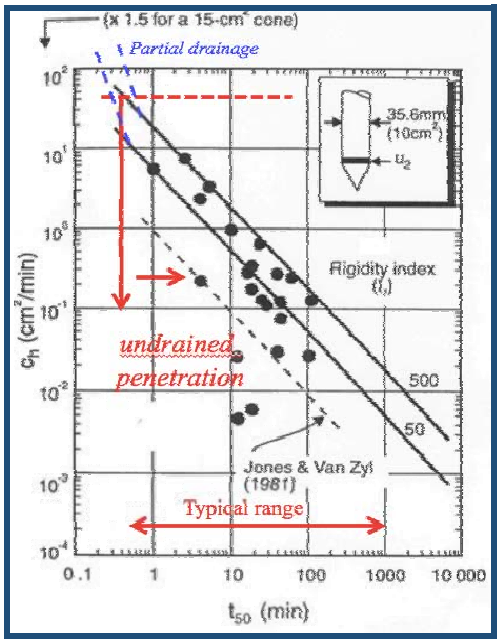


Figure 4.3: *Average laboratory c_h values and CPTU results*
(after Robertson et al. 1992, Teh and Houlsby theory shown as solid lines for I_R = 50 and I_R = 500).

c_h estimation is controlled by soil stress history, sensitivity, anisotropy, rigidity index (relative stiffness), fabric and history. In overconsolidated soils, the pore pressure behind the cone

tip can be low or negative, results in dissipation data that can initially rise before decreasing to the equilibrium values. Care is required to ensure the dissipation test to end at the right moment of time, not stopped prematurely after the initial rise.

An approximate estimate of the coefficient of consolidation in the vertical direction can be obtained using the ratios of permeability in the horizontal and vertical direction given in the section on hydraulic conductivity, since:

$$c_v = c_h(\frac{k_v}{k_h})$$

For relative short dissipations, the dissipation results can be plotted on a square-root time scale. The gradient of the initial straight line in m, where:

$$c_h = (\frac{m}{M_T})^2 r^2 I_r^{0.5}$$

where

M_T is *1.15* for u_2 position and *10 cm²* cone (*r=1.78 cm*).

4.17.3 Coefficients of permeability (hydraulic conductivity, k_h, k_v)

The horizontal coefficient of permeability can be estimated from the following expression:

$$k_h = \frac{\gamma_w}{2.3\sigma'_{v0}} RR c_h$$

where

RR is the compression ratio in the overconsolidated range. It represents the strain per log cycle of effective stress during recompression and can be determined from laboratory consolidation tests ($0.5x10^{-2} < RR < 2x10^{-2}$ was recommended by *Baligh and Levadoux*).

Robertson et al. (1992a) presented a summary of available data from dissipation tests and laboratory determined k_h values.

Nature of Clay	k_h/k_v
No macrofabric, or only slightly developed macrofabric, essentially homogeneous deposits	1 to 1.5
From fairly well to well developed macrofabric, e.g. sedimentary clays with discontinuous lenses and layers of more permeable material	2 to 4
Varved clays and other deposits containing embedded and more or less continuous permeable layers	3 to 15

Table 4.4: *Range of field values of k_h/k_v for soft clays (from Jamiolkowski et al., 1985).*

Estimation of soil permeability from CPTU and dissipation data is subject to much uncertainty and should be used as a guide only.

5.0 CPTU RESULTS APPLICATIONS

5.1 SOIL PROFILING AND APPLICATIONS IN GEOTECHNICAL DESIGN

5.1.1 Soil Behaviour Type

The major applications of CPTU are on *soil behaviour type and soil profiling*. Typically, the cone resistance, q_c is high in sands and low in clays, and the friction ratio, $R_f = f_s/q_t$ is low in sands and high in clays. The CPTU cannot be expected to provide accurate predictions of soil type based on *physical characteristics,* e.g. *grain size distribution*, but provides a guide to the *mechanical characteristics*, including: *strength*, *stiffness*, and *compressibility* of the soils, or the *soil behaviour type*, *SBT*.

The most commonly used CPTU soil behaviour type chart, suggested by *Robertson et al. (1986)* uses the basic CPTU measured parameters of cone resistance, q_c and friction ratio, R_f. The chart is global in nature and can provide reasonable predictions of soil behaviour type for CPTU testing. The expected overlap in some zones is modified in the interpretations of this report somewhat based on previous experience or local knowledge of the site.

Since both the penetration resistance and sleeve resistance increase with depth due to the increase in effective overburden stress, the CPTU data requires normalization for overburden stress for very shallow and/or very deep tests. A popular CPTU soil behaviour chart based on normalized CPTU data is firstly proposed by *Robertson (1990)*. The chart identifies general trends in ground response, such as: *increasing soil density*, *OCR*, *age* and *cementation* for granular soils, and *increasing stress history*, *OCR* and *soil sensitivity* for cohesive soils.

A more general normalized CPTU *SBT* chart, using large strain *soil behaviour* descriptions, proposed by *Robertson (2012)* is shown in *Figure 5.1*.

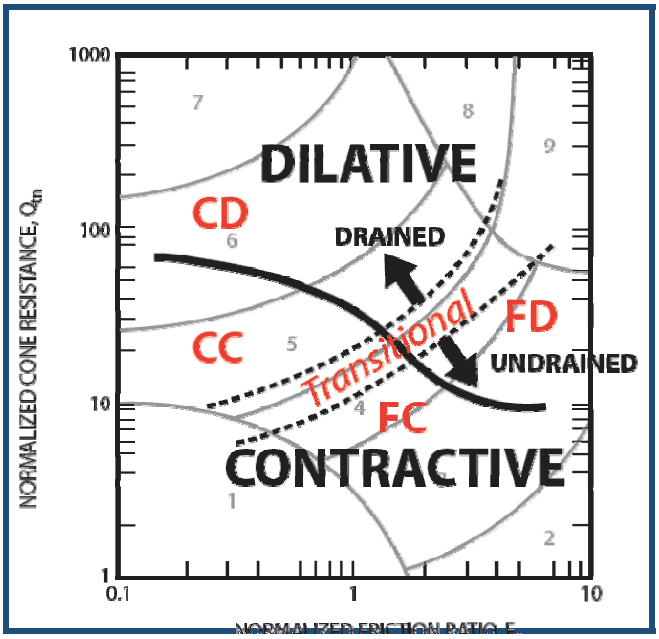


Figure 5.1: *Normalized CPTU Soil Behaviour Type (SBT_n) chart, Q_{tn}-F_R using general large strain soil behaviour description (Robertson, 2012).*

*

CD	is coarse grained dilative soil-predominately drained CPTU
CC	is coarse grained contractive soil-predominately drained CPTU
FD	is fine grained dilative soil-predominately undrained CPTU
FC	is fine grained contractive soil-predominately undrained CPTU

5.1.2 Soil Profiling

CPTU is an excellent test for soil profiling. The continuous monitoring of pore pressure during the cone penetration improves the soil stratigraphy descriptions. The pore pressure develops in response to the soil type being penetrated in the area where the pore pressure element is located. Soft, firm or stiff clays and contractive silts can show very high pore pressure. Very stiff overconsolidated clays and dilative silts can give very low or negative pore pressures same as very dense silty sands.

The thin layers of sand, or silt in a thick layer of clay, or thin layers of clay or silt in a thick layer of sand are easily distinguished during a CPTU test, which will give a response time sufficiently fast to observe pore pressure changes even in the very thin layers of soils (< *5mm*), depending on the response of soil to the advancing of cone.

The sandy soils tend to produce high cone resistance and low friction ratio, whereas soft clayey soils tend to produce low cone resistance and high friction ratio. Organic soils such as peat tend to have very low cone resistance and very high friction ratio. Soils with high horizontal stresses (*high OCR*) tend to have higher cone resistance and friction ratio.

CPTU is an excellent tool to classify the soils based on their behaviour type, and not based on grain size distribution. (*Douglas and Olser, 1981*)

The measurements of sleeve friction, f_s are often less reliable than the measurements of cone resistance, q_c (*Lunne et al., 1986*), but to overpass these problems pore pressure parameter ratio, B_q, and the classification charts based on it, which are also presented in *Appendix A.9*, are used when necessary.

For more reliability in soil profiling, the soil interpretations in this report are carried out based on three parameters measured on site, cone resistance, sleeve friction and pore pressure and three derived geotechnical parameters soil behaviour type index for all soils, undrained shear strength for cohesive soils and relative density for granular soils.

Generally, soils that fall in zones *8*, *9* and *10* of *Robertson et al (1986)* chart (*6* and *7* of *Robertson (1990)* chart) represent approximately drained penetration, whereas, soils in zones 1, 2, 3, 4, 5 and 6 of *Robertson et al (1986)* chart (1, 2, 3 and 4 of *Robertson (1990)* chart) represent approximately undrained penetration. Soils in zones 7, 11 and 12 of *Robertson et al (1986)* (5, 8 and 9 of *Robertson (1990)* chart) may represent partially drained penetration. The classification is often influenced by changes in *stress history*, *in situ stresses*, *sensitivity*, *stiffness*, *mineralogy*, etc. An advantage of pore pressure measurements during cone penetration is the ability to evaluate drainage conditions more directly. (*Lunne et al., 1997*)

The information about the rate and manner of excess pore pressures during the dissipations significantly helps the accurate classification in the corresponding depths of dissipation tests. In very stiff, overconsolidated clayey soils, the pore pressure behind the cone is very low and sometimes negative of the equilibrium pore pressure, u_0, whereas the pore pressure on the face of the cone is very large due to the large increase in normal stresses created by the cone penetration. When penetration is stopped in overconsolidated clays, pore pressure recorded behind the cone may initially increase before decreasing to the equilibrium pore pressure. The rise is caused by local equalization of the high pore pressure gradient around the cone.

Cone penetration in fine grained soils, such as clays and silts, is generally undrained. Cone penetration tests under undrained conditions generate high pore pressure and this reading is extremely useful, because it affects both cone resistance and sleeve friction measurements. These parameters should be corrected using the measured pore pressure.

CPTU in coarse gained soils, such as sandy or gravelly soils is generally drained. In these conditions there is no excess pore pressure generated as a result of cone penetration. Relative density has been used as the main parameter for description of sandy deposits.

5.1.3 Applications in geotechnical design

CPTU measured parameters are used to derive geotechnical parameters, which are the input in several geotechnical analyses. An alternate approach is to directly apply CPTU results to the geotechnical calculations.

As a guide, *Table 5.1* shows a summary of the applicability of CPTU results for direct design applications. The ratings shown in the table have been assigned based on current experience and represent a qualitative evaluation of the confidence level assessed to each design problem and general soil type. Details of ground conditions and project requirements can influence these ratings.

Type of Soil	Pile Design	Bearing Capacity	Settlement	Compaction Control	Liquefaction
Sand	A-B	A-B	B-C	A-B	A-B
Clay	A-B	A-B	B-C	C-D	A-B
Intermediate Soils	A-B	B-C	B-C	B-C	A-B

Table 5.1: *Perceived applicability of CPTU for various direct design problems.*

A is high
B is high to moderate
C is moderate
D is moderate to low

6.0P REFERENCESP

ASTM D7400-14 (2015), "Standard and ISSMGE TC10 guideline", by *Butcher, A. P. et al.*

Baldi et al. (1986) / Al-Hamoud and Wehr (2006), "Interpretation of CPTs and CPTUs; 2nd part: drained penetration of sands / Experience of vibrocompaction in calcareous sand of UAE"

Been at al (1987), "Cone Penetration Test Calibration For Erksak (Beaufort Sea) Sand", Canadian Geotechnical Journal, 24, 4, pp. 601-610

Been and Jefferies (1992), "Towards Systematic CPT Interpretation", Proceedings Wroth Memorial Symposium, Thomas Telford, London, pp. 121–134

Boulanger and Idriss (2014), "CPT and SPT Based Liquefaction Triggering Procedures", Report No. UCD/CGM-14/01, Center of Geotechnical Modelling, Department of Civil and Environmental Engineering, College of Engineering, University of California at Davis

British Standard BS5930:1999, "Code of practice for site investigations". BSI, 1999

British Standard BS EN ISO 22475-1:2012

Burns and Mayne (2002), "Analytical Cavity Expansion Critical State Model for Piezocone Dissipation in Fine Grained Soils, Soils and Foundations", Vol. 42, No. 2, 2002

Houlsby, G.T. and Teh, C. I. (1998), "Analysis of the piezocone in clay". Proceedings of the International Symposium on Penetration Testing, ISOPT-1, Orlando, 2, 777-83, Balkema Pub., Rotterdam

Idriss and Boulanger (2008), "Soil liquefaction during earthquakes", Earthquake Engineering Research Institute, MNO-12

International Standard for Electrical Cone and Piezocone Penetration Test, ISO 22476-1:2012

International Standard, "Geotechnical Investigation and testing- field testing – part 1: electrical cone and piezocone penetration test", ISO/ FDIS 22476-1.

Jamiolkowski et al. (2001), Evaluation of relative density in shear strength of sands from cone peonetration tests (CPT) and flat dilatometer (DMT), Soil Behaviour and Soft Ground Construction (GSP 119), American Society of Civil Engineers, Reston, Va., 2001, pp. 201-238

Jefferies, M.G. and Davies, M.P. (1991), "Soil classification by the cone penetration test": Discussion. Canadian Geotechnical Journal, 28(1), 173-6

Jefferis and Been (2006), "Soil liquefaction: a critical state approach", Taylor and Frencis.

Jones, G.A. and Rust, E. (1995), "Piezocone settlement prediction parameters for embankments on alluvium". Proceedings of the International Symposium on Cone Penetration Testing, CPT '95, Linköping, Sweden, 2, 501-8, Swedish Geotechnical Society

Kulhawy, F.H. and Mayne, P.H. (1990) "Manual on estimating soil properties for foundation design". Electric Power Research Institute, EPRI, August, 1990.

Keaveny and Mitchel (1986), "Strength of Fine-Grained Soils Using the Piezocone," Use of In-Situ Tests in Geotechnical Engineering (GSP 6), American Society of Civil Engineers, Reston, Va., 1986, pp. 668–699

Lord, J.A., Clayton, C.R.I., and Mortimore, R.N. (2002), "Engineering in chalk". Ciria Guide C574.

Lunne, T. And Kleven, A. (1981), "Role of CPT in North Sea foundation engineering". Session at the ASCE National Convention: Cone Penetration Testing and Materials, St. Louis, 76-107, American Society of Engineers (ASCE).

Lunne, T. And Christophersen, H.P. (1983), "Interpretation of cone penetrometer data for offshore sands". Proceedings of the Offshore Technology conference, Richardson, Texas, Paper No. 4464.

Lunne, T., Robertson, P. K. And Powell, J. J. M. (1997), "Cone Penetration testing in Geotechnical Practice". Blackie.

Mayne and Rix (1995) / Lune et al. (1997), "Gmax-qc relationships for clays", Geotechnical Testing Journal, ASTM, 16 (1), pp. 54-60/ CPT in Geotechnical Practice (1997)

Mayne (2001), "Stress-Strain-Strength-Flow Parameters from Enhanced In-Situ Tests", International Conference on In-Situ Measurement of Soil Properties and Case Histories, Indonesia, 2001, pp. 27–48

Mayne and Campanella (2005), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mayne (2007), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mitchell, J.K. and Gardner, W.S. (1975), "In situ measurement of volume change characteristics". Proceedings of the ASCE Specialty Conference on In Situ

Measurements os Soil Properties, Raleigh, North Carolina, 2, 279-345, American Society of Engineers (ASCE)

Rix, G.J. and Stokoe, K.H. (1992), "Correlation of Initial Tangent Modulus and Cone Resistance", Proceedings of the International Symposium on Calibration Chamber Testing, Potsdam, New York, 1991, pp. 351-362, Elsevier

Robertson, P.K. and Campanella, R.G. (1983) "Interpretation of cone penetrometer test: Part 1: Sand". Canadian Geotechnical Journal, 20(4), 718-33

Robertson, P.K., Campanella, R.G., Gillespie, D. And Greig, J (1986), "Use of piezometer cone data". Proceedings of the ASCE Specialty Conference In Situ '86: Use of In Situ Tests in Geotechnical Engineering, Blacksburg, 1263-80, American Society of Engineers (ACE)

Robertson, P.K. (1990), "Soil classification using the cone penetration test". Canadian Geotechnical Journal, 27(1), 151

Robertson, P.K. and Fear, C.E. (1995), "Liquefaction of sands and its evaluation. IS TOKYO '95". First International Conference on Earthquake Geotechnical Engineering, Keynote Lecture, November, 1995

Robertson, P.K. and Wride (Fear), C.E. (1998), "Evaluating cyclic liquefaction potential using the cone penetration test". Can. Geotech. J. Vol. 35

Robertson (2010), "Soil behaviour type from the CPT: an update", Gregg Drilling and Testing Inc. Signal Hill, California, USA, CPT 10, paper 2-56

Robertson (2015), "Guide to Cone Penetration Testing", 6th Edition (2015)

Senneset K. And Janbu, N. (1985), "Shear strength parameters obtained from static cone penetration tests. Strength Testing of Marine Sediments; Laboratory and In Situ Measurements". Symposium, San Diego, 1984, ASTM Special technical publication, STP 883, 41-54

Senneset, K., Sandven, R. And Janbu, N. (1989), "The evaluation of soil parameters from piezocone tests". Transportation Research Record, No. 1235, 24-37

Schmertmann, J.H (1978), "Guidelines for cone penetration test, performance and design", US Federal Highway Administration, Washington, DC, Report, FHWA-TS-78-209, 145

Shuttle and Jefferies (1998), "Dimensionless and unbiased CPT interpretation in sand", International Journal for Numerical and Analythical Methods in Geomechanics, 22, pp. 351-391.

Suzuki, Y., Tokimatsu, K., Taya, Y. And Kubota, Y. (1995), "Correlation between CPT data and dynamc properties of in situ frozen samples". Proceedings of the Third

International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, St. Louis, 1, 249-52, University of Missouri Rolla.

Topp, G.C., Davis, J.L. and Anna, A.P. (1980),. "Electromagnetic determination of soil water content: Measurements in coaxial transmission lines". Water Resiur. Res., 16, 574-582.

Waltham, A.C., 2002, "Foundations of Engineering Geology". Blackie Academic and Professional, 2002.

P

P

P

P

P

P

P

P

APPENDIXPAP

APPENDIX A1 – Site Map

Not provided

P

P

P

P

P

P

P

P

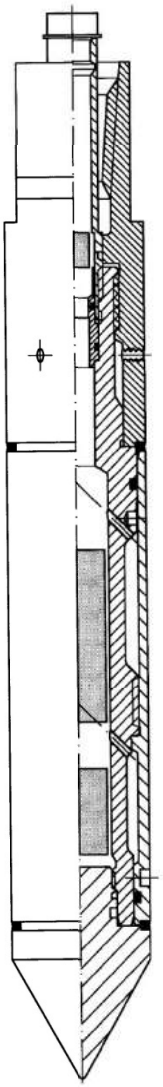
P

P

P

APPENDIX A2P-PConeDDatasheetP

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS
S15 SERIES
ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

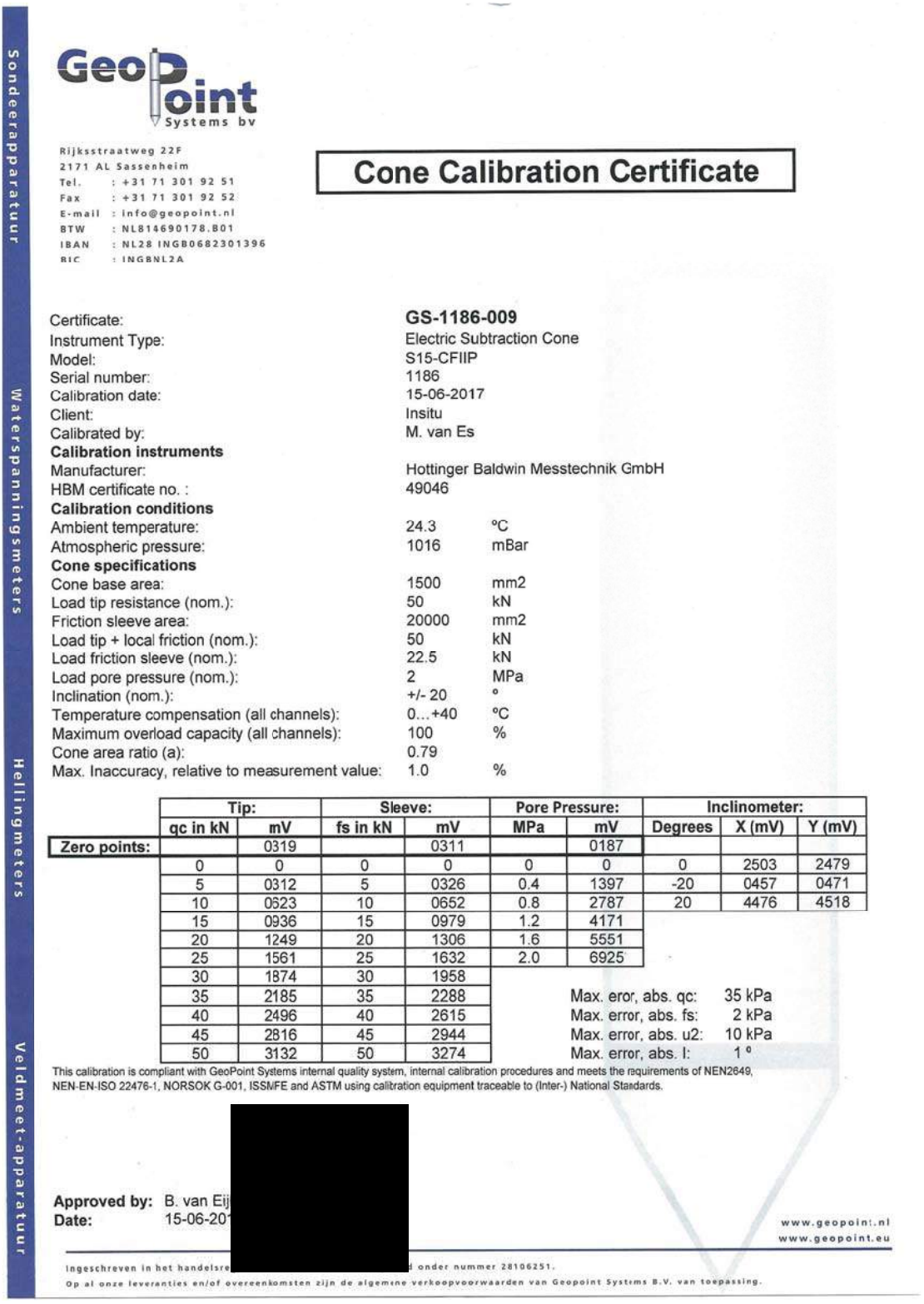
INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A3P–PConeP CalibrationP CertificateP



Sondeerapparatuur Waterspanningsmeters Hellingmeters Veldmeet-apparatuur

GeoPoint Systems bv

Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
BTW : NL814690178.B01
IBAN : NL28 INGB0682301396
BIC : INGBNL2A

Cone Calibration Certificate

Certificate:	**GS-1186-009**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	1186	
Calibration date:	15-06-2017	
Client:	Insitu	
Calibrated by:	M. van Es	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
HBM certificate no. :	49046	
Calibration conditions		
Ambient temperature:	24.3	°C
Atmospheric pressure:	1016	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	50	kN
Friction sleeve area:	20000	mm2
Load tip + local friction (nom.):	50	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0319		0311		0187			
	0	0	0	0	0	0	0	2503	2479
	5	0312	5	0326	0.4	1397	-20	0457	0471
	10	0623	10	0652	0.8	2787	20	4476	4518
	15	0936	15	0979	1.2	4171			
	20	1249	20	1306	1.6	5551			
	25	1561	25	1632	2.0	6925			
	30	1874	30	1958					
	35	2185	35	2288					
	40	2496	40	2615					
	45	2816	45	2944					
	50	3132	50	3274					

Max. eror, abs. qc: 35 kPa
Max. error, abs. fs: 2 kPa
Max. error, abs. u2: 10 kPa
Max. error, abs. I: 1 °

This calibration is compliant with GeoPoint Systems internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-) National Standards.

[redacted]

Approved by: B. van Eij
Date: 15-06-201

www.geopoint.nl
www.geopoint.eu

Ingeschreven in het handelsre d onder nummer 28106251.
Op al onze leveranties en/of overeenkomsten zijn de algemene verkoopvoorwaarden van Geopoint Systems B.V. van toepassing.

APPENDIX A – Project Summary Sheet

CPT Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPTC-01A	9.40	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-02	7.94	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-03	8.22	10/08/2017	S15CFIIP.1186	Test stopped due to buckling rods.
CPTC-04	15.00	10/08/2017	S15CFIIP.1186	Test completed at target depth.
CPTC-05	11.40	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-06	12.58	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-07	10.75	11/08/2017	S15CFIIP.1186	Test stopped due to buckling rods.
CPTC-08	1.65	11/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-08A	10.36	11/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-09	25.00	11/08/2017	S15CFIIP.1186	Test completed at target depth.
CPTC-10	10.61	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.
CPTC-11	20.27	10/08/2017	S15CFIIP.1186	Test refused on tip resistance.

APPENDIX A – CPT Rig Datasheet

RIGS

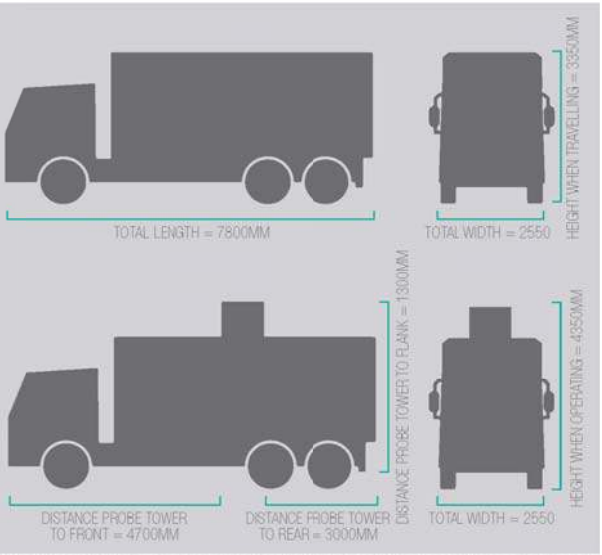
21 TONNE WHEELED RIG (CPT010)

This rig is ideal for geotechnical testing on hardstanding sites such as car parks, motorways and docks. Fitted with reflective yellow and red chevrons, these high visibility rear markings meet the 'Chapter 8' requirements for vehicles working on highways. In addition, there are beacons fitted to the front and strobes to the back corners to ensure further safety and visibility for night work on the motorways. This efficient truck is capable of pushing to a depth of 30 to 40 metres depending on the ground conditions of the site. Furthermore, the interior is large enough to house our MiHpt equipment for environmental testing.

CPT RIG DETAILS

DRIVE SYSTEM	6 X 2 WHEELED DRIVE
TOTAL WEIGHT	21 TONNES
GROUND BEARING PRESSURE	75KPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M OF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	HARDSTANDING SITES E.G. ROADS INCLUDING MOTORWAYS, CAR PARKS, DOCKS. DRY NON HARDSTANDING SITES.

CPT RIG DIMENSIONS









IN SITU SITE INVESTIGATION INSITUSI.COM

APPENDIX A6P – SymbolP ListP

English

a	is area ratio of the cone ($= {A_n}/{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {(u_2 - u_0)}/{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max}-e}{e_{max}-e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {f_s}/{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {G}/{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {\sigma'_{h0}}/{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	measured cone resistance

q_e effective cone resistance $(= q_t - u_2)$
q_n is net cone resistance $(= q_t - \sigma_{v0})$
q_t is corrected cone resistance $(= q_c - (1-a)u_2)$
Q_c is total force acting on the cone
Q_t is normalized cone resistance $(= {}^{q_t - \sigma_{v0}}/_{\sigma'_{v0}})$
R_f is friction ratio $(= \left({}^{f_t}/_{q_t}\right) x100\%$ or alternatively $= \left({}^{f_t}/_{q_t}\right) x100\%)$
s_u is undrained shear strength
s_{ur} is remoulded undrained shear strength
S_t is sensitivity
t is time
t_{50} is time for 50% dissipation of excess pore water pressure
T_{50} is time factor at $U = 50\ \%$
u is pore water pressure
u_0 is in situ pore pressure
u_1 is pore pressure measured on the cone
u_2 is pore pressure measured behind the cone
u_3 is pore pressure measured behind sleeve friction
Δu is excess pore water pressure
U is normalized excess pore pressure
V_s is shear wave velocity
z is depth

Greek

α is constant
α is cone roughness
β is constant
β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ is unit weight of soil
γ_w unit weight of water
Δ is change
Δu is excess pore pressure $(= u - u_0)$
μ is Poisson's ratio
ρ is density
ψ is state parameter
σ, σ' is normal stress (total, effective)
σ_h, σ_h' is horizontal stress (total, effective)
σ_v, σ_v' is horizontal stress (total, effective)
σ_{v0},σ_{v0}' is overburden stress (total, effective)
τ_{av} average cyclic shear stress
τ_{cy} cyclic shear stress
φ' effective friction angle

APPENDIX A7 – Abbreviations

ASTM is American Society for Testing and Materials
CPTU Cone Pentration Test with Pore Pressure Measurement (Piezocone Test)
CRR Cyclic Resistance Ratio
CSR Cyclic Stress Ratio
GWT Ground Water Table
NC Normally Consolidated
OC Overconsolidated
OCR Overconsolidation Ratio
PL Limit Pressure
SDMT Seismic Dilatometer Marchetti
SPT Standard Penetration Test
TC Technical Committee

APPENDIX A8 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone Resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {}^{Q_c}/_{A_c}$

Corrected Cone Resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected Sleeve Friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data Acquisition System
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter Element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction Ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction Reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction Sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized Cone Resistance, Q_c or Q_t
The *cone resistance* expressed in a non dimensional form and taking account of stress changes *in situ*, $Q_c = {}^{(q_c - \sigma_{v0})}/_{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {}^{(q_t - \sigma_{v0})}/_{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net Cone Resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized Friction Ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, u
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore Pressure Ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve Friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {}^{F_s}/_{A_s}$

APPENDIX A9 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT 'N' value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

P

P

P

P

P

P

P

P

P

P

APPENDIX B

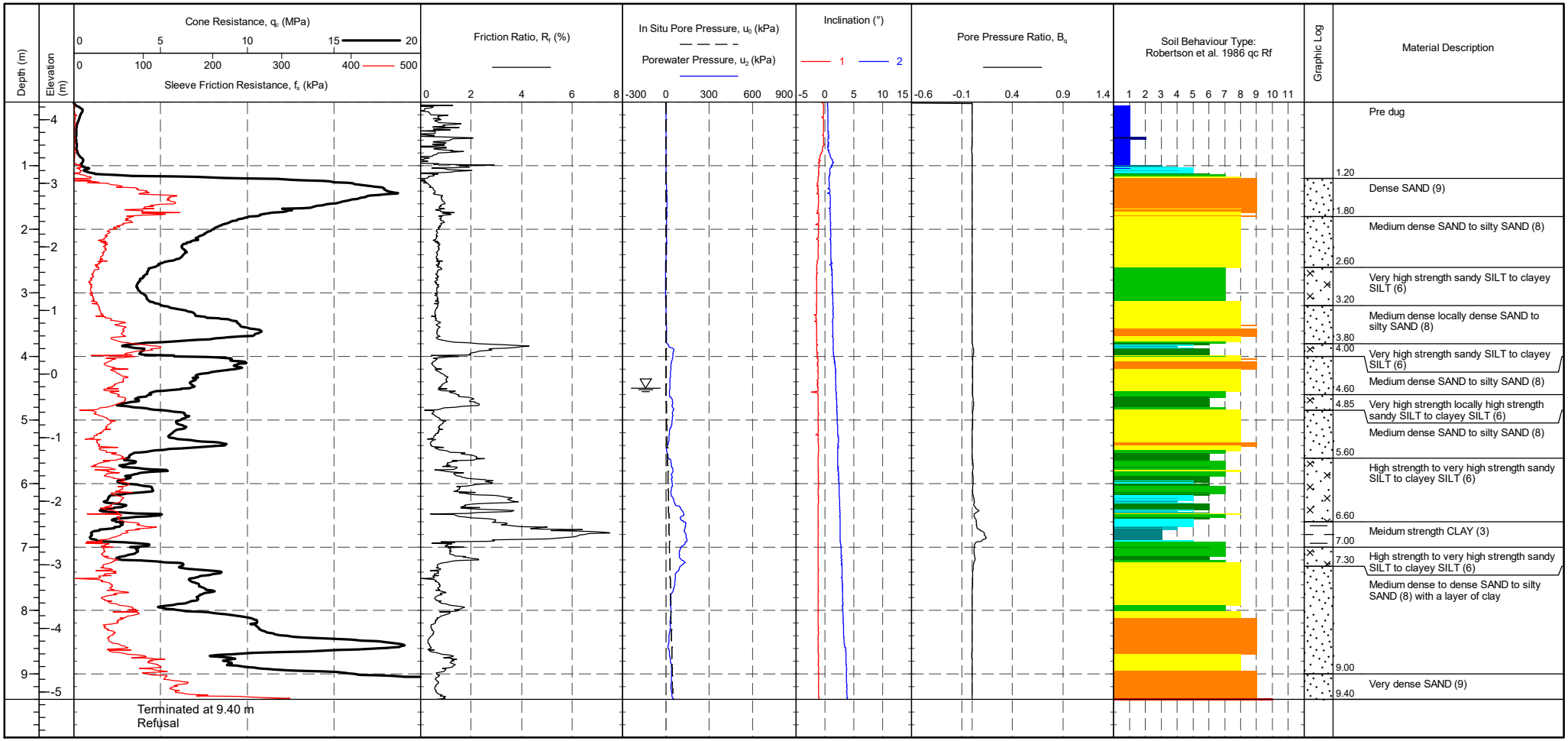
Cone Penetration Measured Parameters

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-01A**

CLIENT : Geosphere Environmental	EASTING : 653755.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293037.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 4.28 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-01A		
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	317 mV	324 mV	0.074 MPa
Sleeve	289 mV	306 mV	0.013 kPa
Pore Pressure 2	216 mV	271 mV	0.016 kPa
X-Y Inclinometer	2463 mV	2436 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

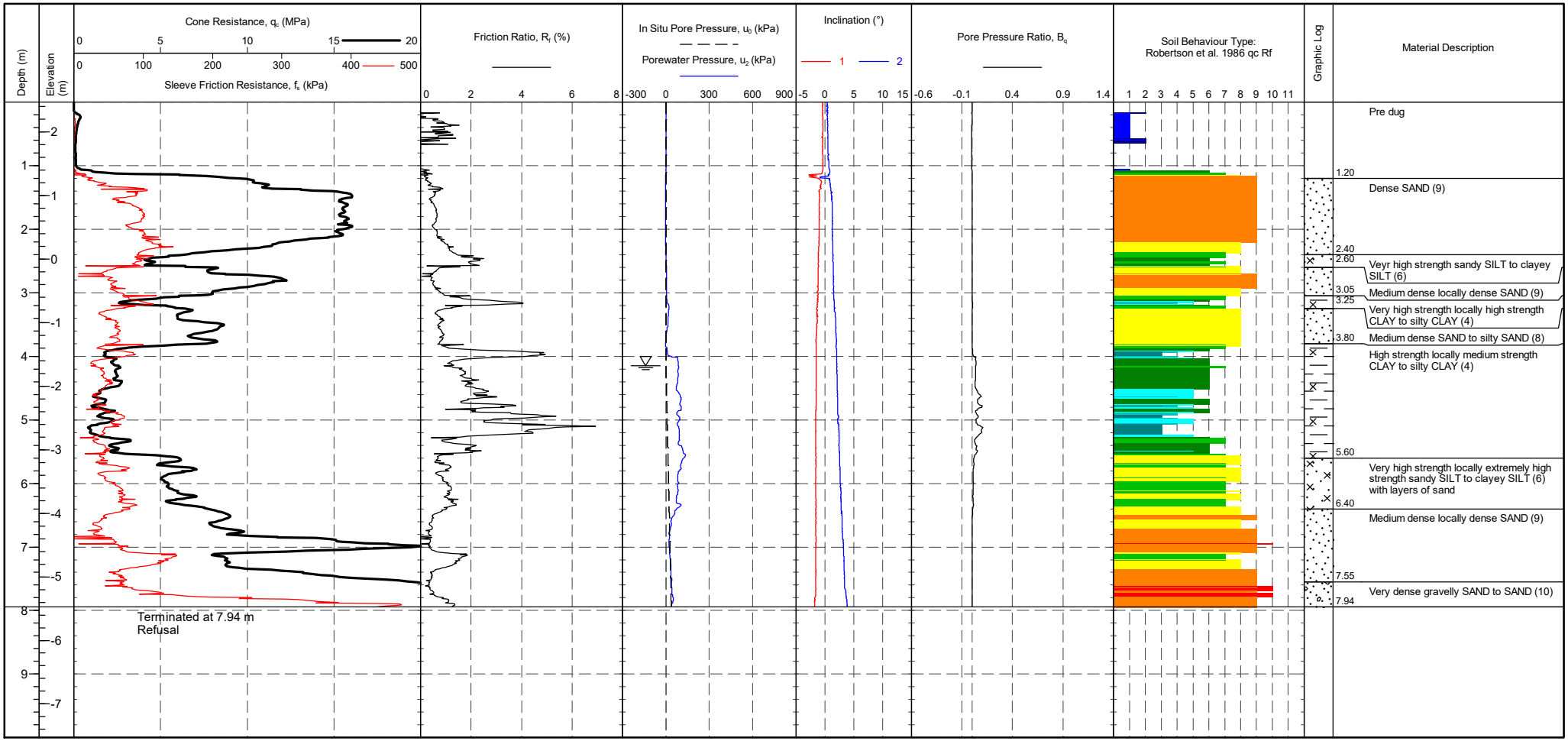
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-02**

CLIENT : Geosphere Environmental	EASTING : 653810.7 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292976.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.47 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES	
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer / Pre / Post / Difference	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip 317 mV 320 mV 0.032 MPa	
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve 302 mV 310 mV 0.006 kPa	
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-02	Pore Pressure 2 250 mV 286 mV 0.01 kPa	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer 2467 mV 2477 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

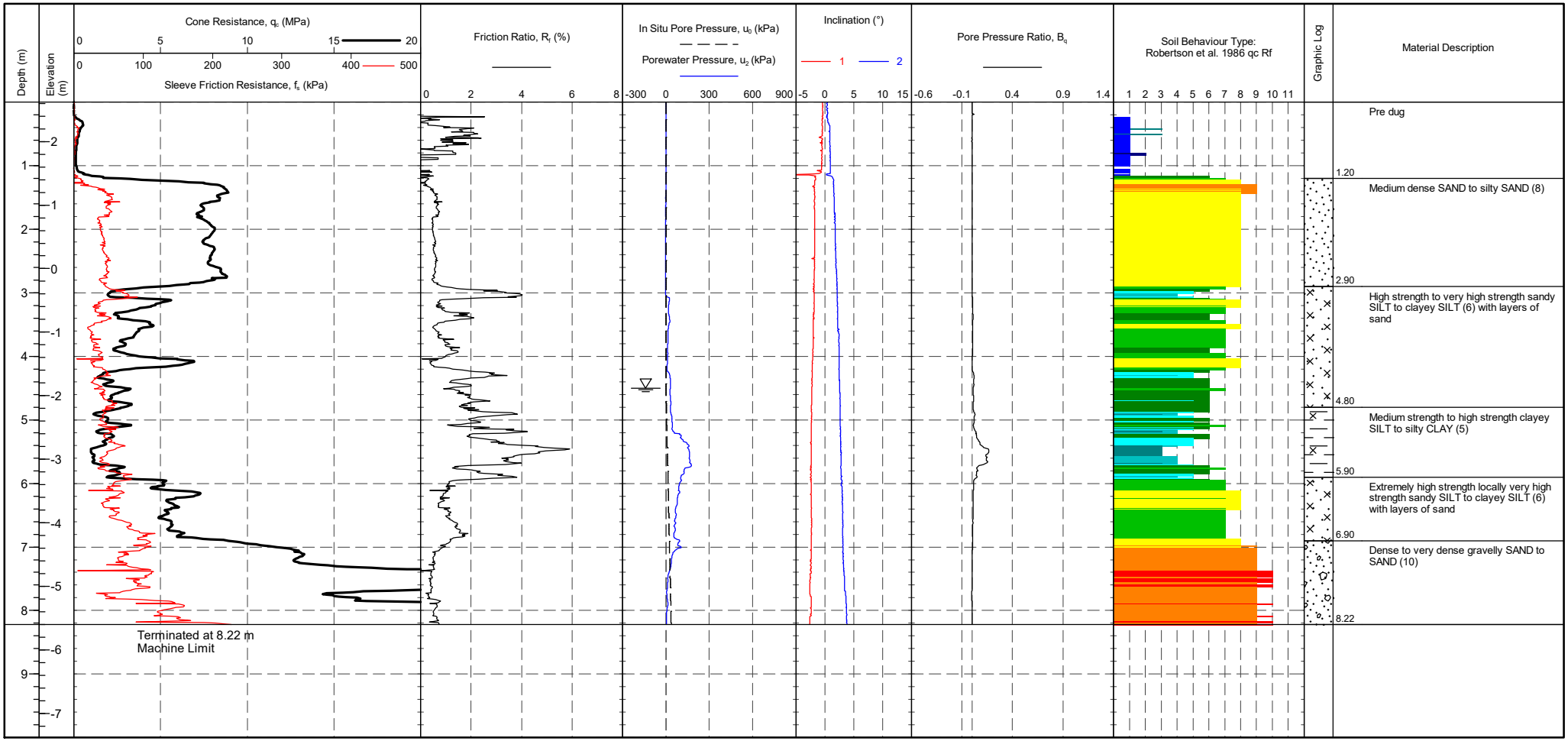
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-03**

CLIENT : Geosphere Environmental	EASTING : 653781.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292986.6 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.62 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-03		
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	319 mV	318 mV	-0.011 MPa
Sleeve	306 mV	308 mV	0.002 kPa
Pore Pressure 2	268 mV	284 mV	0.005 kPa
X-Y Inclinometer	2469 mV	2484 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

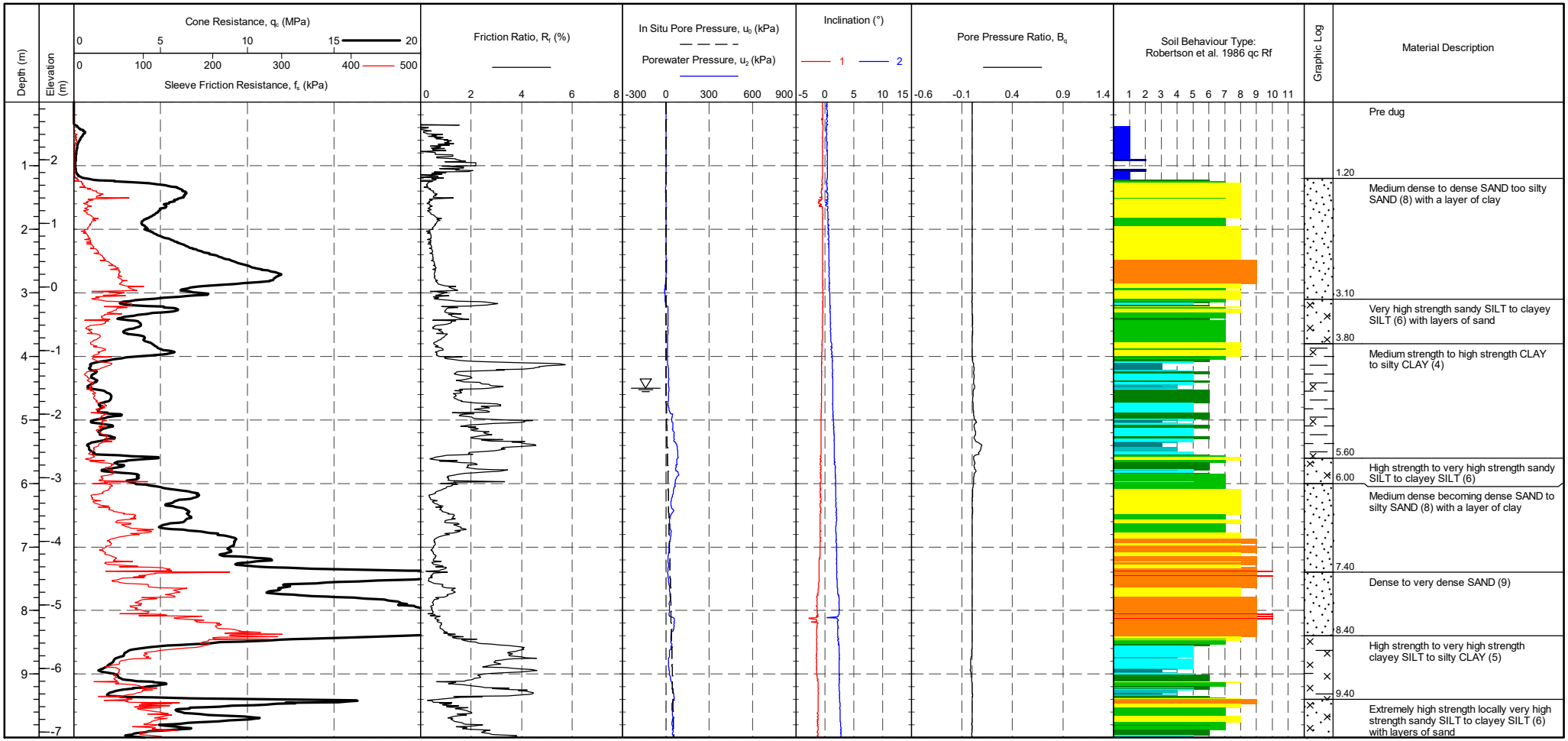
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	
FILTER POSITION	: u2	OPERATOR	: LS & DH	
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	318 mV	315 mV	-0.032 MPa
Sleeve	299 mV	300 mV	0.001 kPa
Pore Pressure 2	231 mV	315 mV	0.024 kPa
X-Y Inclinometer	2459 mV	2388 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

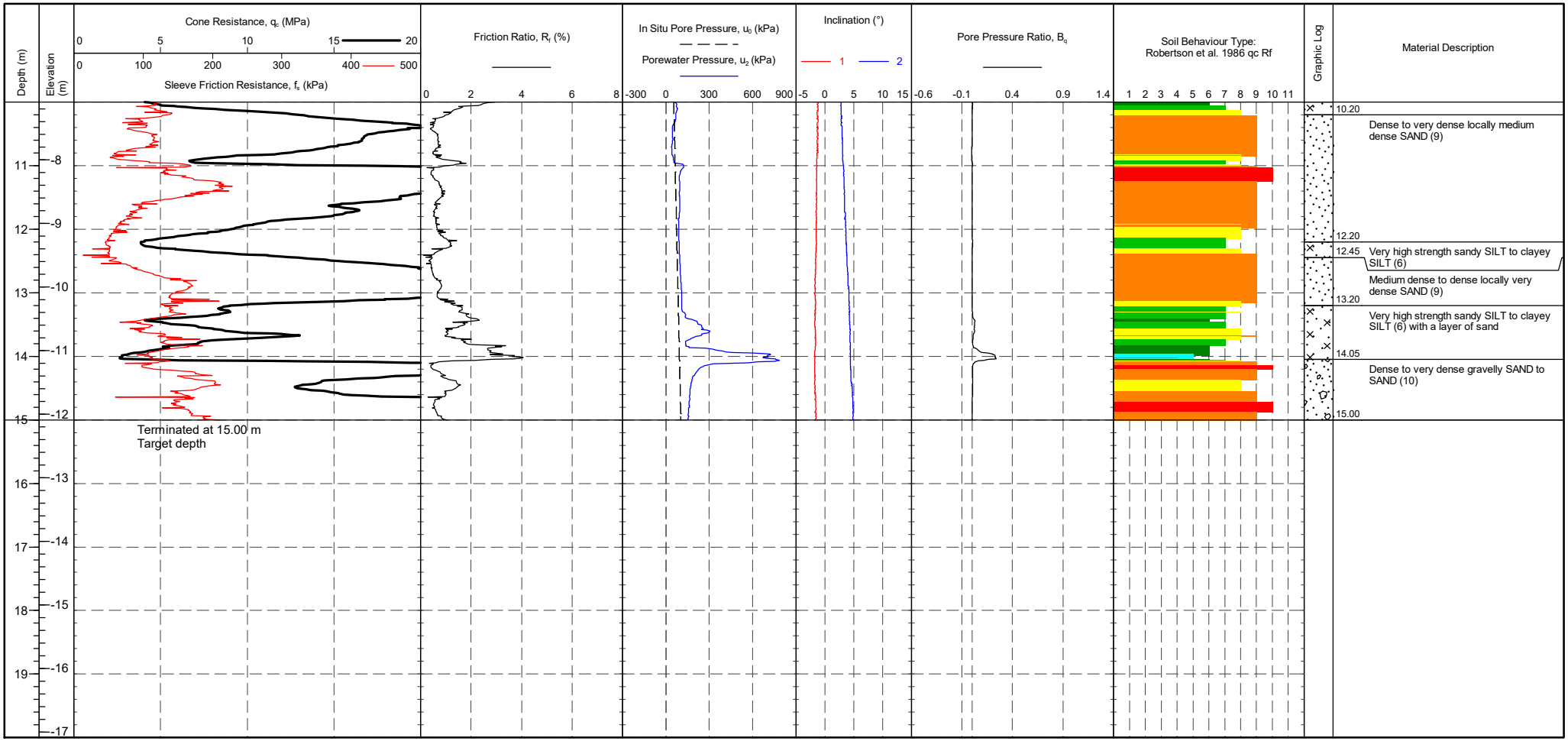
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

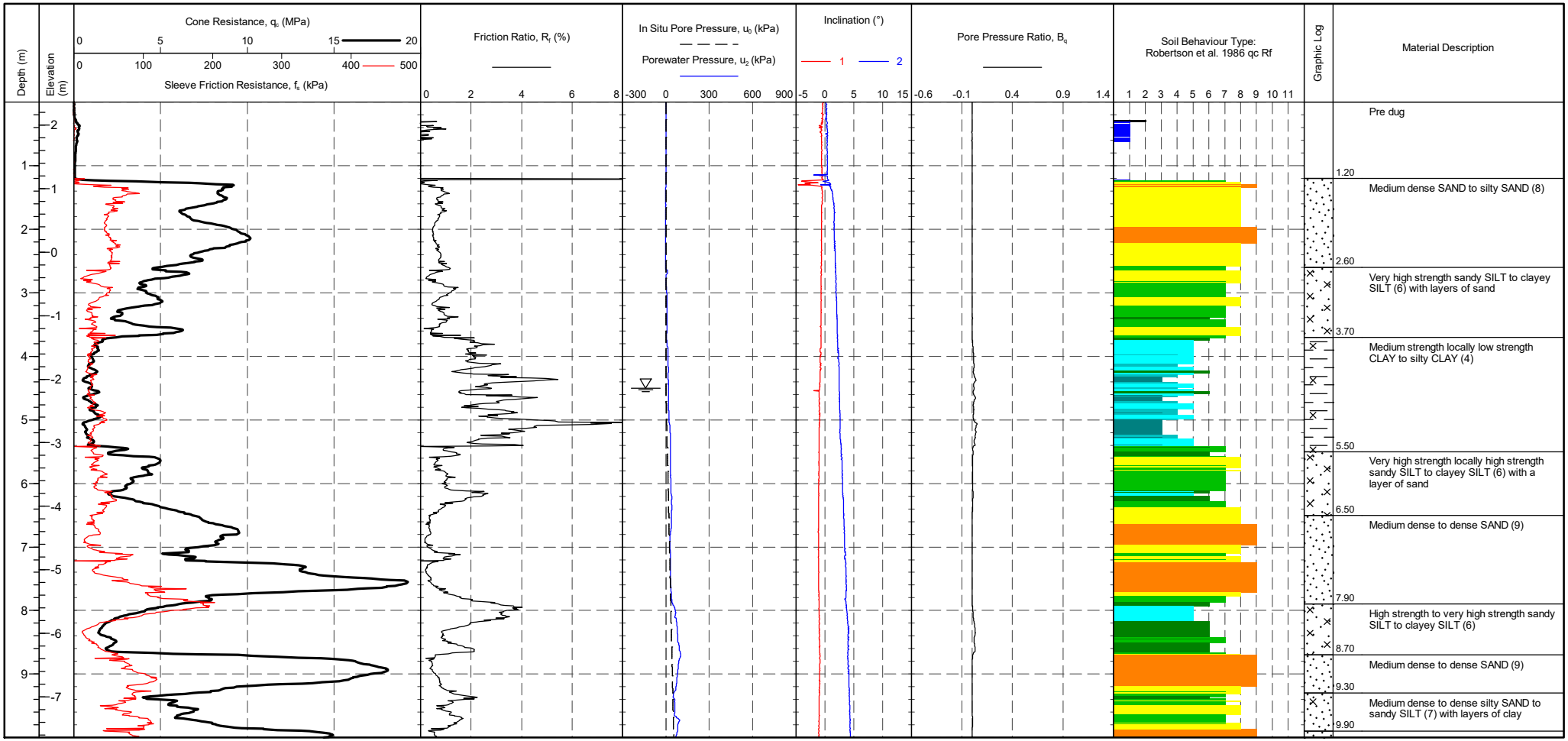
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV	0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

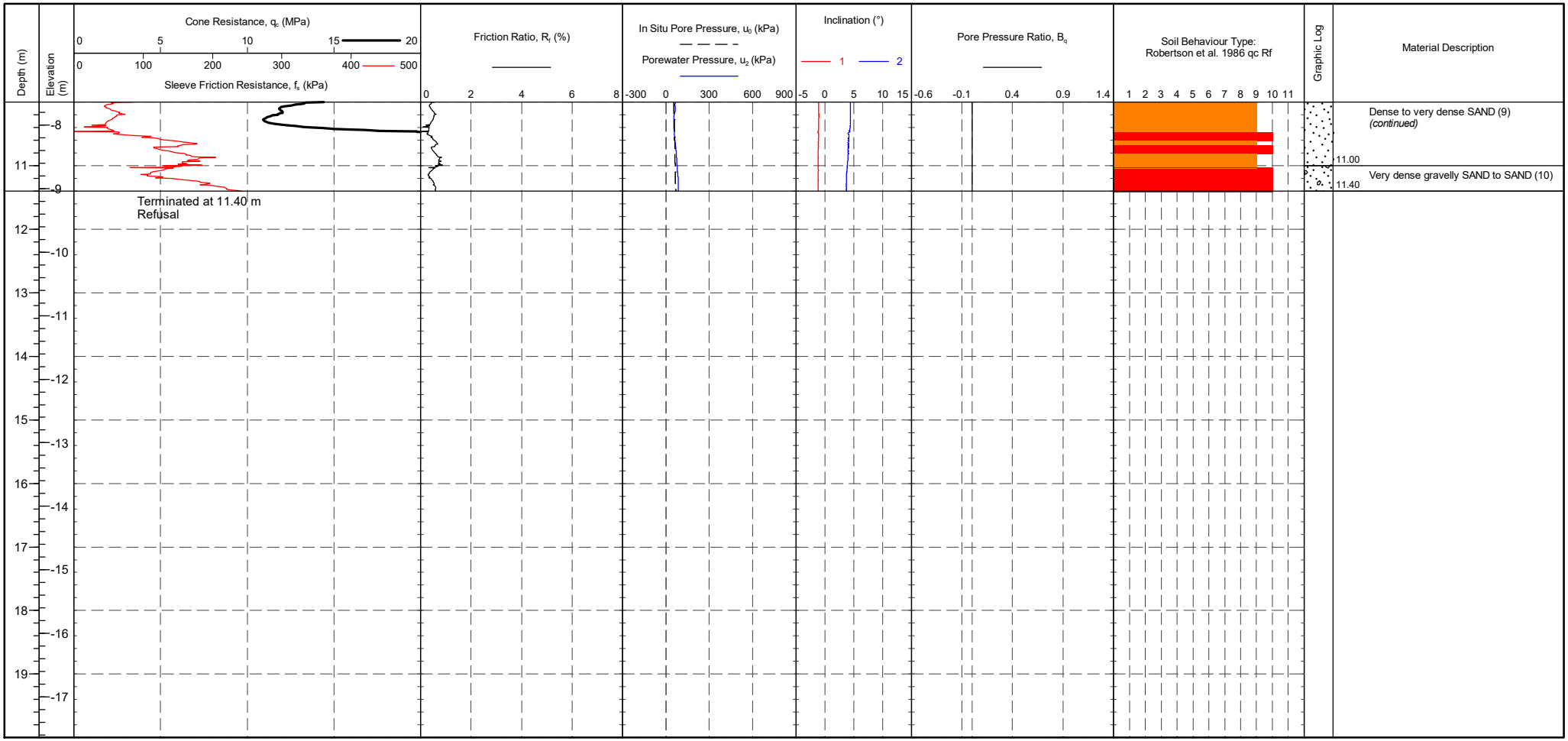
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-05**

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV	0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

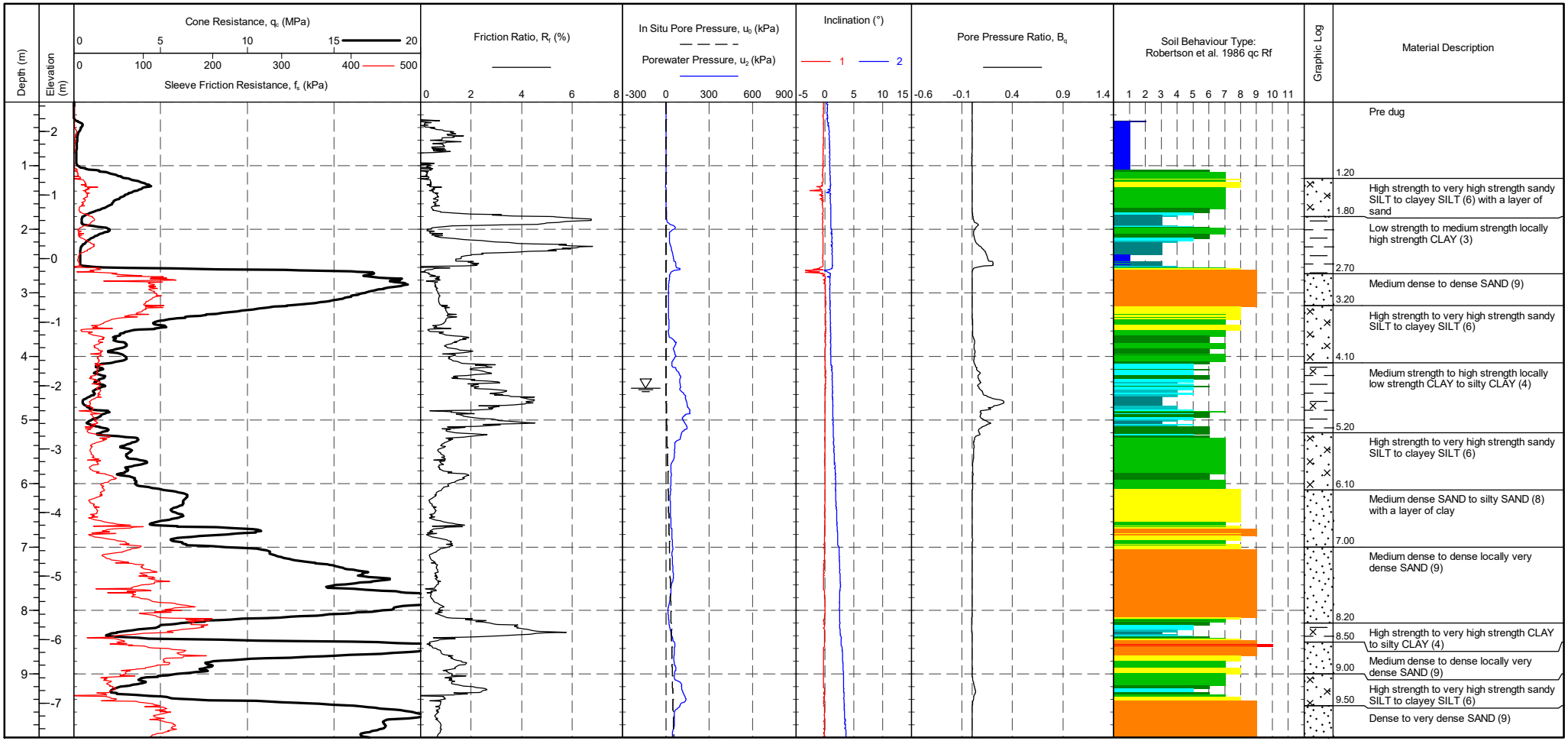
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID

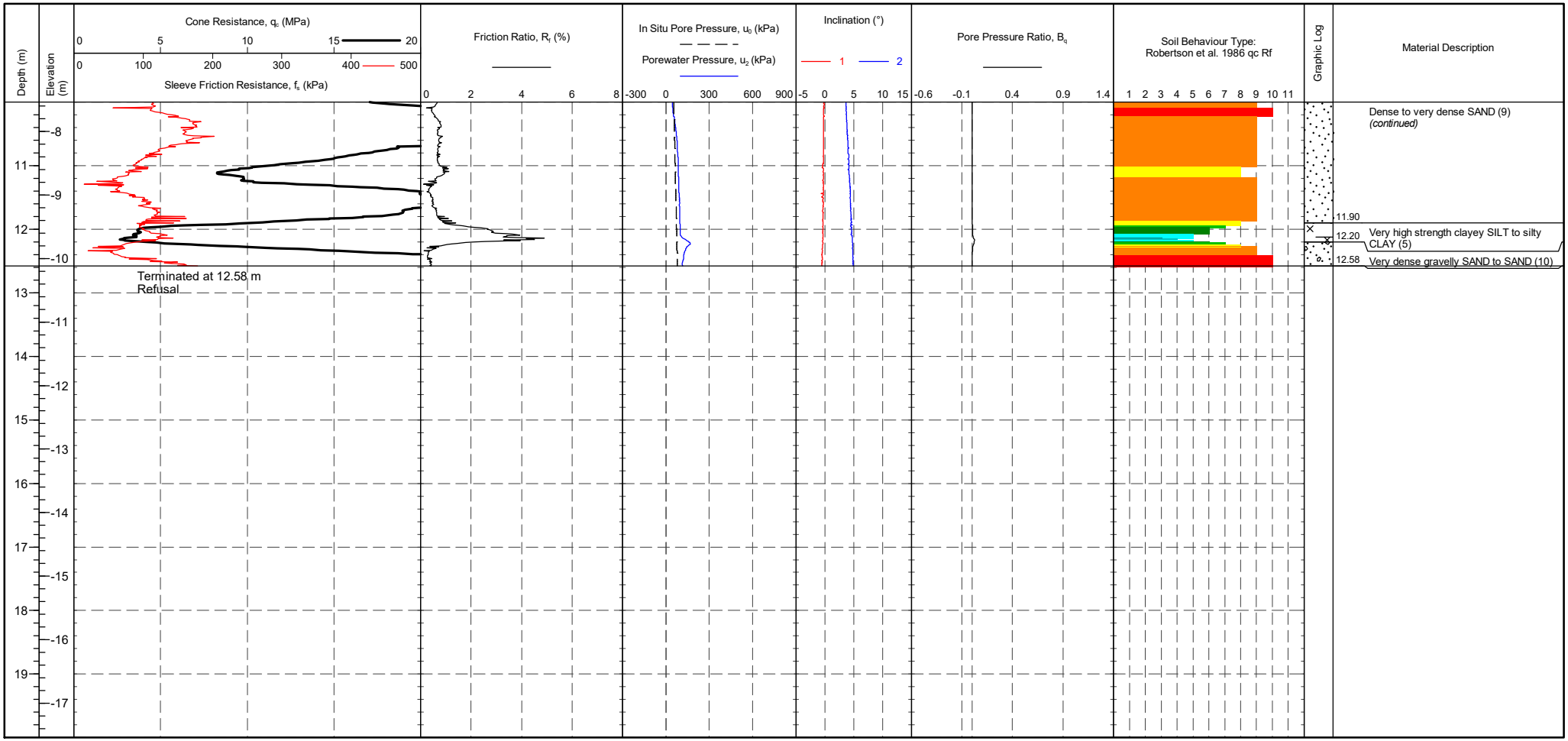
CPTC-06

CLIENT : Geosphere Environmental
PROJECT : Lake Lothing, Lowerstoft
LOCATION : Lowerstoft
PROJECT No. : 1170332

EASTING : 653835.7 m
NORTHING : 292965.3 m
ELEVATION : 2.46 m
CHECKED BY : LD
TERMINATION REASON : Refusal

REMARK
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 10/08/2017
PLOT DATE : 25/08/2017
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06		
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	318 mV	318 mV	0 MPa
Sleeve	305 mV	305 mV	0 kPa
Pore Pressure 2	221 mV	317 mV	0.028 kPa
X-Y Inclinometer	2484 mV	2486 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level
Dissipation Test

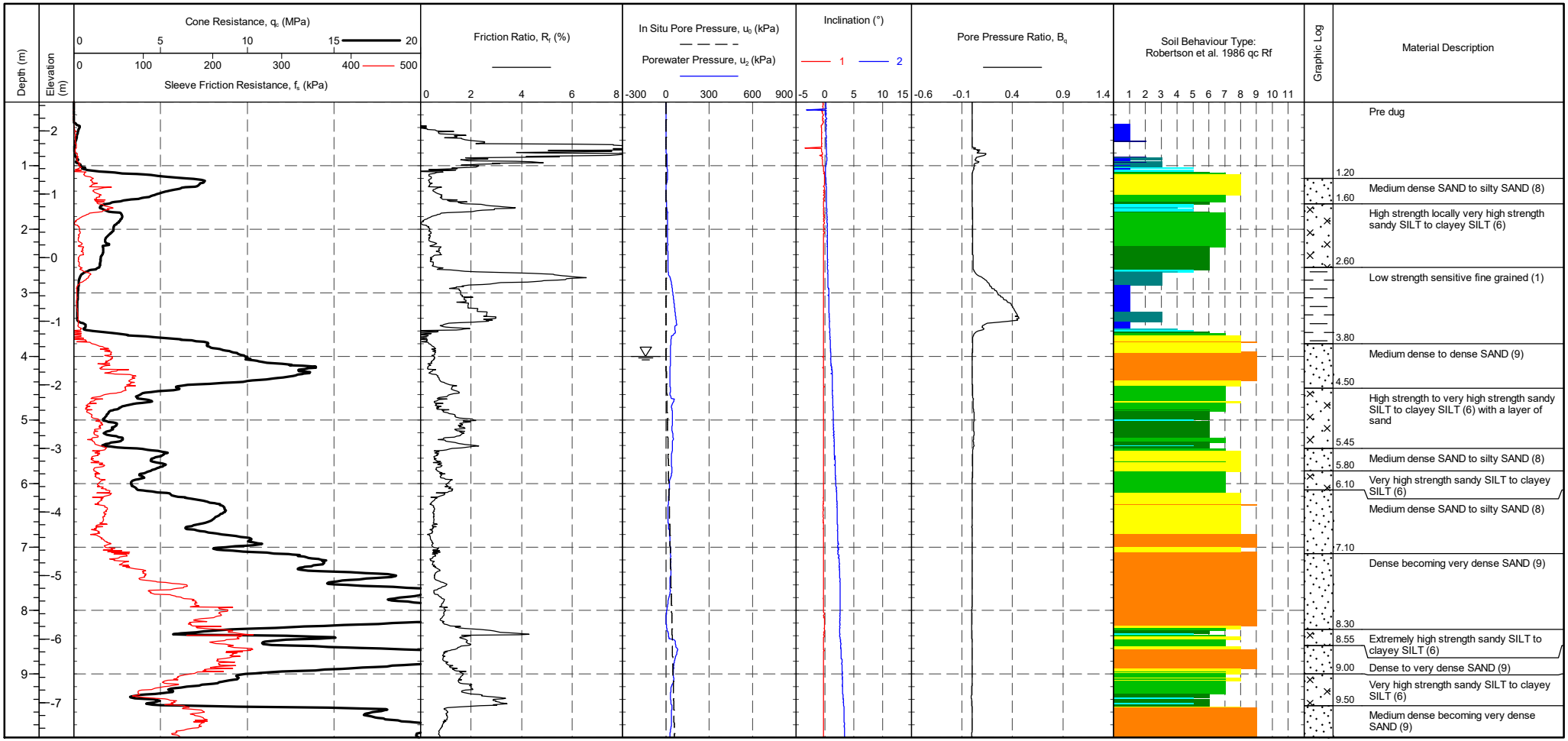
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES		
CONE AREA : 15cm²	APPLICATION CLASS : 2	Transducer	Pre / Post	Difference
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	318 mV / 315 mV	-0.032 MPa
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	305 mV / 304 mV	-0.001 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-07	Pore Pressure 2	211 mV / 269 mV	0.017 kPa
FRICTION REDUCER : None	WEATHER : Sunny & Mild	X-Y Inclinometer	2473 mV / 2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material; 2 - Organic material; 3 - Clay; 4 - Silty clay to clay; 5 - Clayey silt to silty clay; 6 - Sandy silt to clayey silt; 7 - Silty sand to sandy silt; 8 - Sand to silty sand; 9 - Sand; 10 - Gravelly sand to sand; 11 - Very stiff fine grained; 12 - Sand to clayey sand

Groundwater Level

Dissipation Test

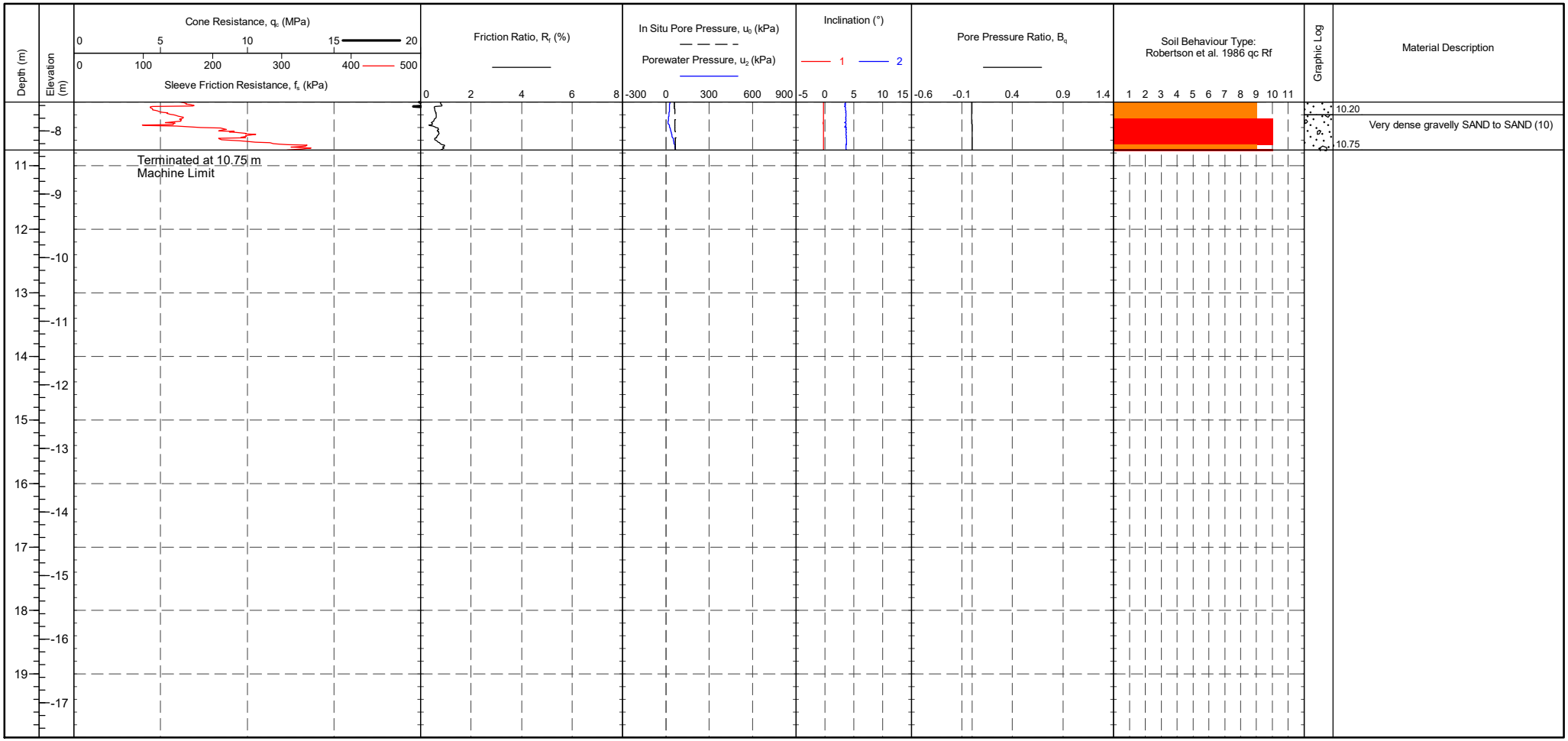
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

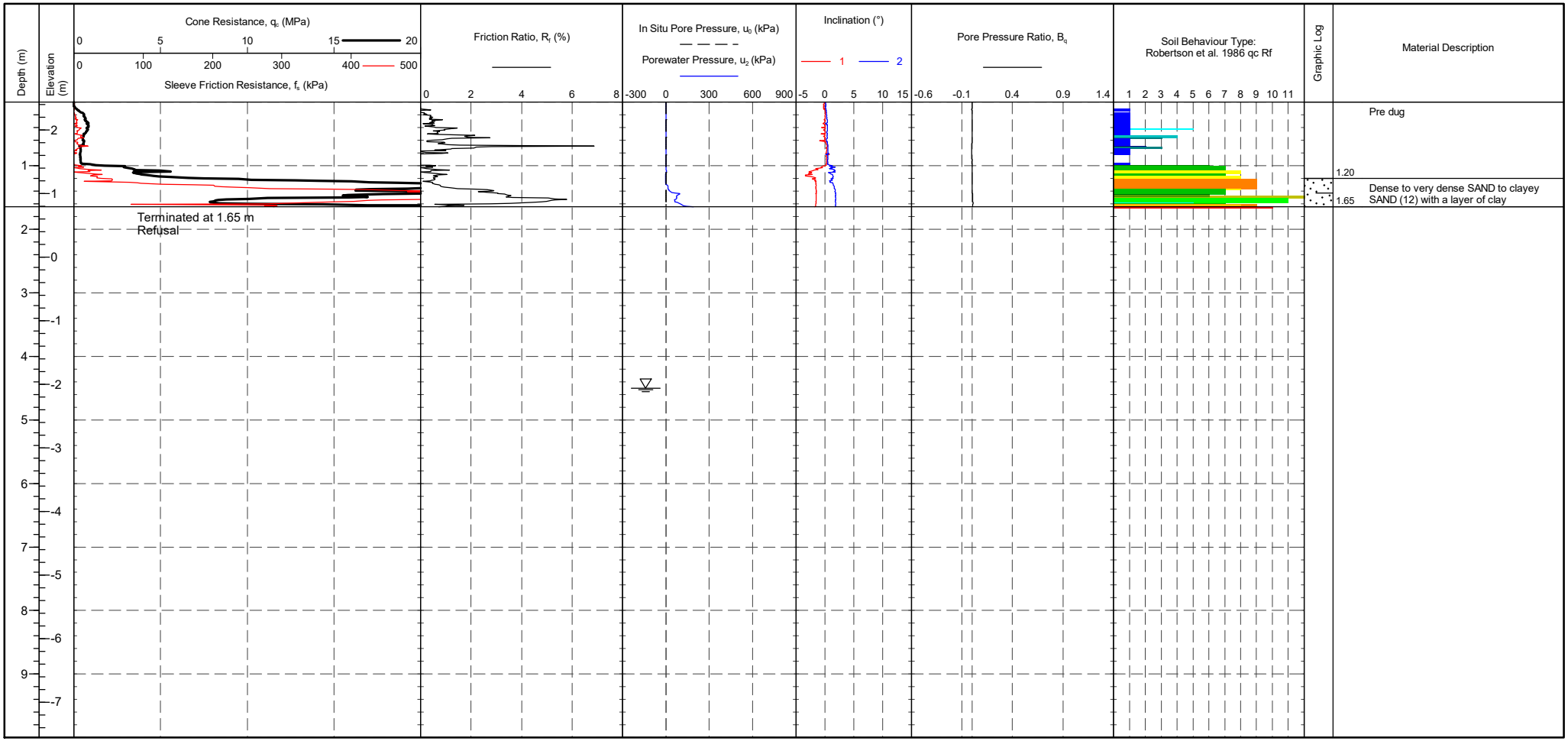
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-08**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	311 mV	-0.064 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	309 mV	0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08	Pore Pressure 2	238 mV	263 mV	0.007 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2484 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

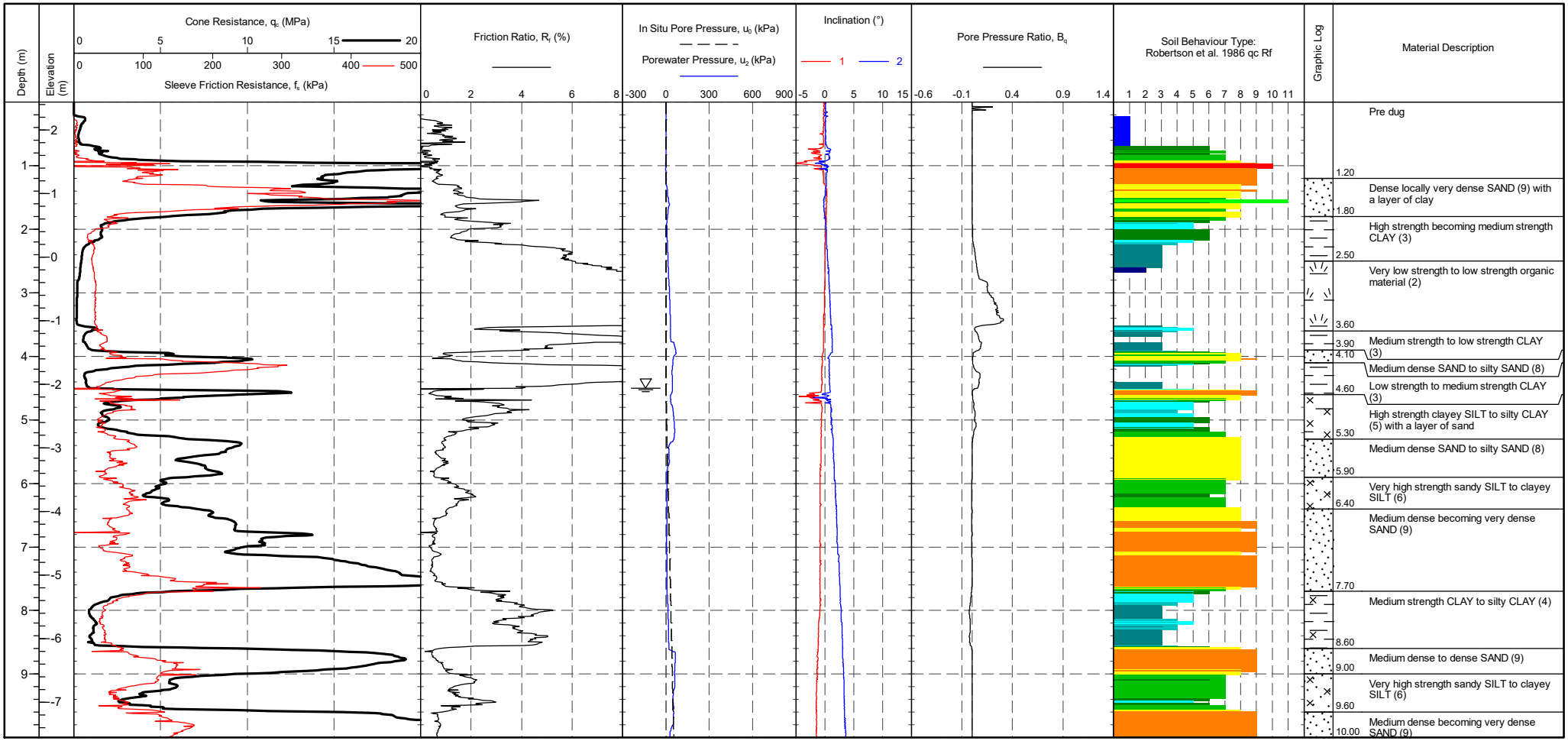
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A		
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	318 mV	314 mV	-0.043 MPa
Sleeve	302 mV	317 mV	0.011 kPa
Pore Pressure 2	217 mV	250 mV	0.01 kPa
X-Y Inclinometer	2488 mV	2510 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

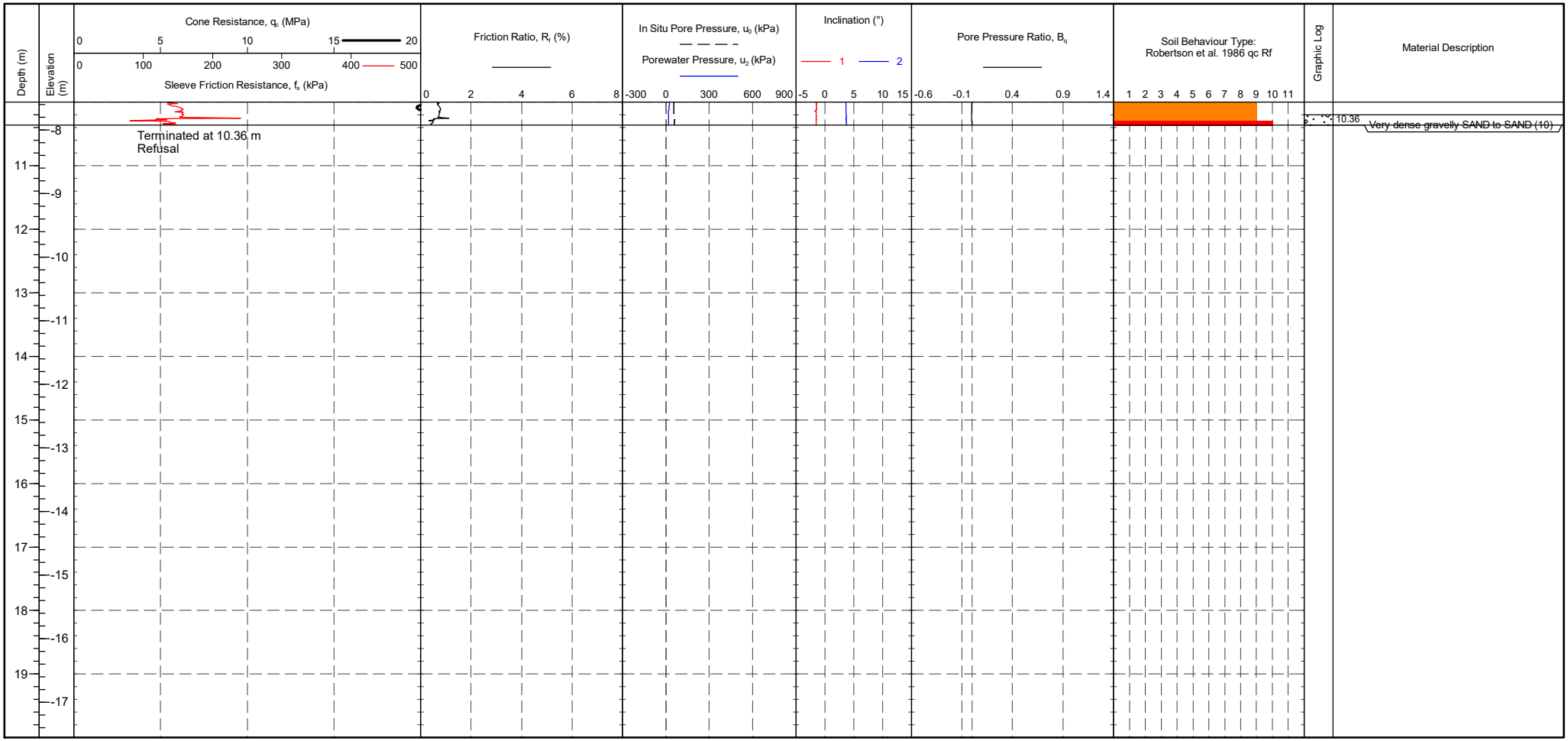
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES				
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa	
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa	
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa	
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV		

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

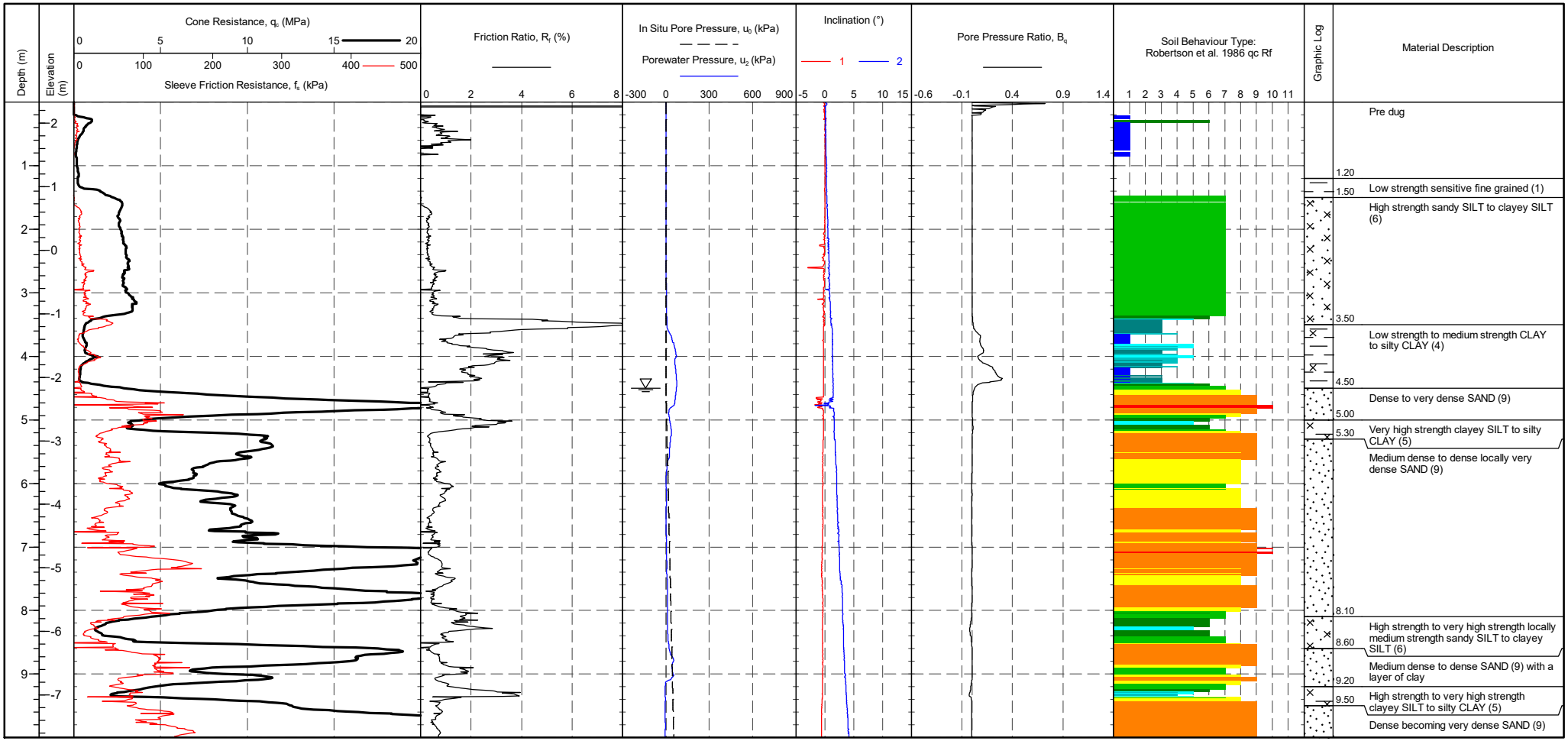
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES		
CONE AREA : 15cm²	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER : None	WEATHER : Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

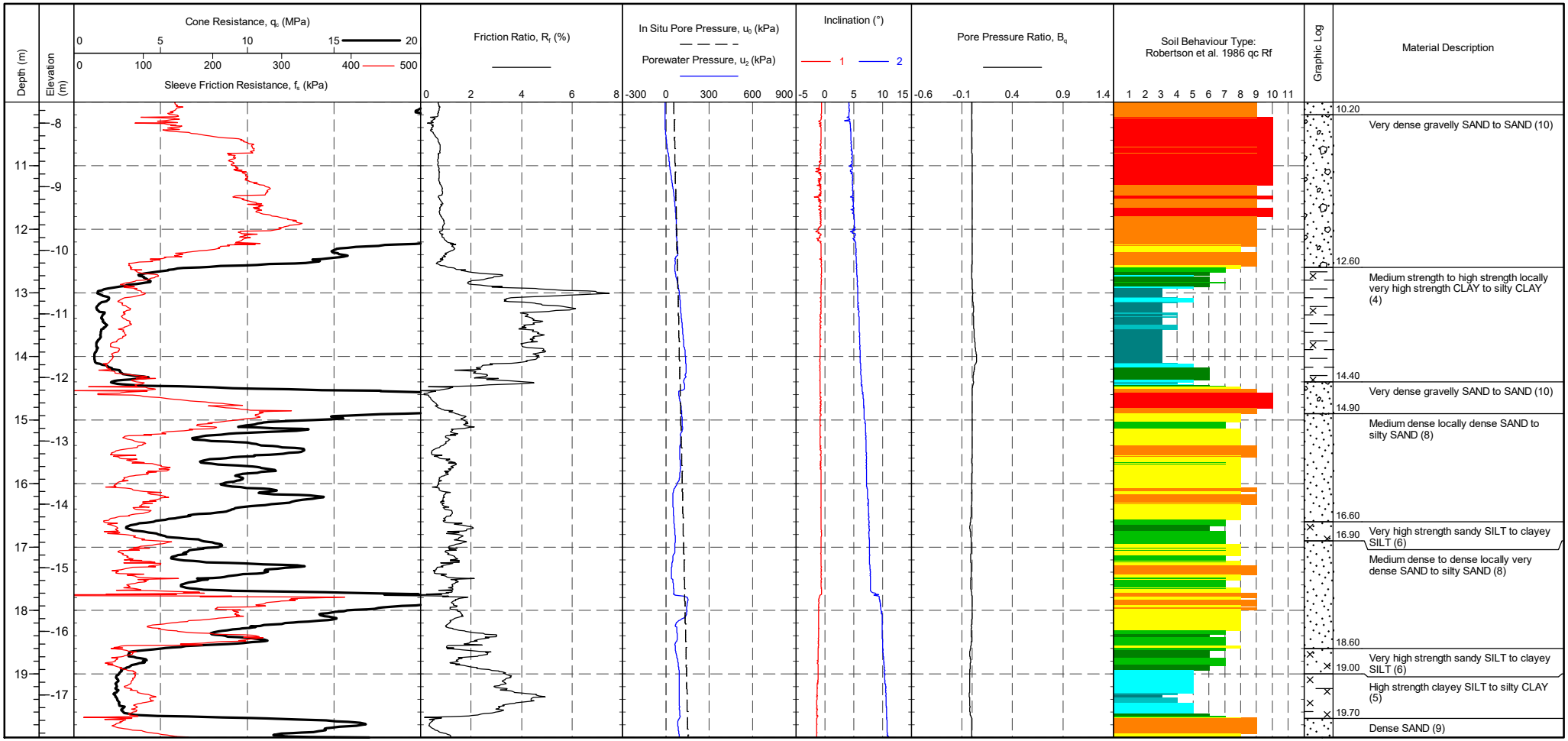
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

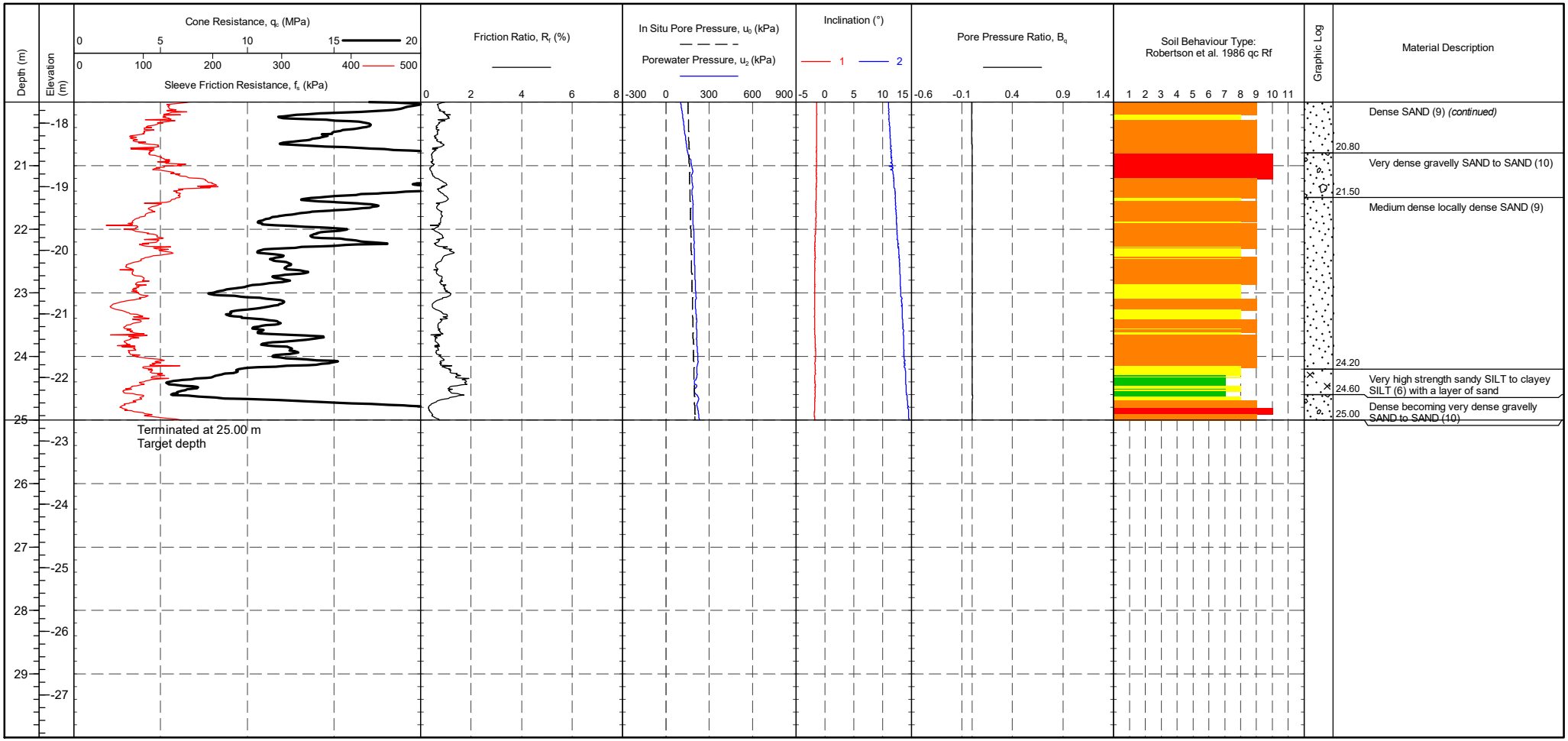
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

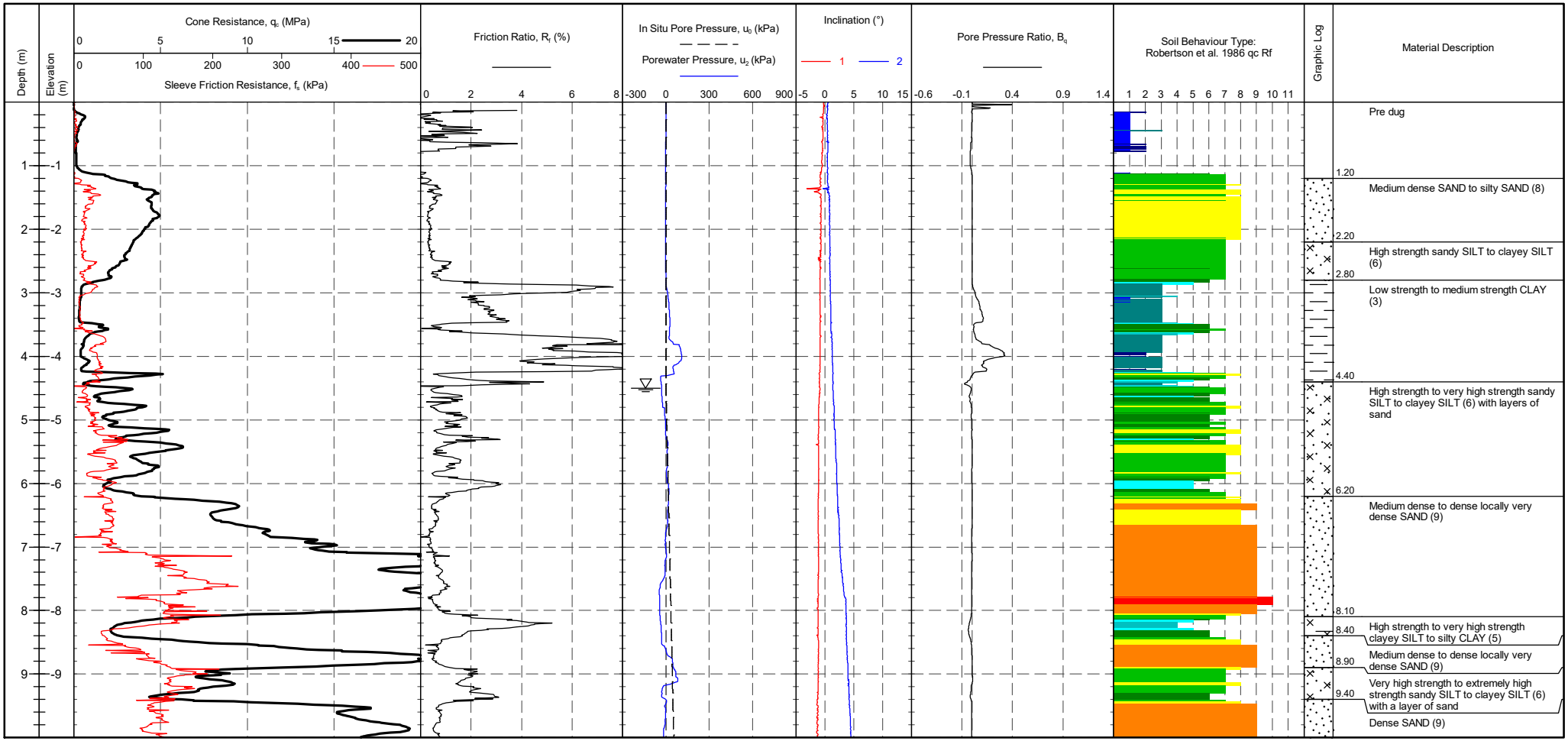
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

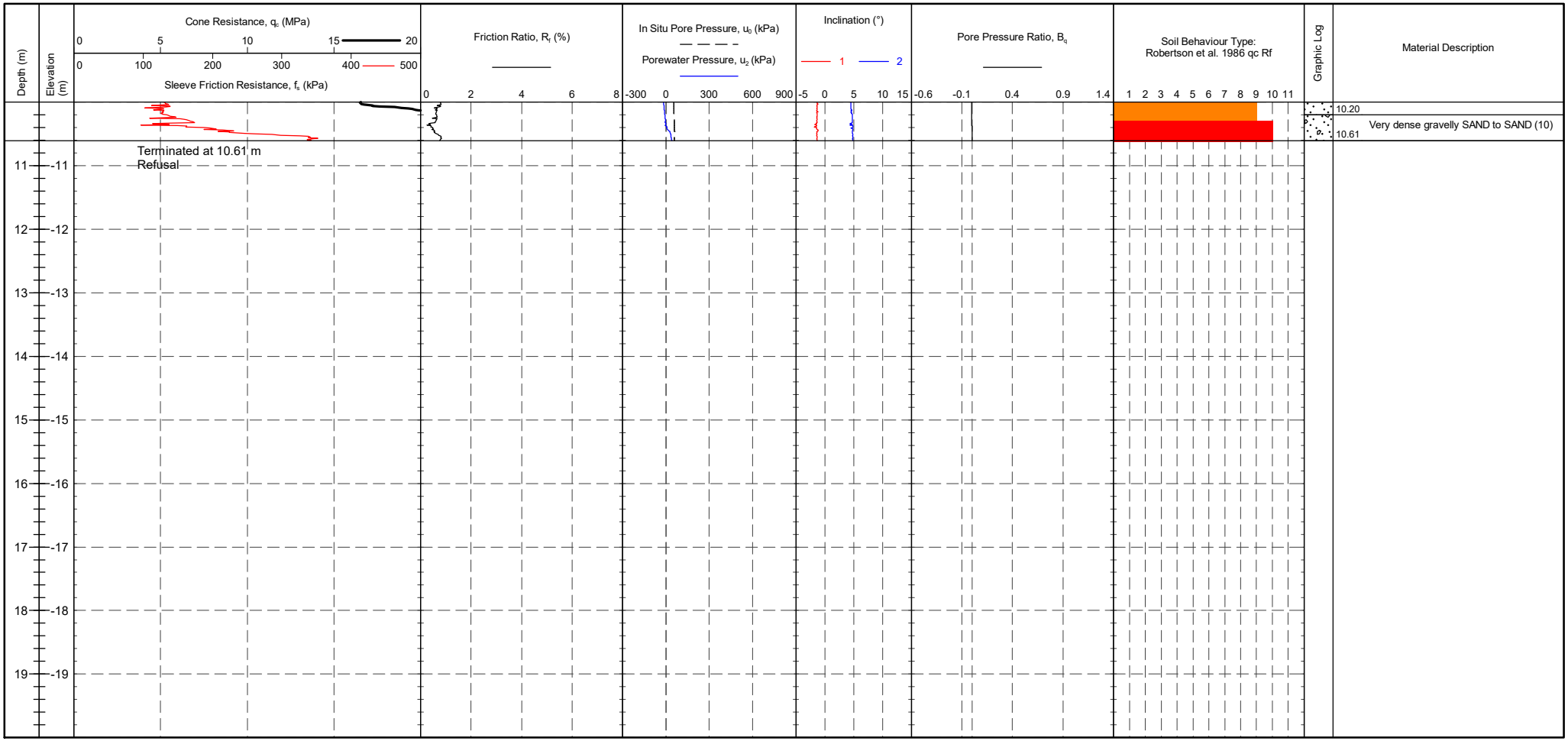
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV

Difference
0.021 MPa
0.004 kPa
-0.002 kPa

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

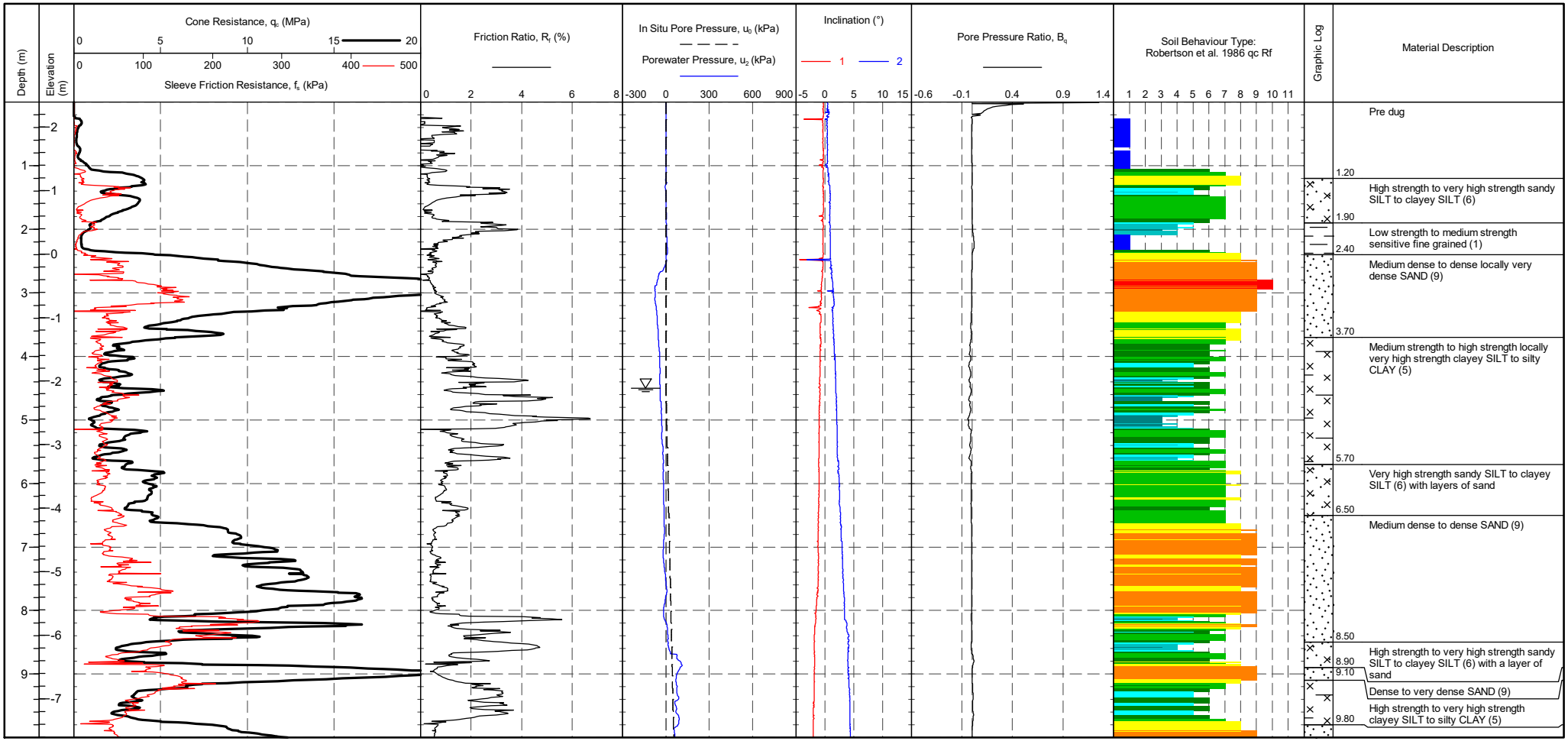
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



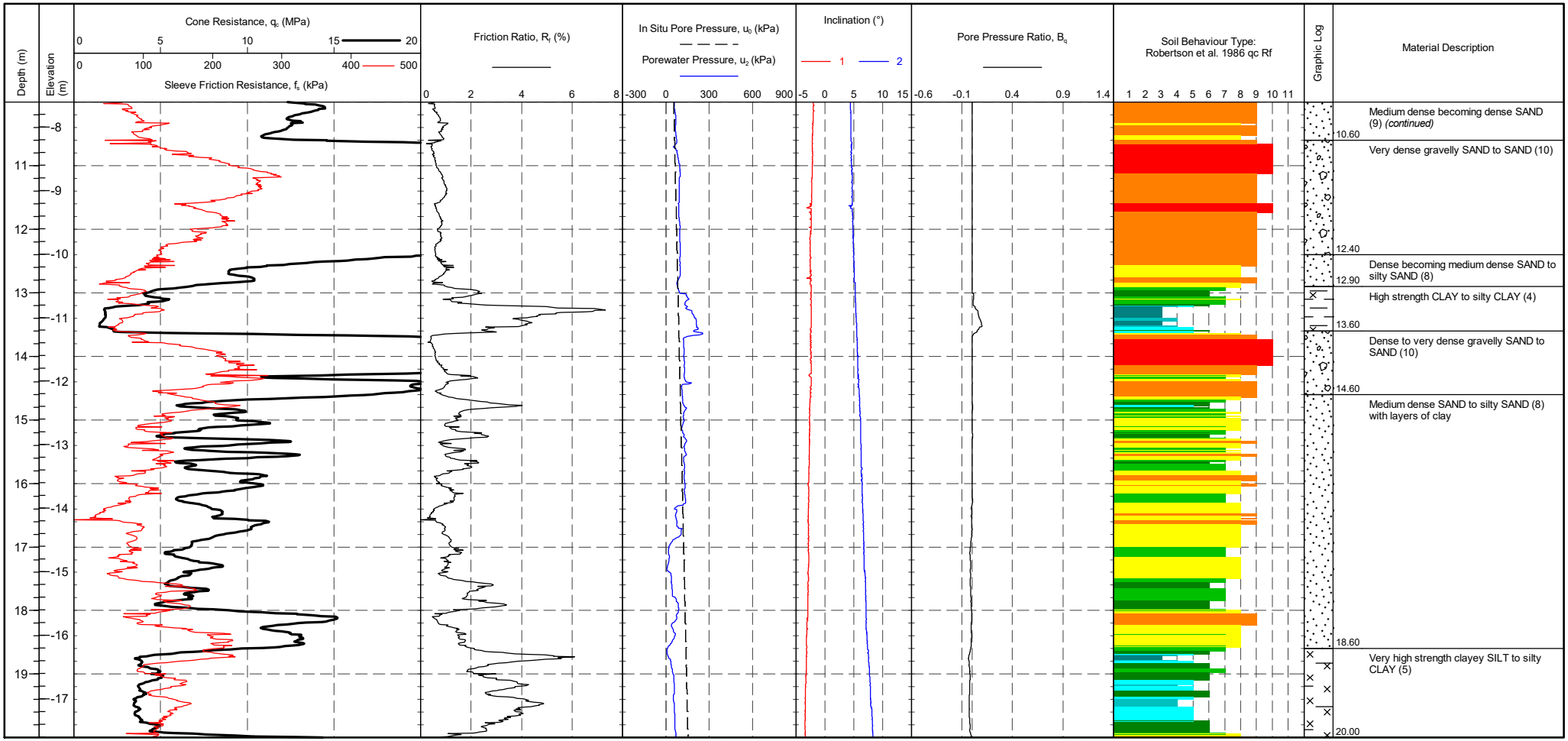
CONE ID : S15-CFIP.1186	TEST TYPE : TE2	CPTU ZERO VALUES				METHOD: Robertson et al. 1986 qc Rf
CONE AREA : 15cm^2	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference	1 - Sensitive fine grained material; 2 - Organic material; 3 - Clay; 4 - Silty clay to clay; 5 - Clayey silt to silty clay; 6 - Sandy silt to clayey silt; 7 - Silty sand to sandy silt; 8 - Sand to silty sand; 9 - Sand; 10 - Gravelly sand to sand; 11 - Very stiff fine grained; 12 - Sand to clayey sand
CONE AREA RATIO : 0.79	RIG : CPT 010	Tip	319 mV	318 mV	-0.011 MPa	
FILTER POSITION : u2	OPERATOR : LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa	
FILTER TYPE : HDPE	FILE NAME : 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa	
FRICTION REDUCER : None	WEATHER : Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV		Groundwater Level; Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

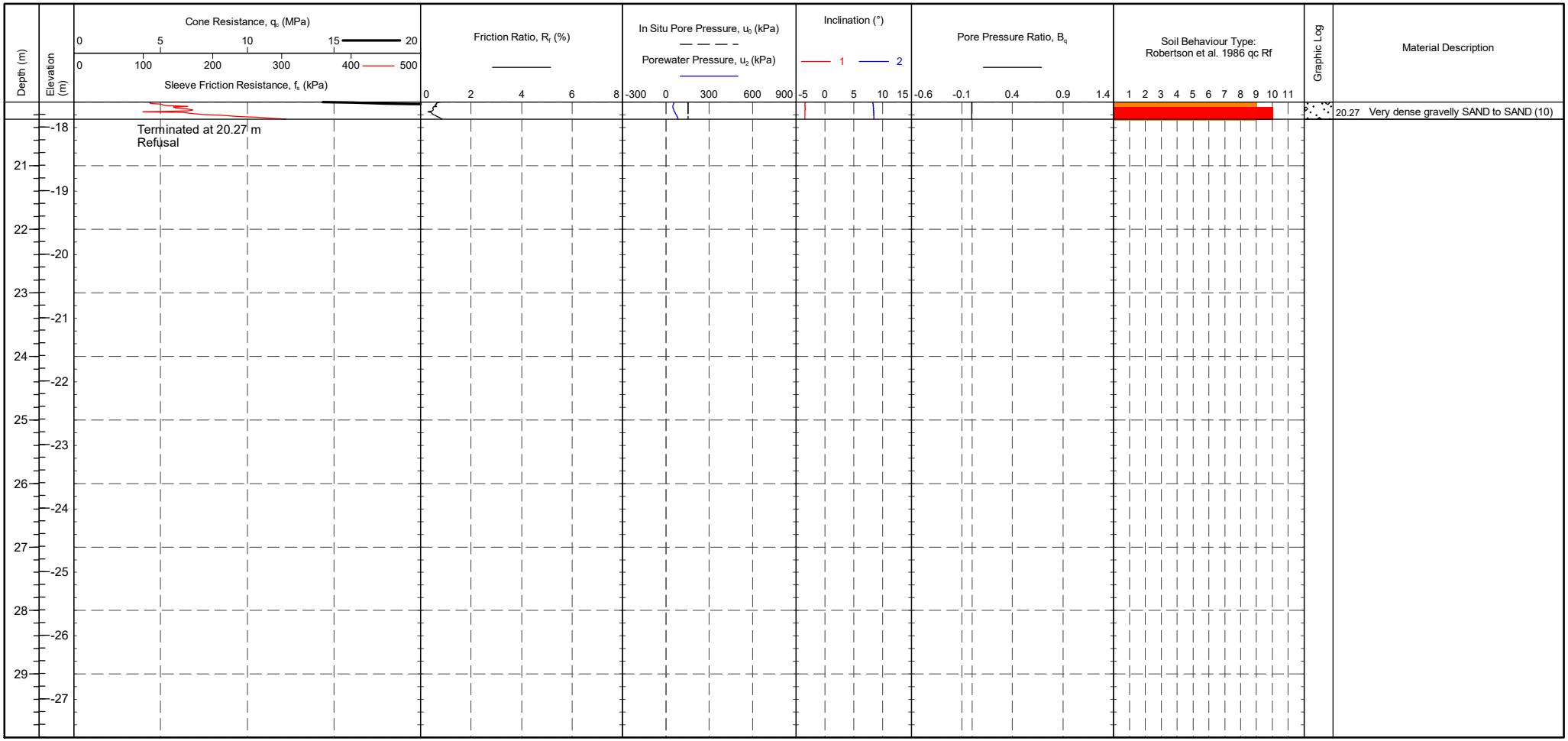
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 01

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES				
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference	
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa	
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa	
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV		

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - Clay
4 - Silty clay to clay
5 - Clayey silt to silty clay
6 - Sandy silt to clayey silt
7 - Silty sand to sandy silt
8 - Sand to silty sand
9 - Sand
10 - Gravelly sand to sand
11 - Very stiff fine grained
12 - Sand to clayey sand

Groundwater Level

Dissipation Test

P

P

P

P

P

P

P

P

P

P

APPENDIX C

Geotechnical Derived Parameters

P

P

IN SITU SITE INVESTIGATION

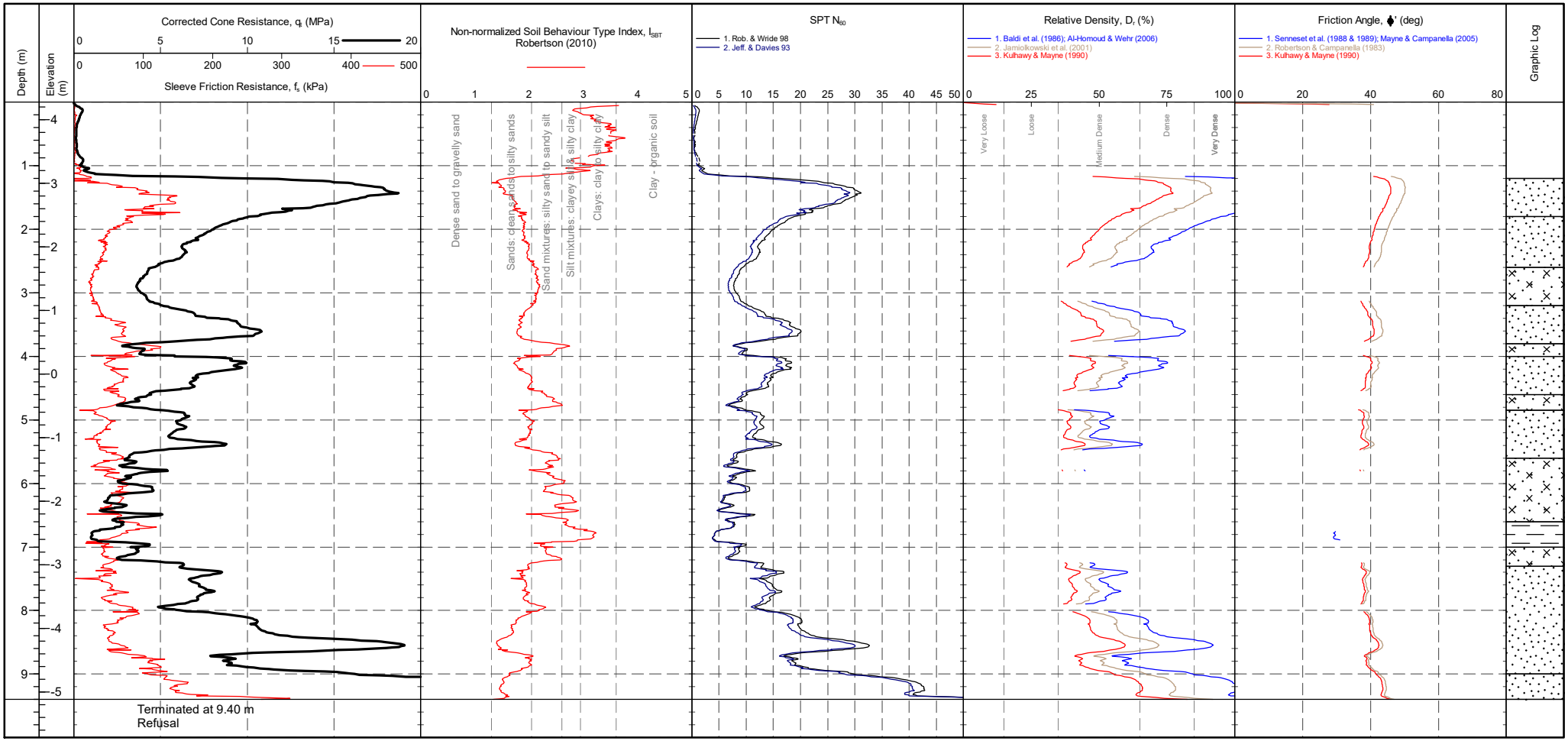
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-01A

CLIENT : Geosphere Environmental	EASTING	: 653755.6 m	REMARK	SHEET	: 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 293037.8 m	Test refused on tip resistance.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 4.28 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Refusal		METHOD	: ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	324 mV	0.074 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	289 mV	306 mV	0.013 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	216 mV	271 mV	0.016 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-01A	X-Y Inclinometer	2463 mV	2436 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

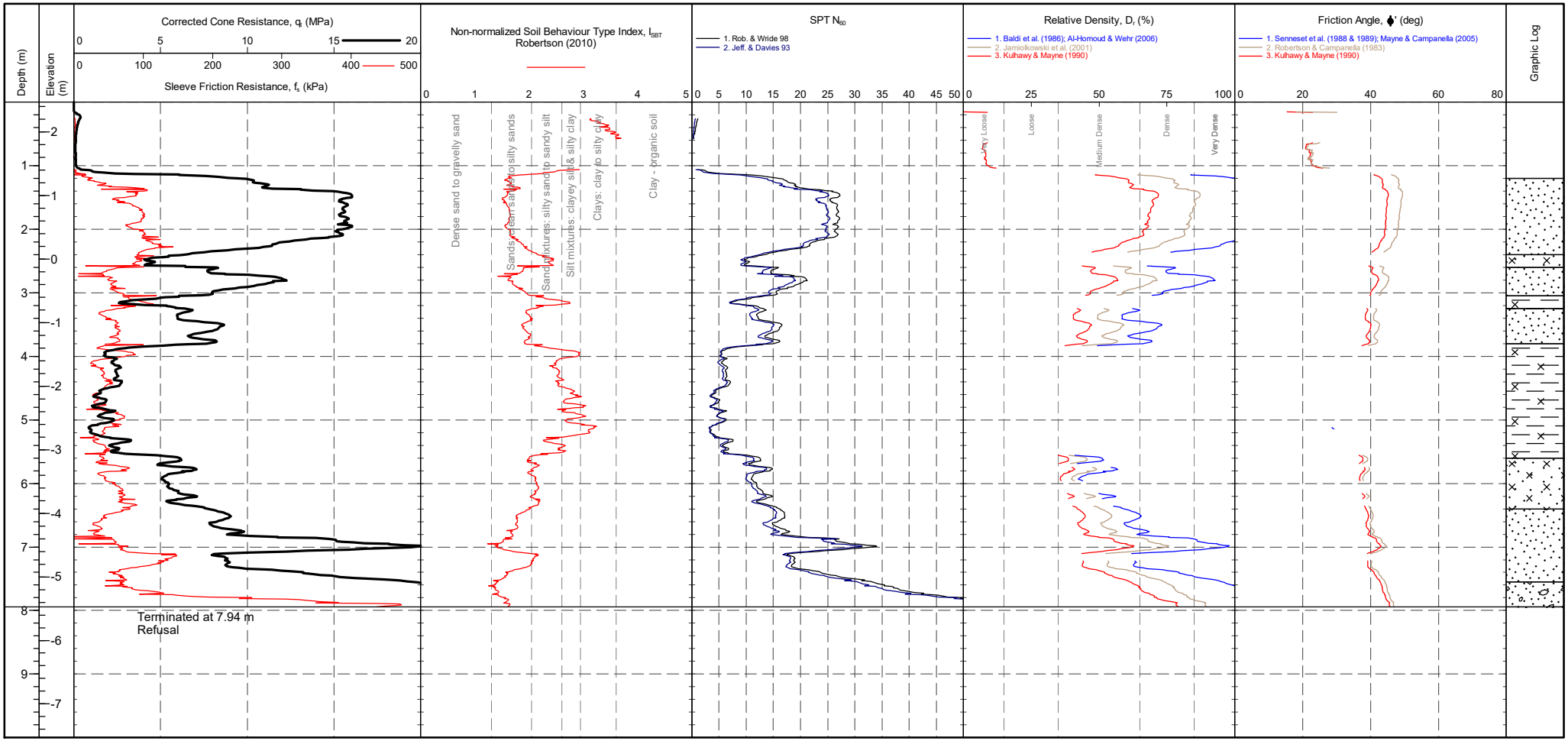
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-02

CLIENT	: Geosphere Environmental	EASTING	: 653810.7 m	REMARK	SHEET : 1 OF 1
PROJECT	: Lake Lothing, Lowerstoft	NORTHING	: 292976.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION	: Lowerstoft	ELEVATION	: 2.47 m		TEST DATE : 10/08/2017
PROJECT No.	: 1170332	CHECKED BY	: LD		PLOT DATE : 25/08/2017
		TERMINATION REASON	: Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	320 mV	0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	302 mV	310 mV	0.006 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	250 mV	286 mV	0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-02	X-Y Inclinometer	2467 mV	2477 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

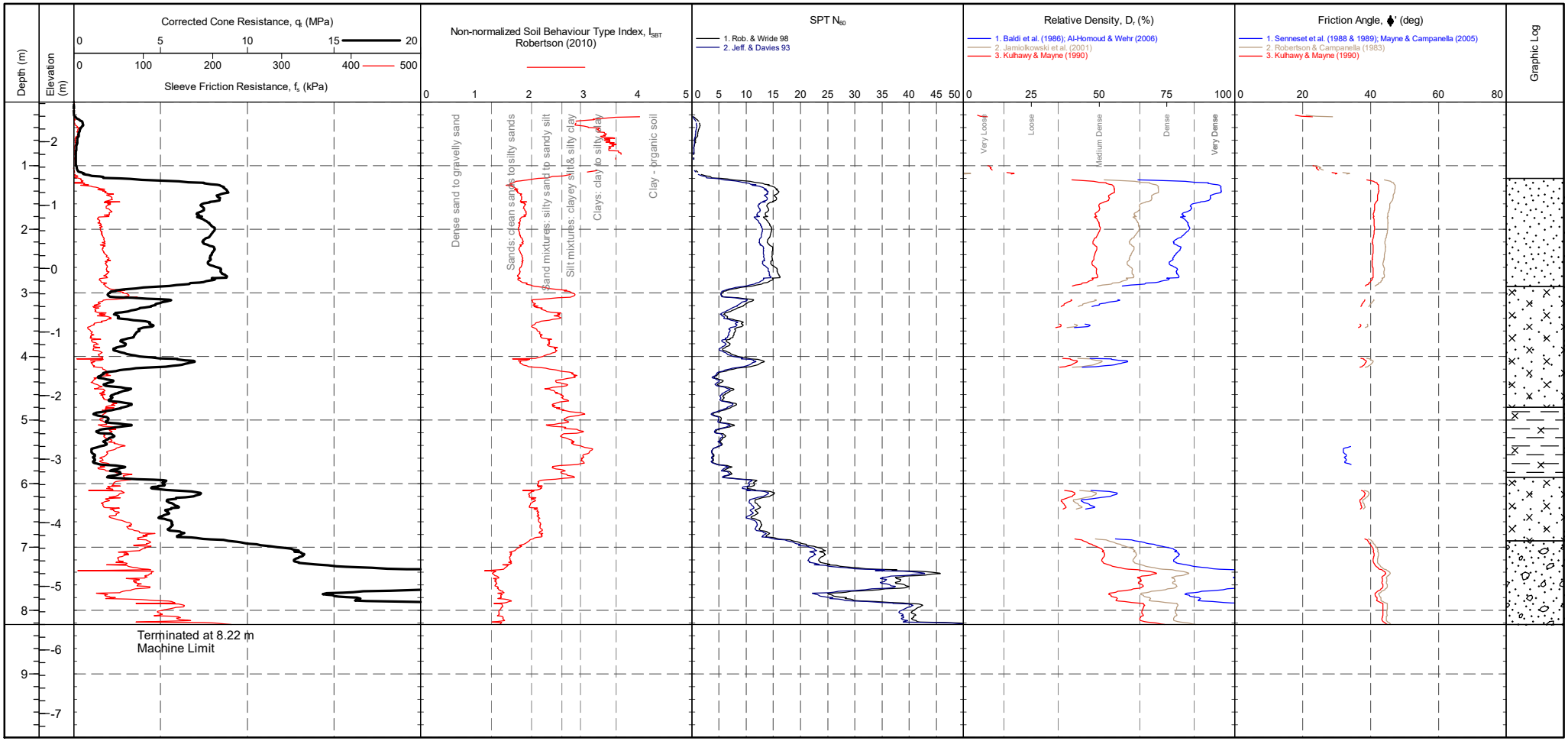
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-03

CLIENT : Geosphere Environmental	EASTING	: 653781.6 m	REMARK	SHEET	: 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292986.6 m	Test stopped due to buckling rods.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.62 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Machine Limit		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-03	Pore Pressure 2	268 mV	284 mV	0.005 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2469 mV	2484 mV	

Groundwater Level

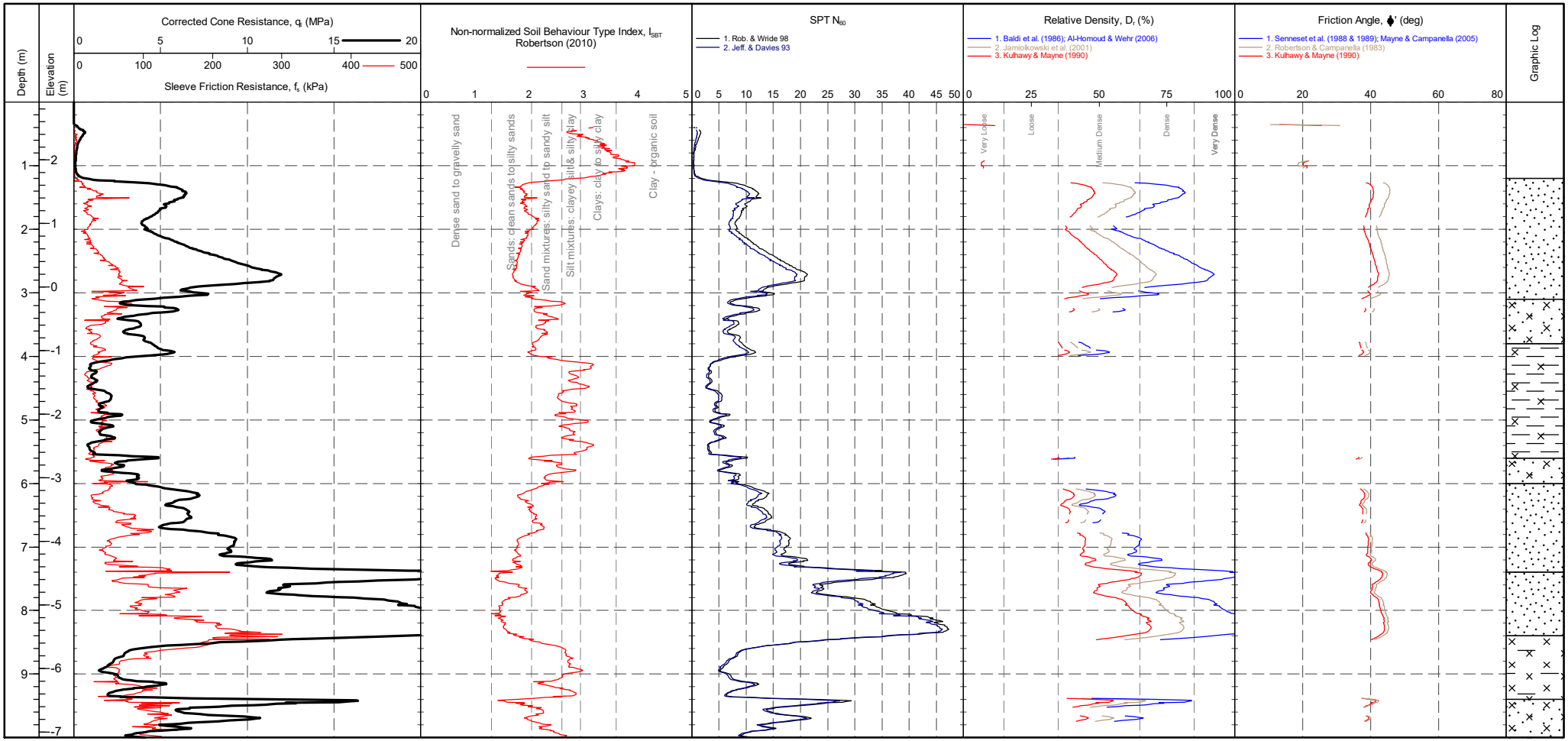
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	318 mV	315 mV	-0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	299 mV	300 mV	0.001 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	X-Y Inclinometer	2459 mV	2388 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

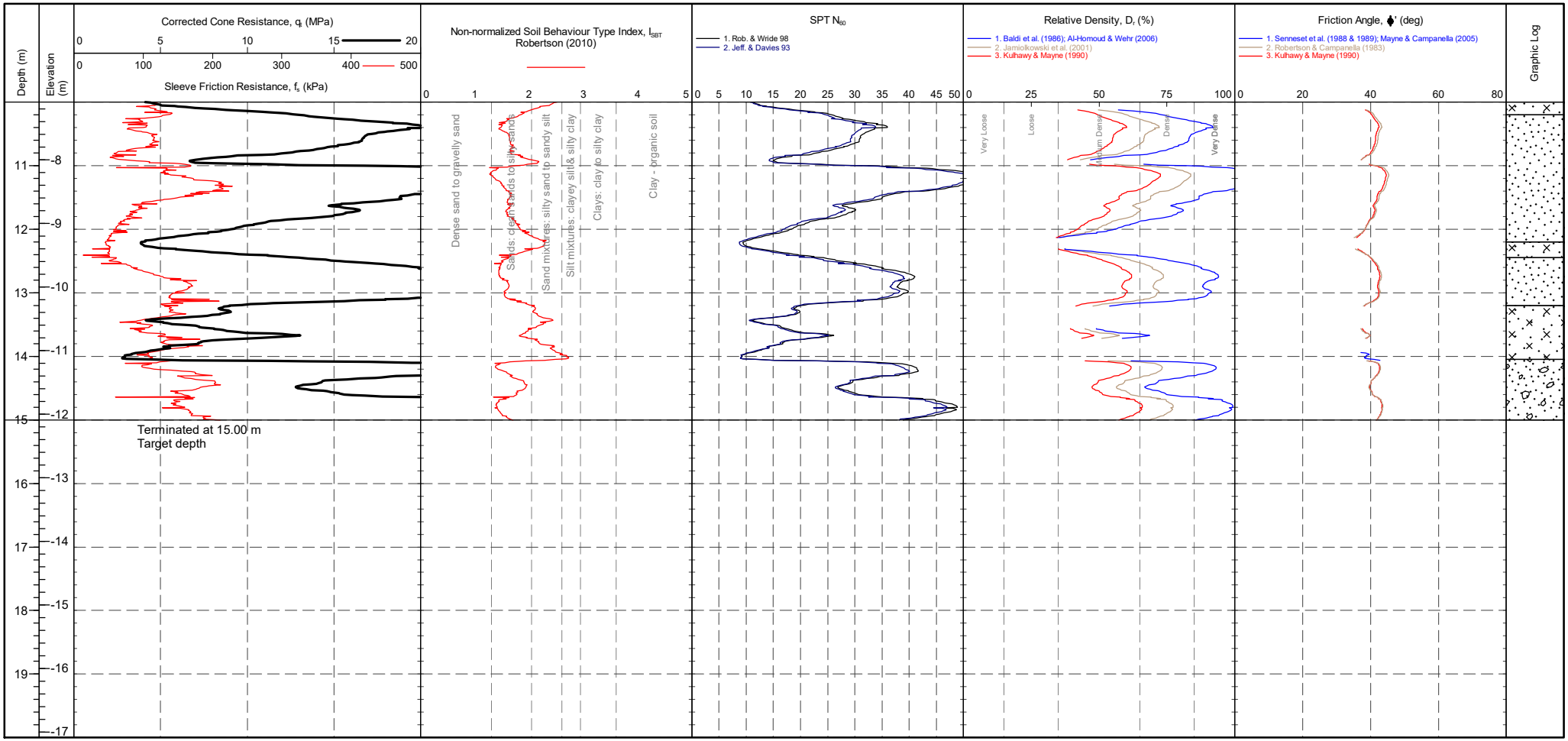
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-04

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	318 mV	315 mV	-0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	299 mV	300 mV	0.001 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	X-Y Inclinometer	2459 mV	2388 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

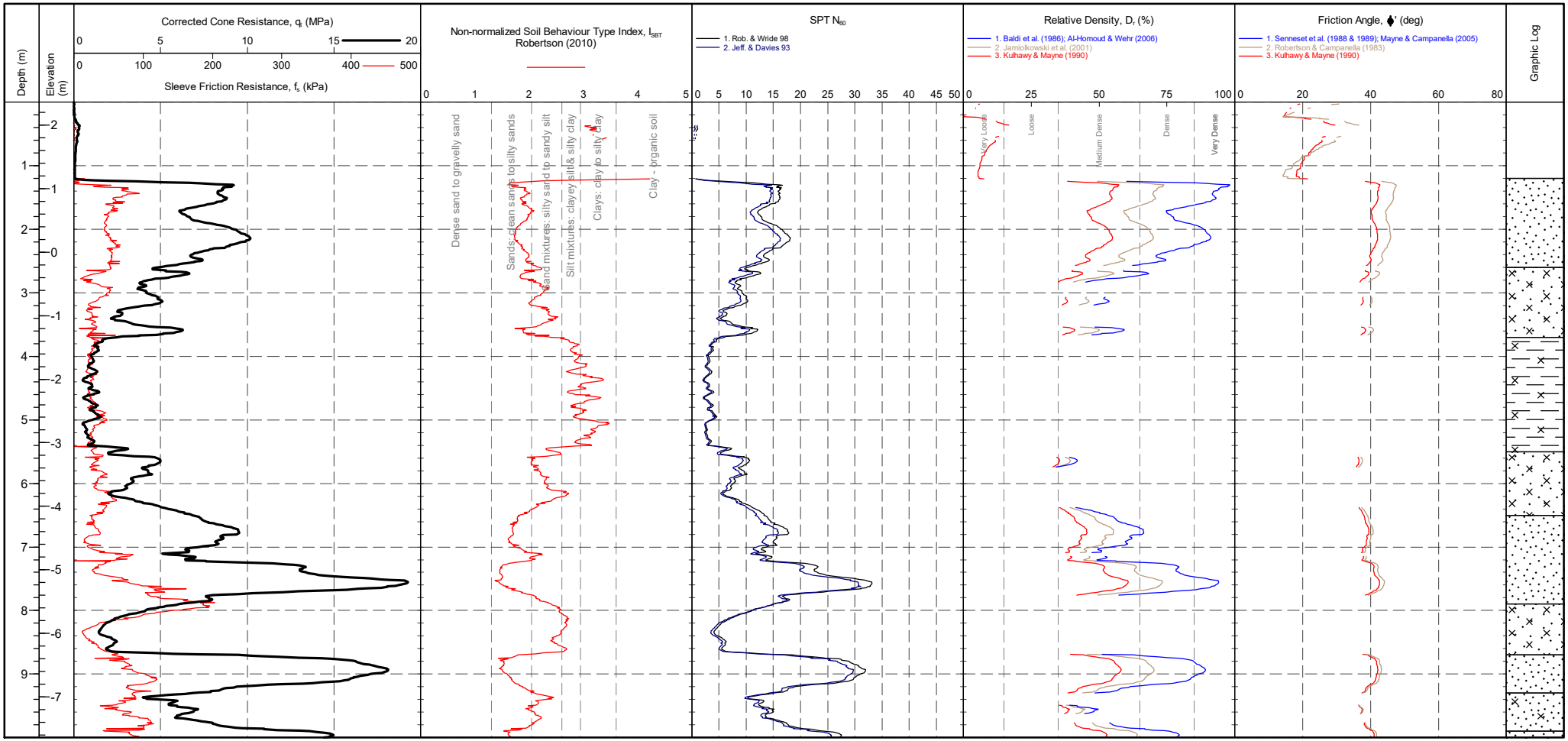
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-05

CLIENT : Geosphere Environmental	EASTING	: 653834.7 m	REMARK	SHEET	: 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292996.4 m	Test refused on tip resistance.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.36 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Refusal		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV / 0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV / 0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV / 0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

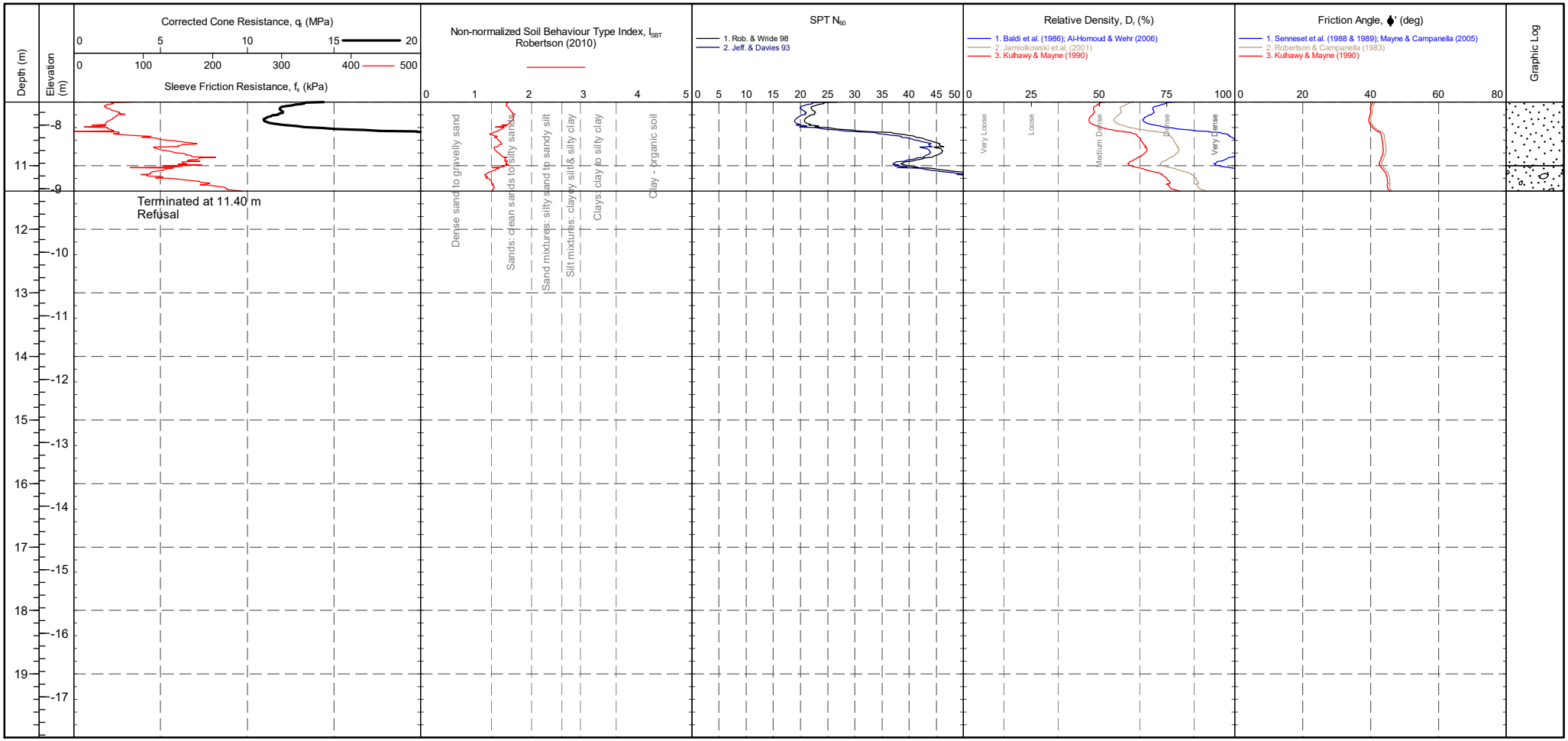
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-05

CLIENT : Geosphere Environmental	EASTING	: 653834.7 m	REMARK	SHEET	: 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292996.4 m	Test refused on tip resistance.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.36 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Refusal		METHOD	: ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	318 mV	0.011 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	305 mV	308 mV	0.002 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	X-Y Inclinometer	2473 mV	2479 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

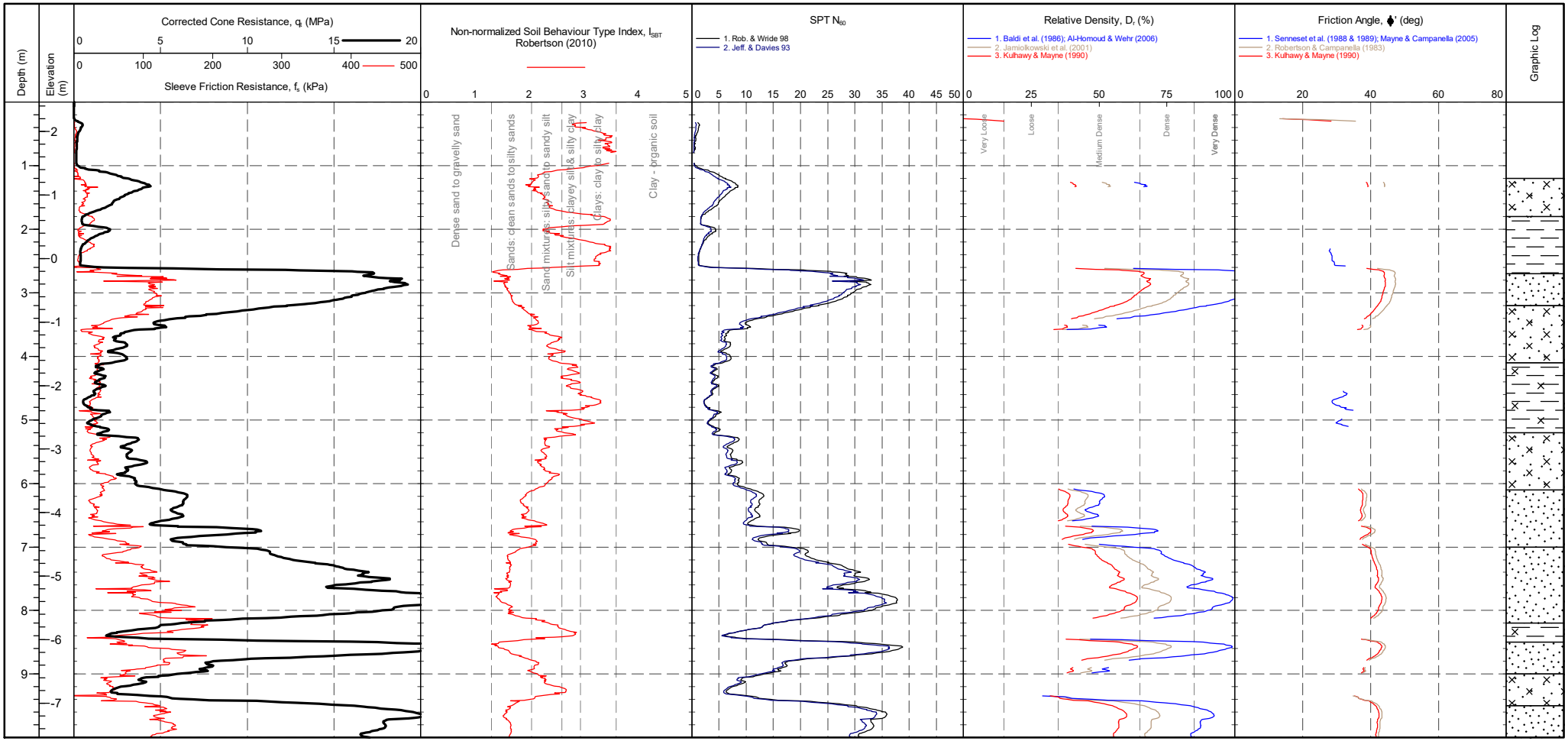
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

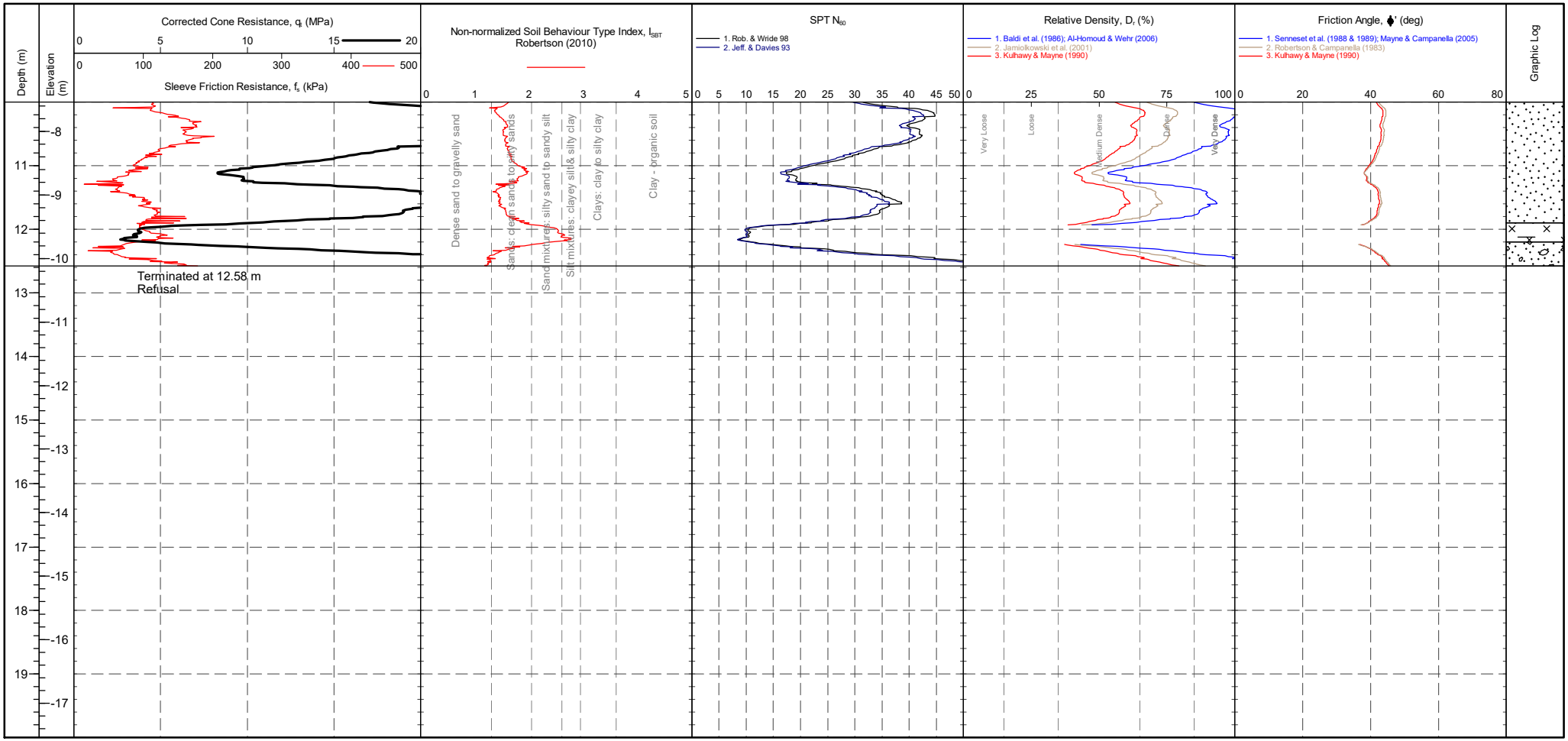
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-06

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

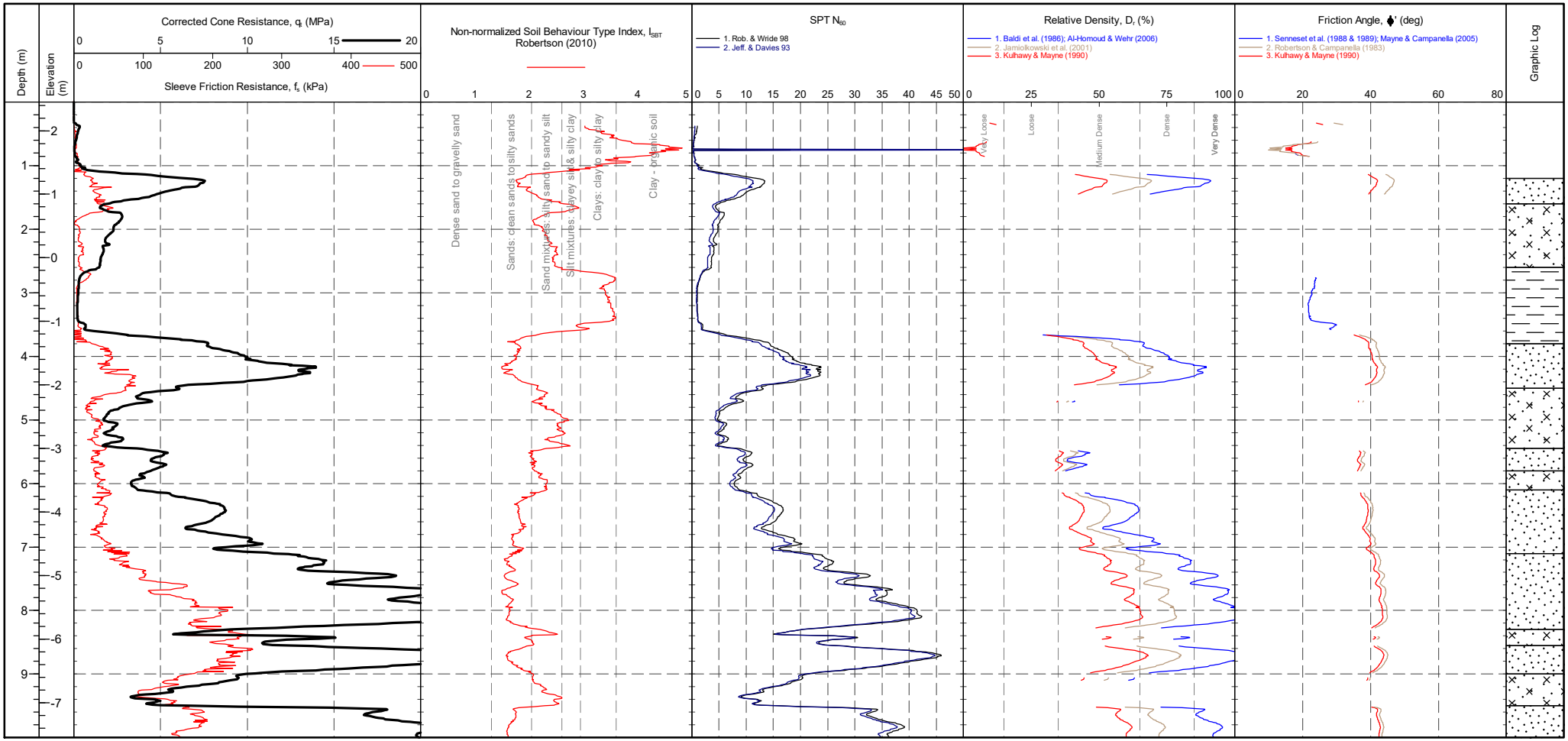
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

Groundwater Level

Dissipation Test

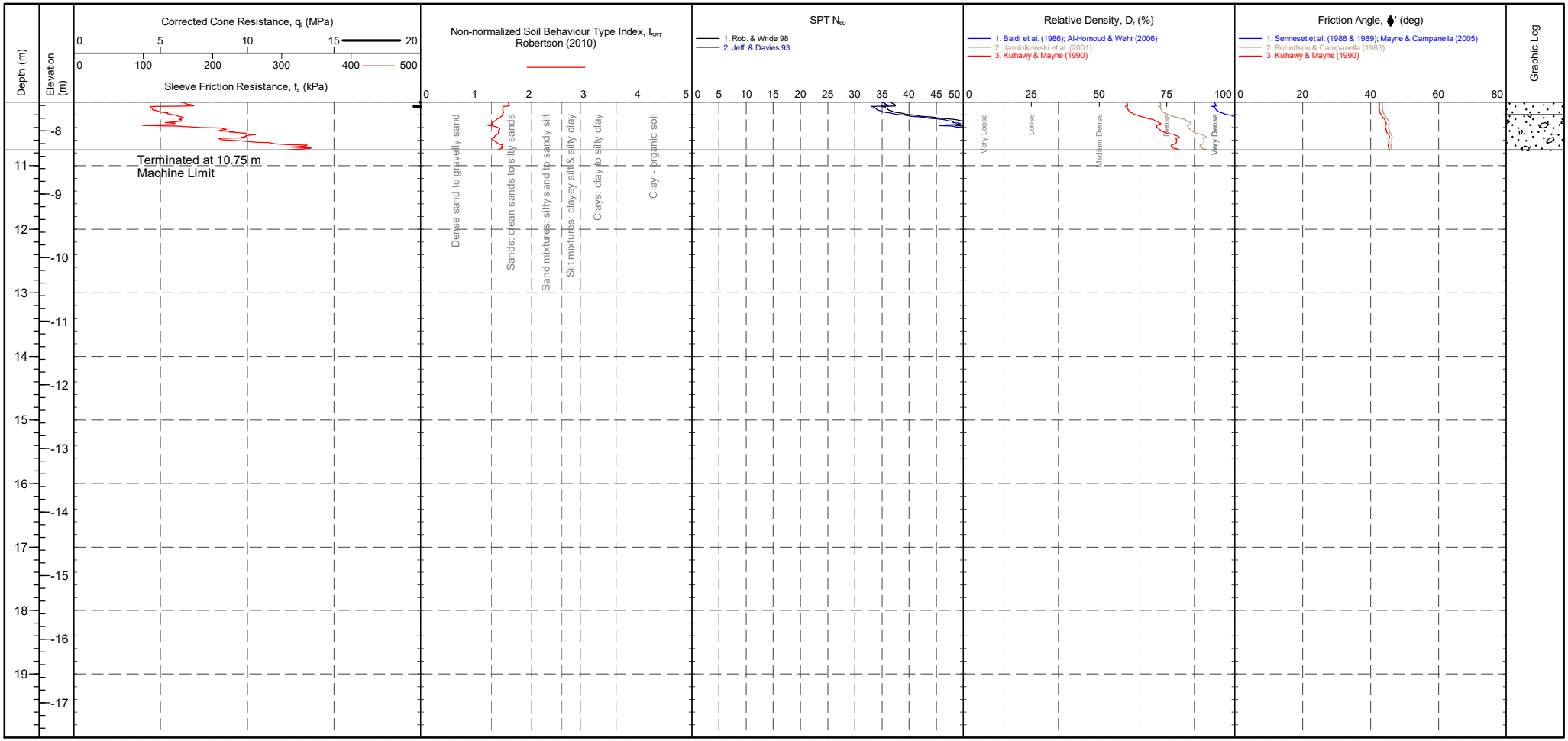
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV / -0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV / 0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

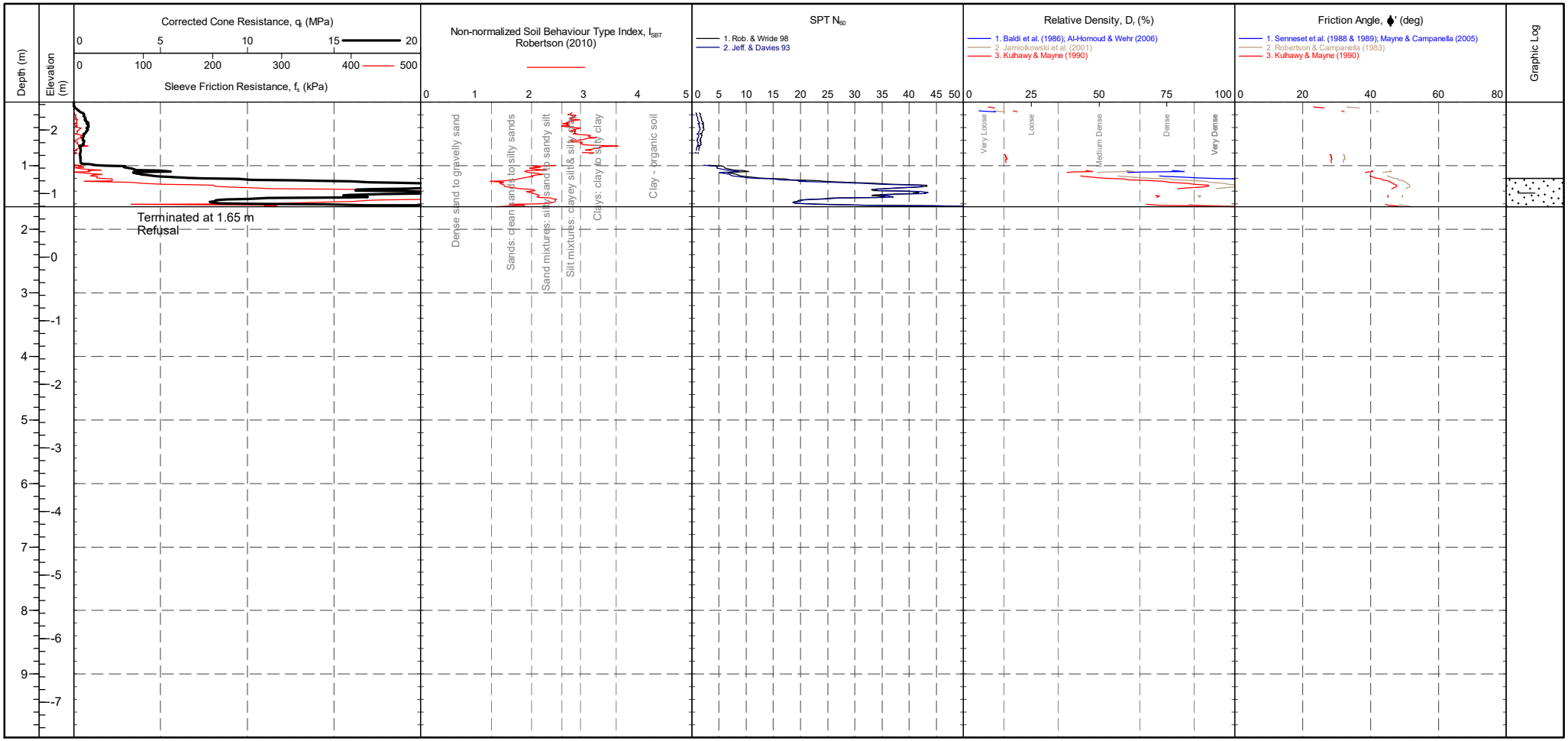
PointID **CPTC-08**

CLIENT : Geosphere Environmental
PROJECT : Lake Lothing, Lowerstoft
LOCATION : Lowerstoft
PROJECT No. : 1170332

EASTING : 653888.0 m
NORTHING : 292957.6 m
ELEVATION : 2.44 m
CHECKED BY : LD
TERMINATION REASON : Refusal

REMARK
Test refused on tip resistance.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 11/08/2017
PLOT DATE : 25/08/2017
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	311 mV	-0.064 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	309 mV	0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08	Pore Pressure 2	238 mV	263 mV	0.007 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2484 mV	

Groundwater Level

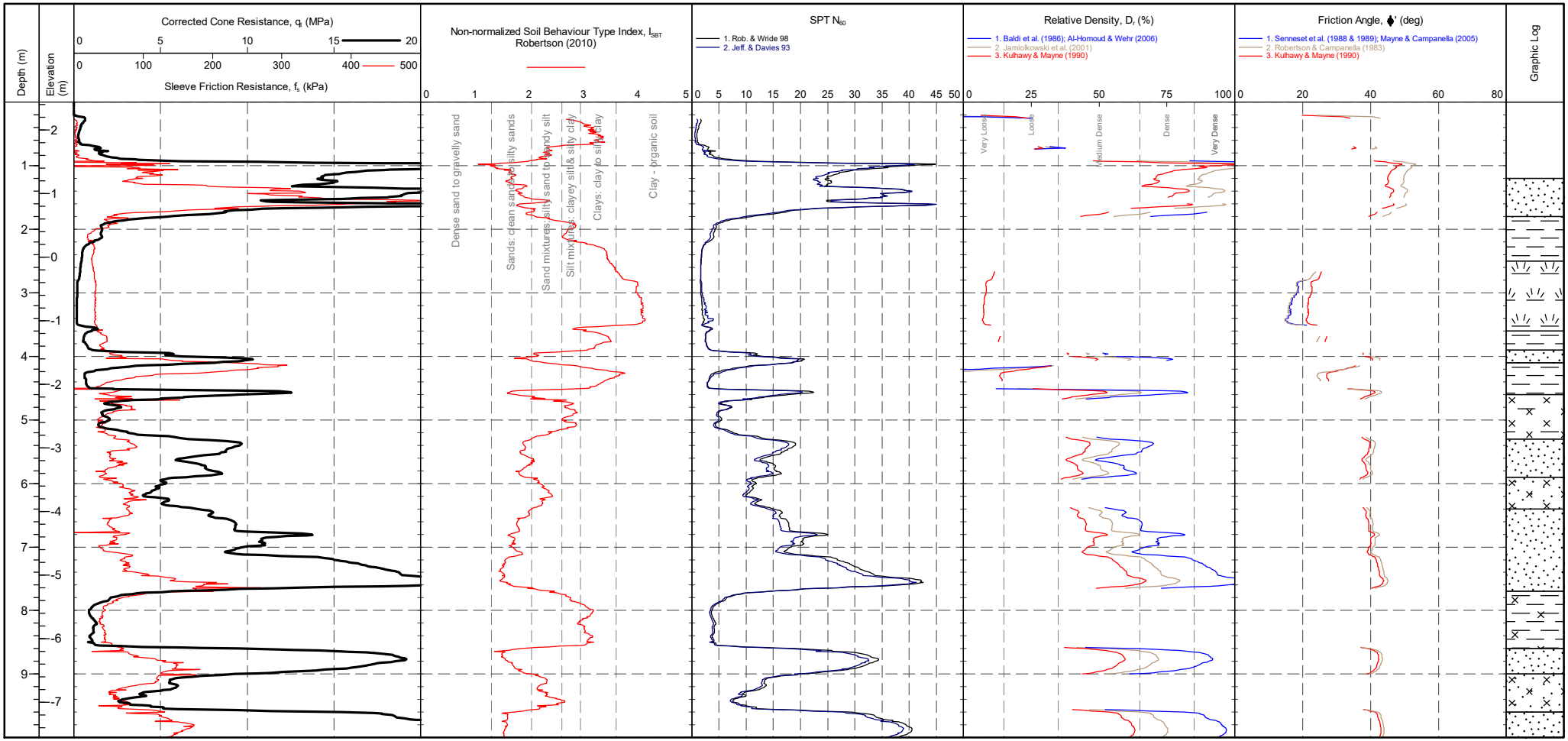
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV / -0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV / 0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV / 0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV

Groundwater Level

Dissipation Test

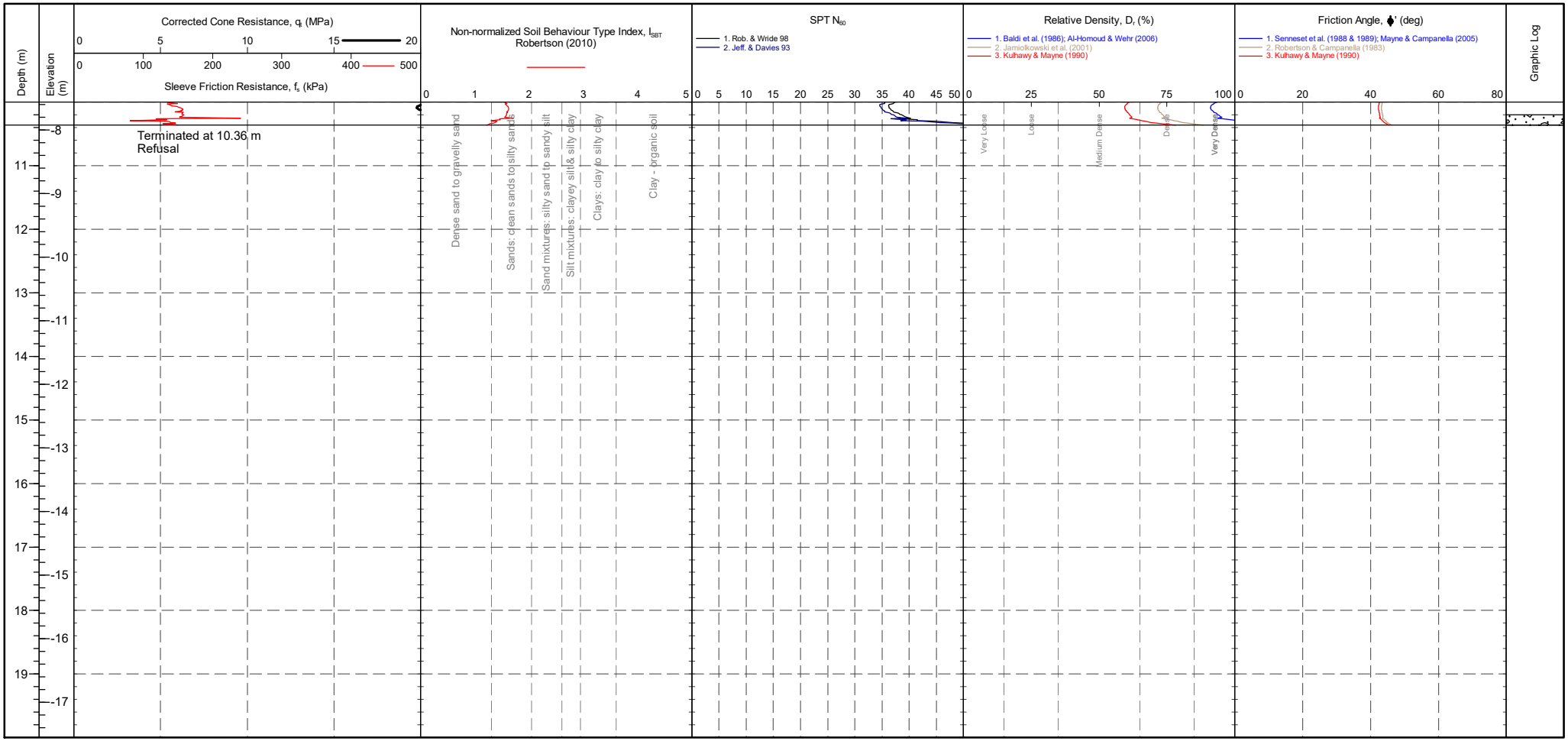
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV	

Groundwater Level

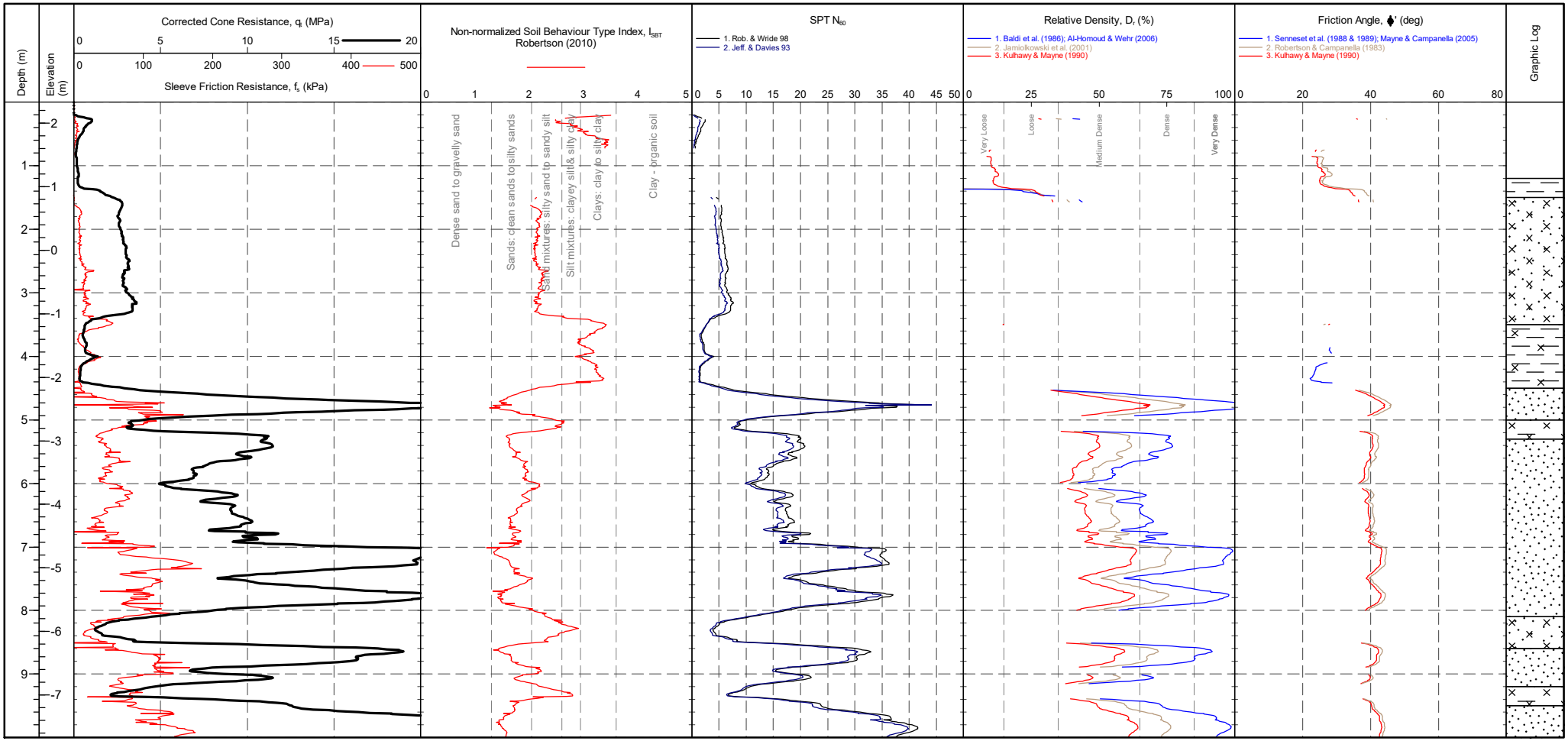
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV / 0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV / -0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV / 0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV

Groundwater Level

Dissipation Test

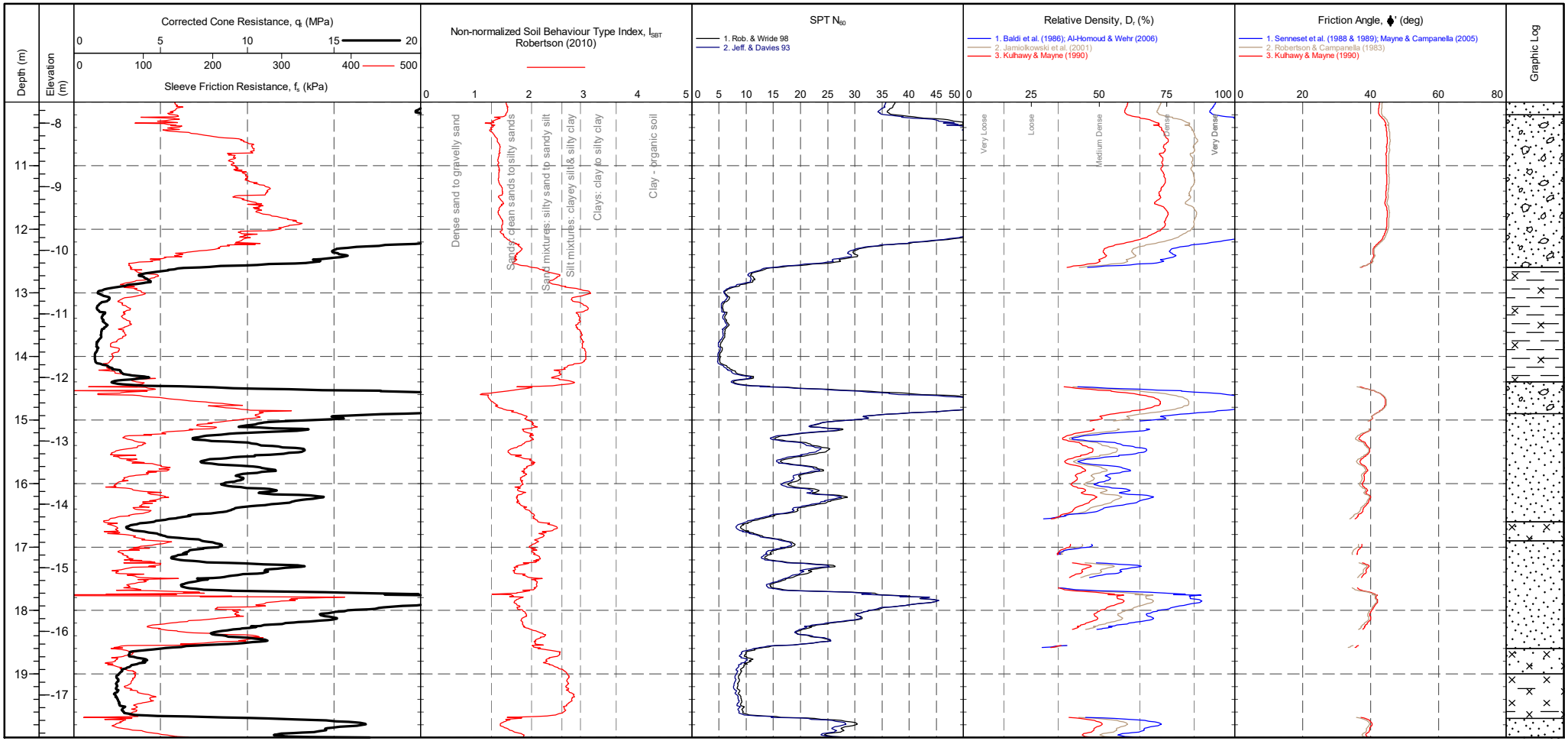
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV / 0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV / -0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV / 0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV

Groundwater Level

Dissipation Test

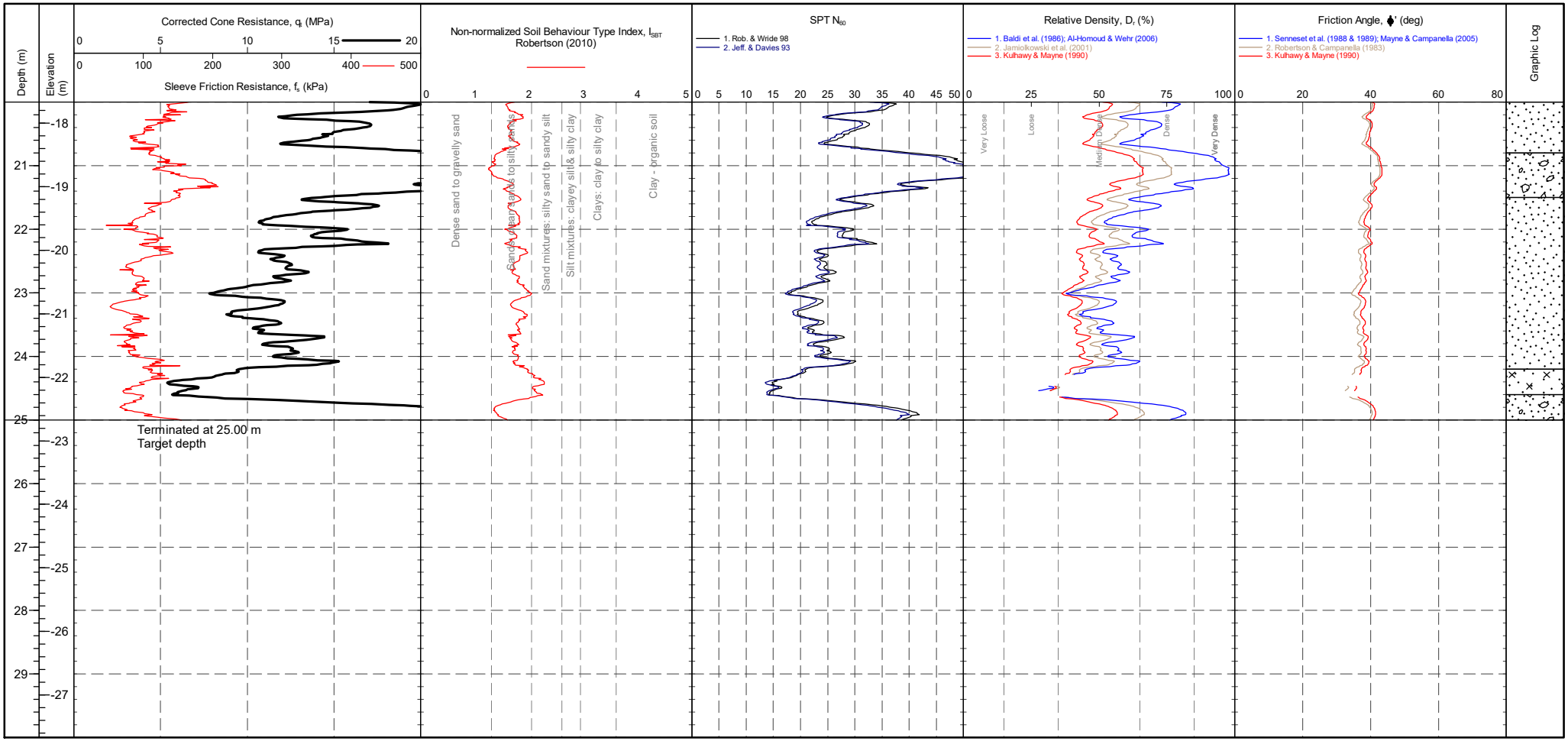
IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-09

CLIENT : Geosphere Environmental	EASTING	: 653882.9 m	REMARK	SHEET	: 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292937.4 m	Test completed at target depth.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.33 m		TEST DATE	: 11/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Target depth		METHOD	: ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	315 mV	318 mV	0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	X-Y Inclinometer	2492 mV	2490 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild				

Groundwater Level

Dissipation Test

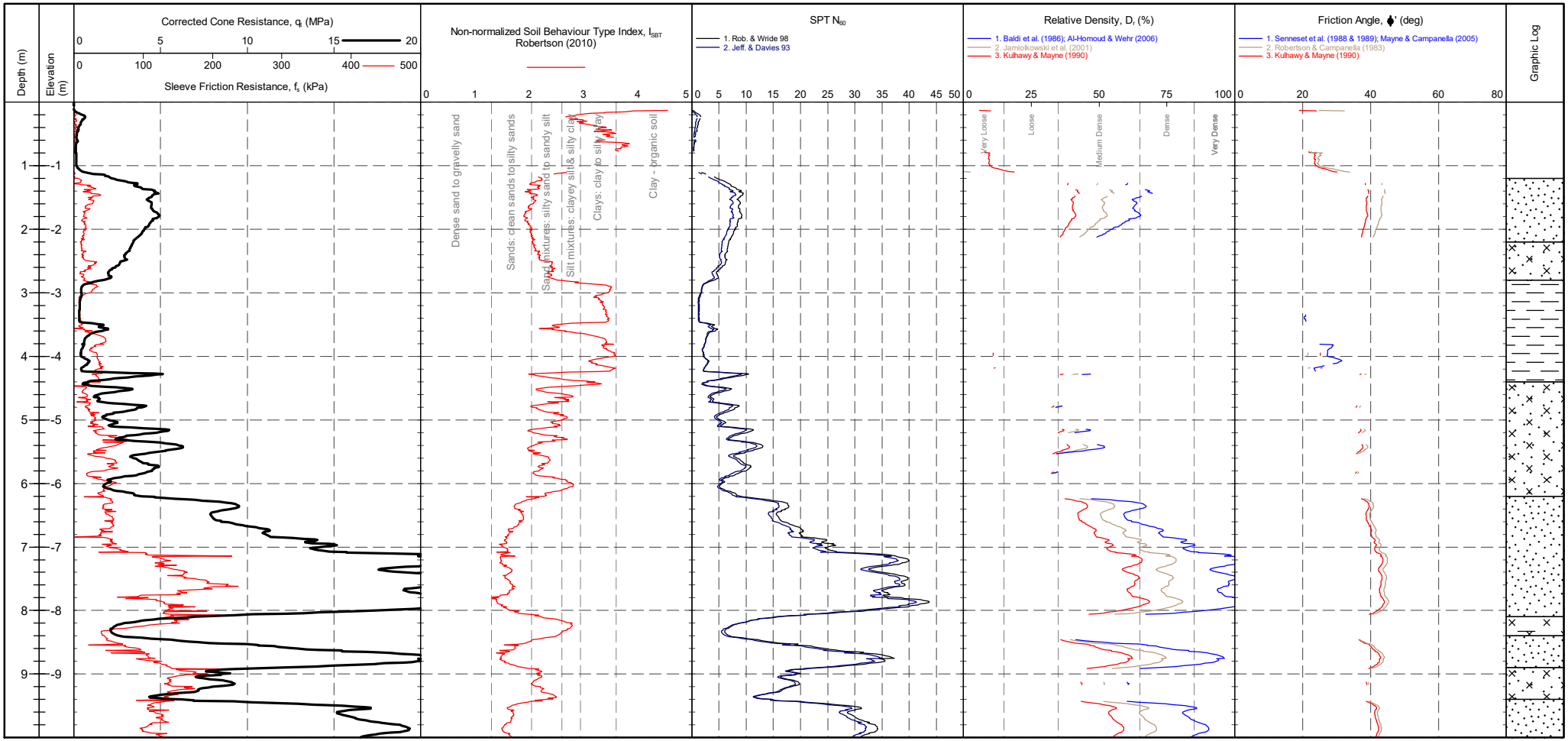
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-10**

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

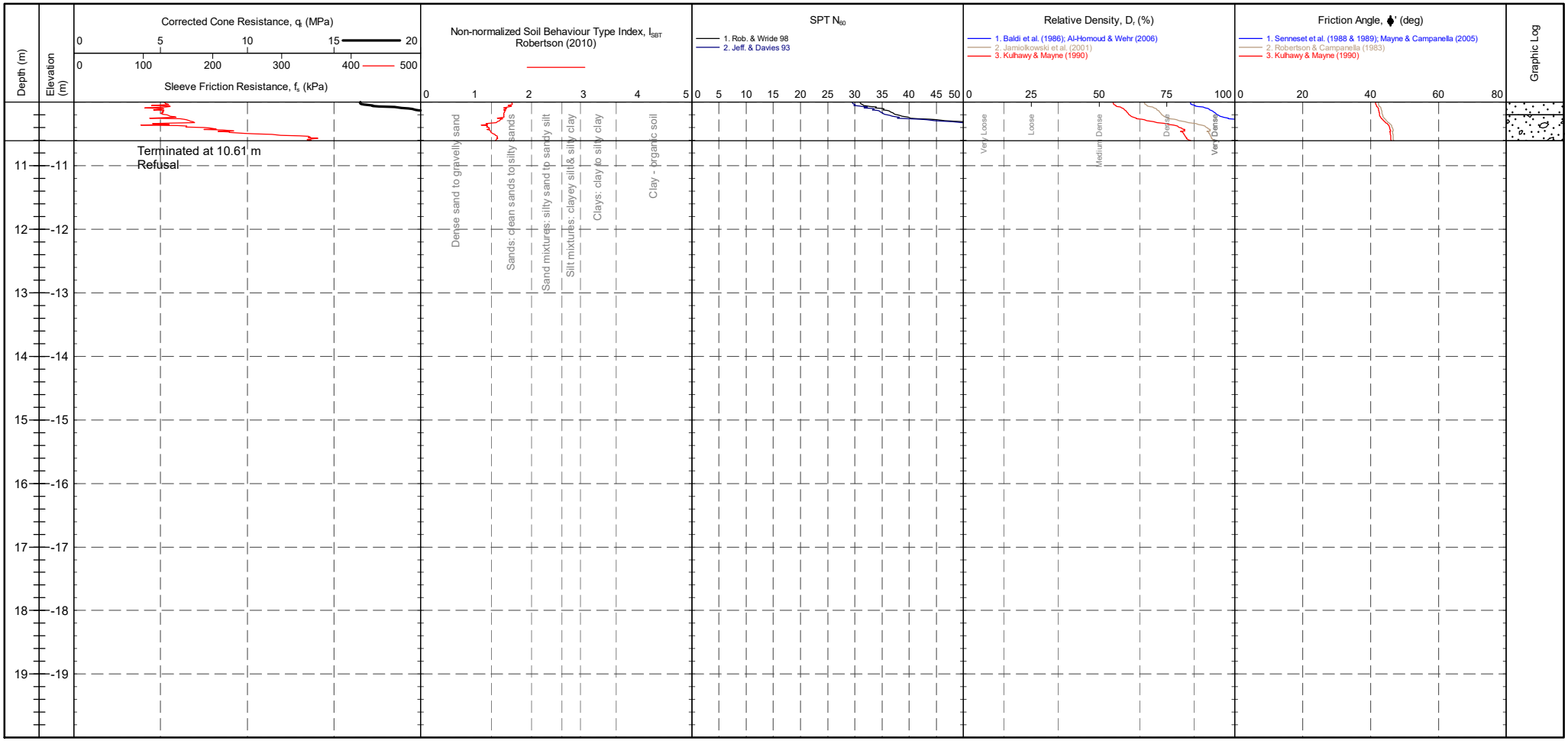
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-10

CLIENT : Geosphere Environmental	EASTING :	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING :	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 0.00 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV / 0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV / 0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV / -0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV

Groundwater Level

Dissipation Test

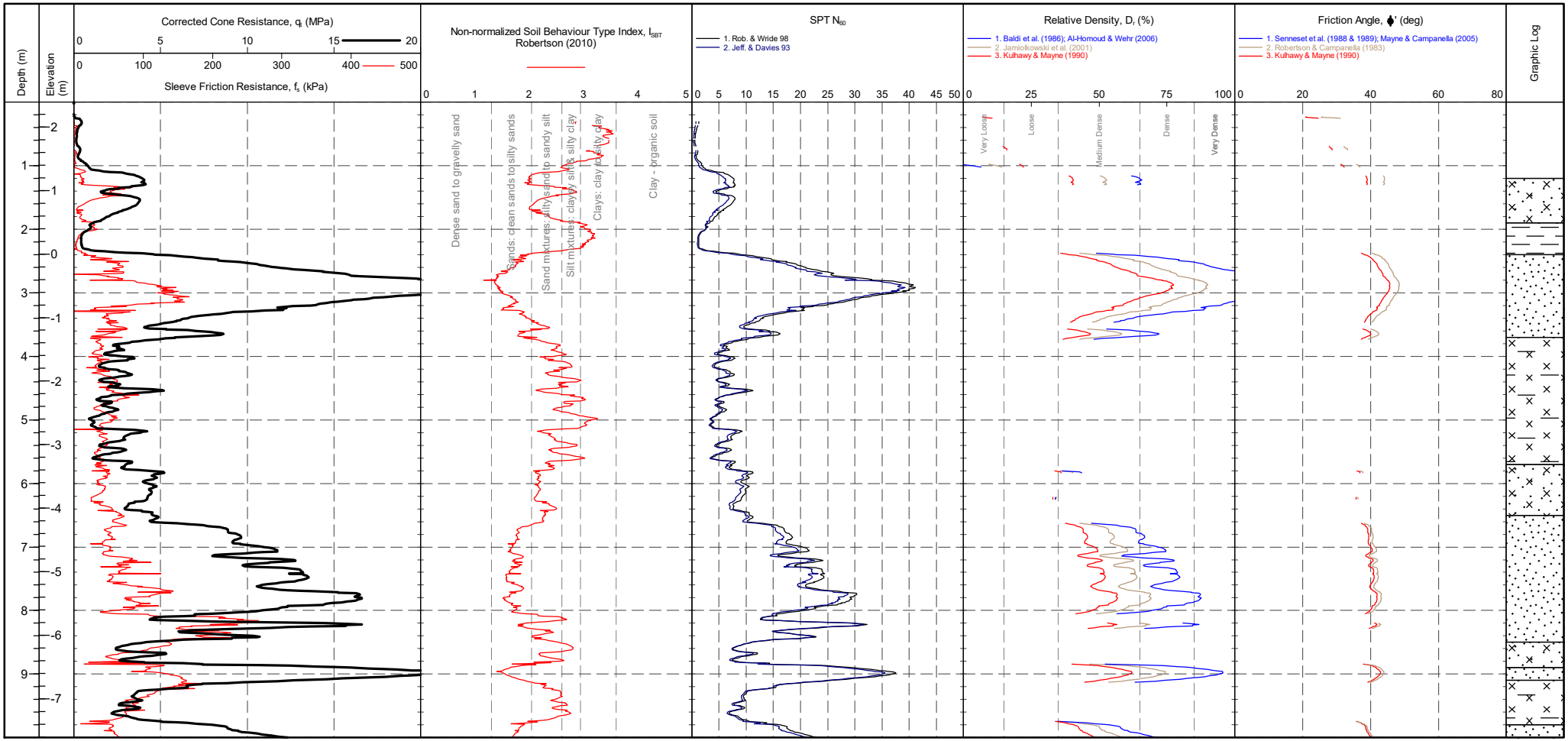
IN SITU SITE INVESTIGATION

Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

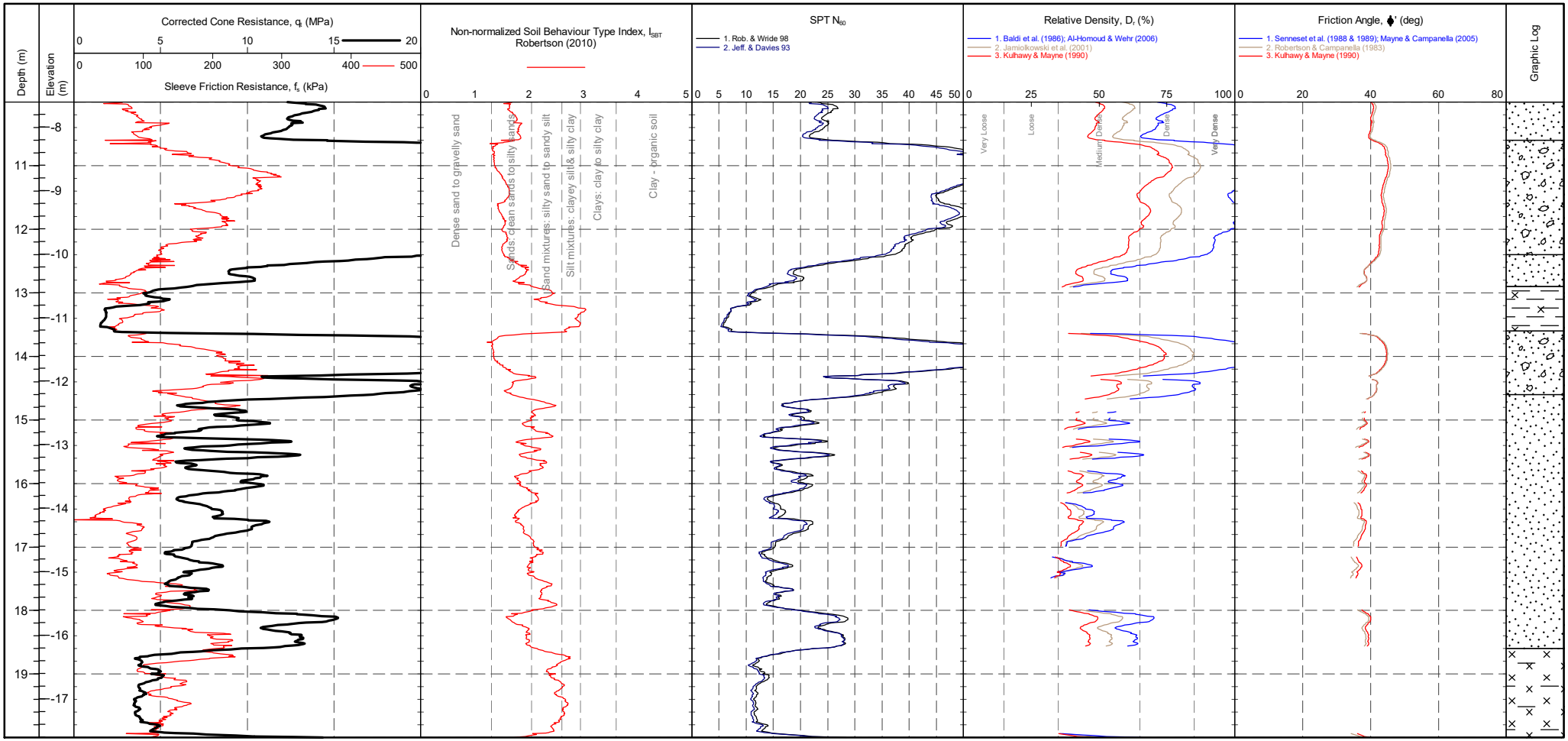
Working with: geosphere environmental ltd

CPT LOG 02

PointID

CPTC-11

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV / -0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV / 0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV

Groundwater Level

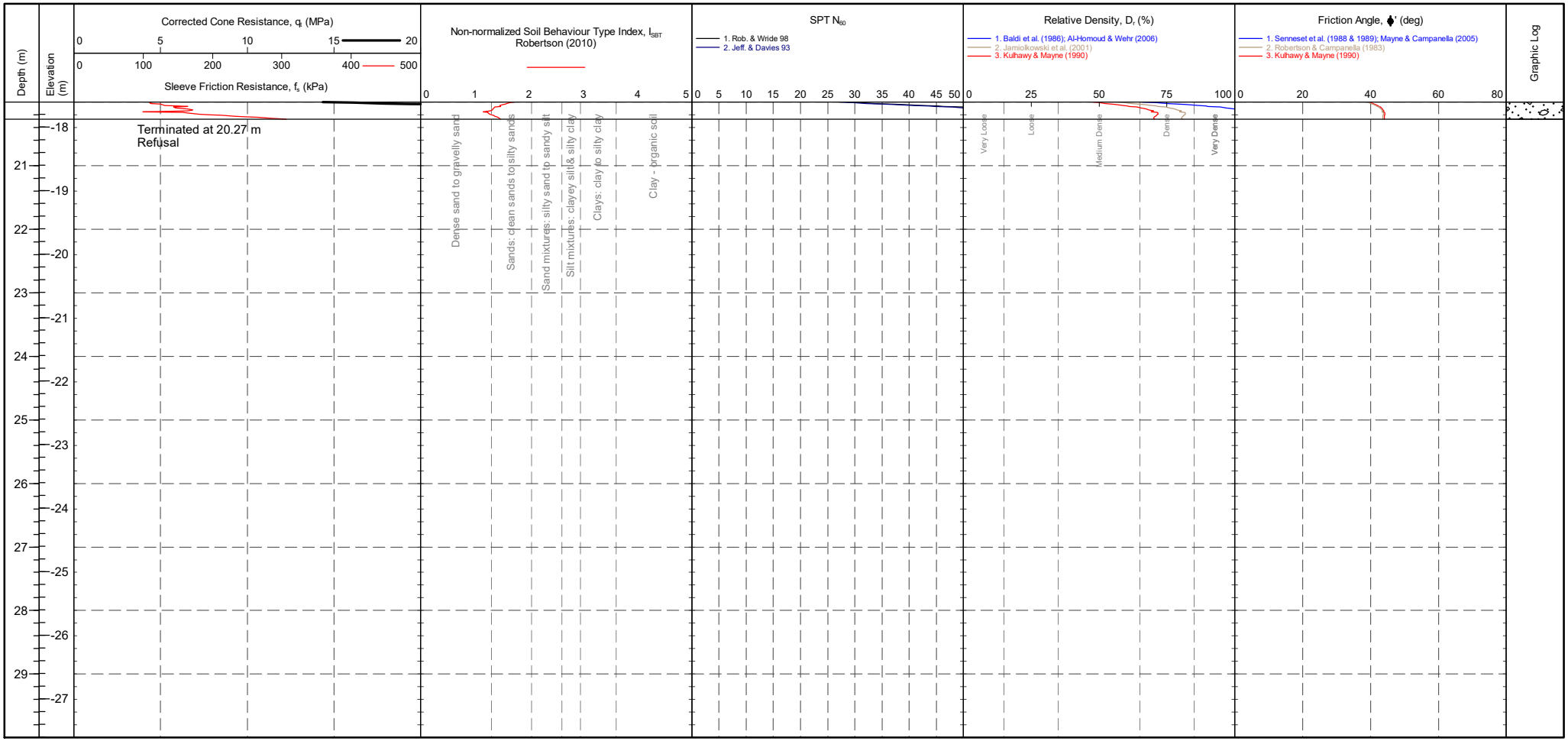
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 02

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	319 mV	318 mV	-0.011 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	X-Y Inclinometer	2479 mV	2436 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

Dissipation Test

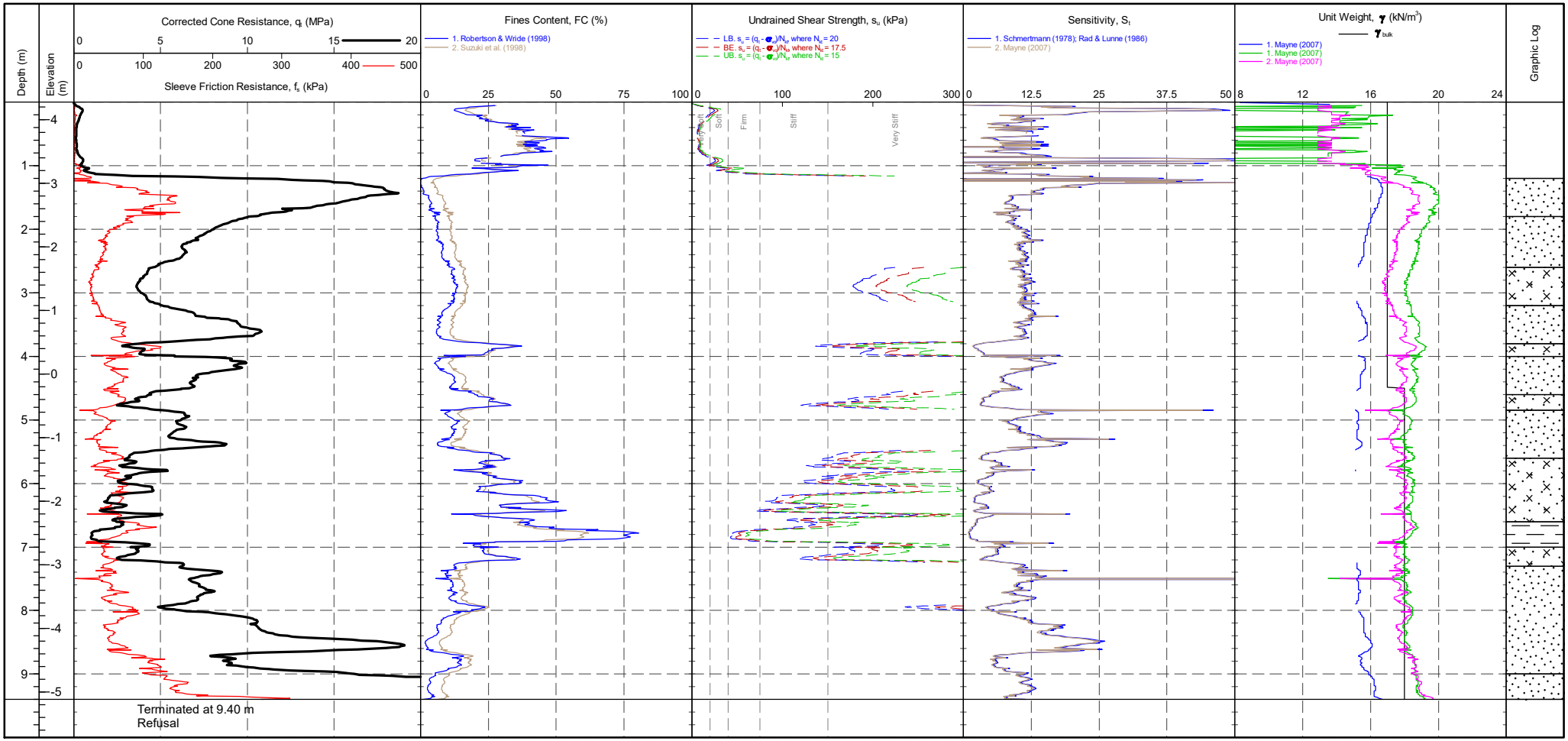
IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID

CPTC-01A

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653755.6 m NORTHING : 293037.8 m ELEVATION : 4.28 m CHECKED BY : LD TERMINATION REASON : Refusal	REMARK Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 10/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	324 mV	0.074 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	289 mV	306 mV	0.013 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-01A	Pore Pressure 2	216 mV	271 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2463 mV	2436 mV	

Groundwater Level

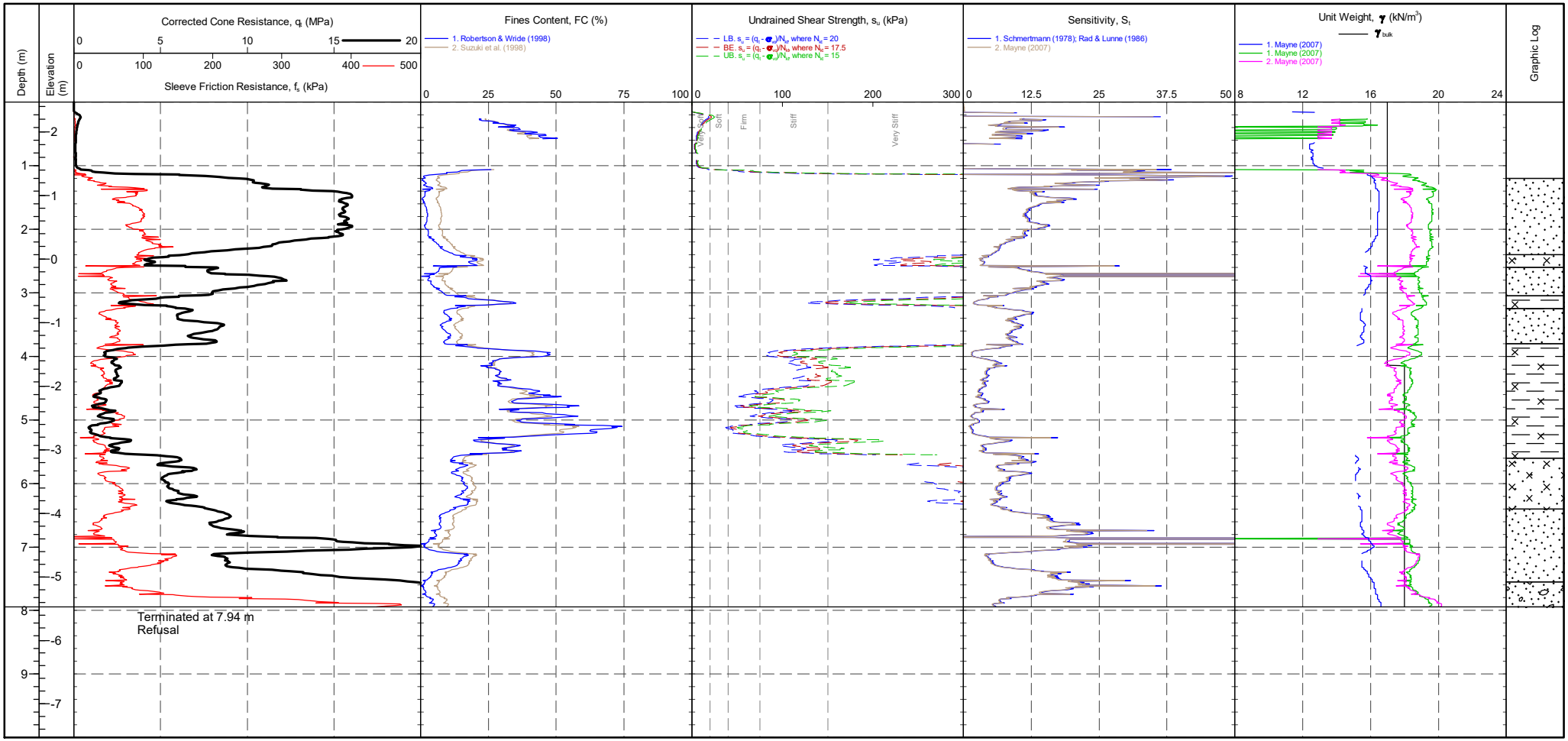
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-02**

CLIENT : Geosphere Environmental	EASTING : 653810.7 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292976.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.47 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	317 mV	320 mV	0.032 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	302 mV	310 mV	0.006 kPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Pore Pressure 2	250 mV	286 mV	0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-02	X-Y Inclinometer	2467 mV	2477 mV	
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild				

Groundwater Level

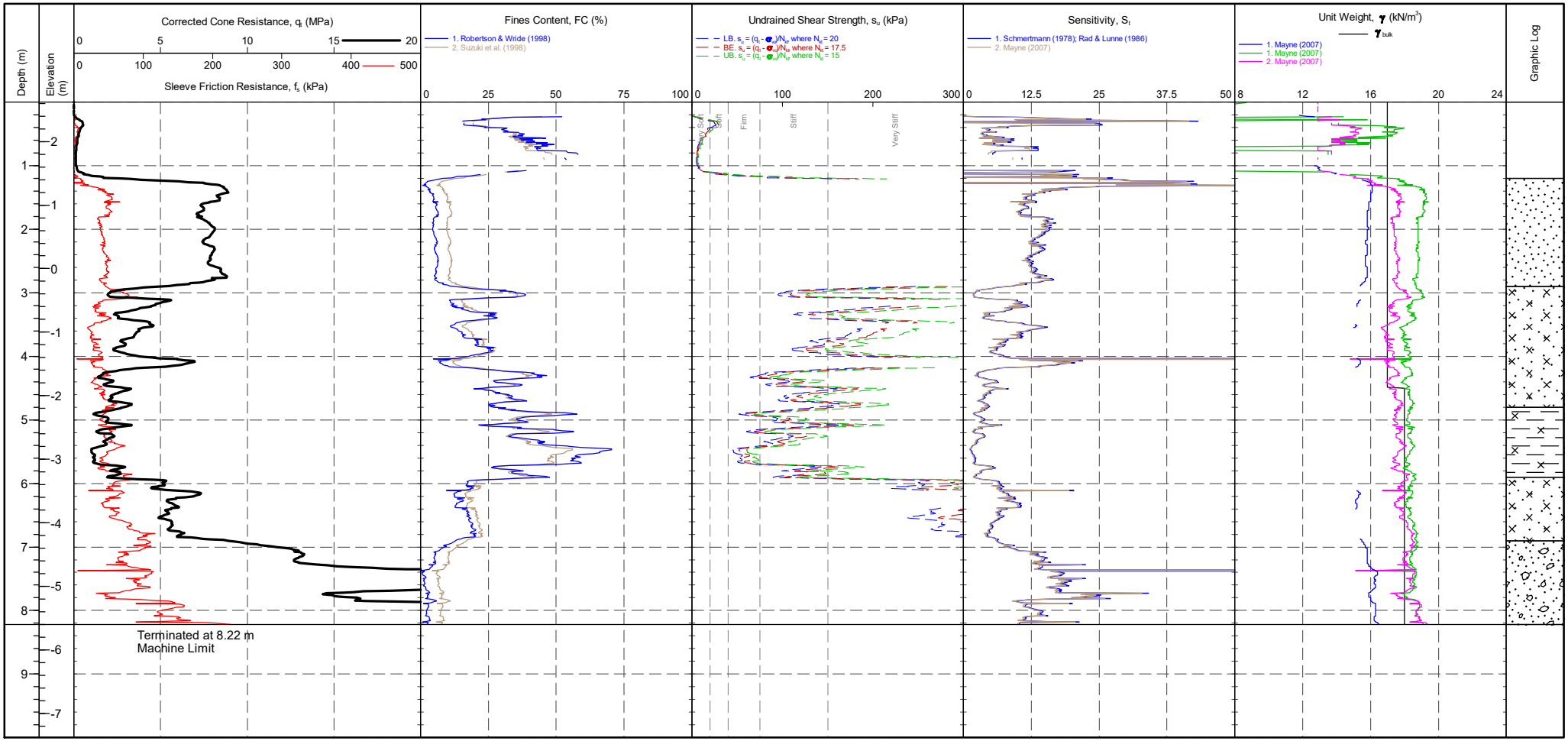
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-03**

CLIENT : Geosphere Environmental	EASTING : 653781.6 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292986.6 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.62 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-03	Pore Pressure 2	268 mV	284 mV	0.005 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2469 mV	2484 mV	

Groundwater Level

Dissipation Test

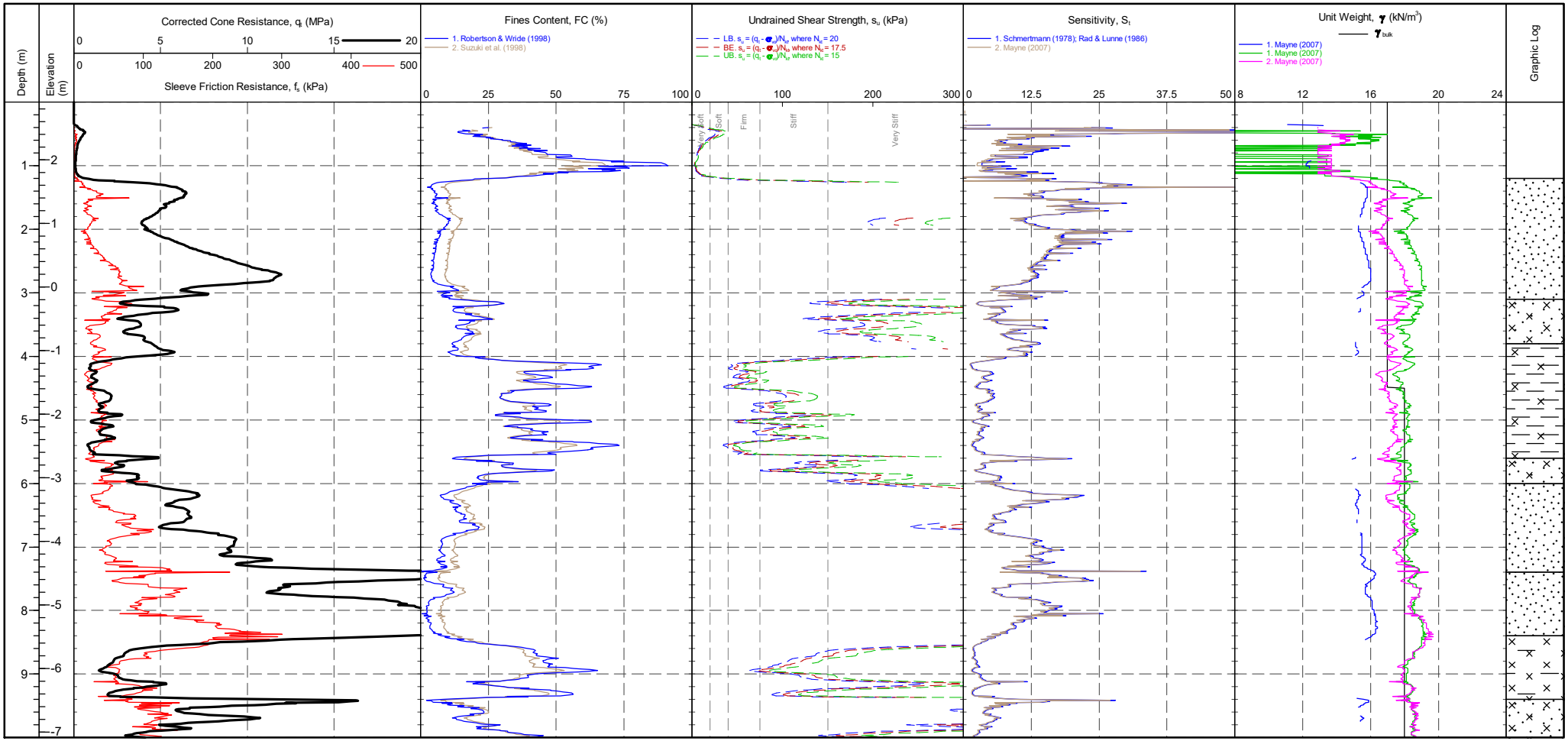
IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID

CPTC-04

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653809.4 m NORTHING : 293019.1 m ELEVATION : 2.91 m CHECKED BY : LD TERMINATION REASON : Target depth	REMARK Test completed at target depth.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 10/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

Groundwater Level

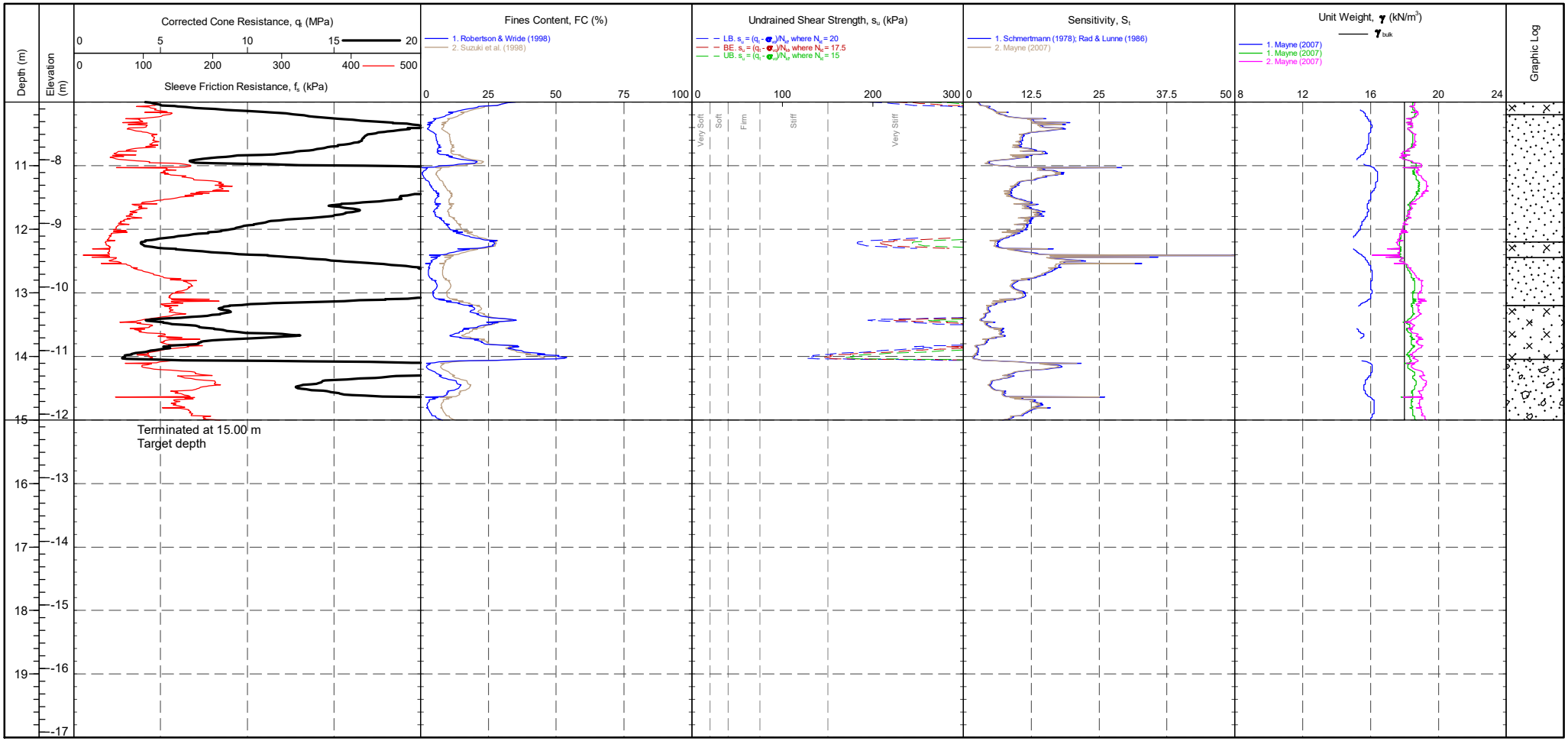
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-04**

CLIENT : Geosphere Environmental	EASTING : 653809.4 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 293019.1 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.91 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	299 mV	300 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-04	Pore Pressure 2	231 mV	315 mV	0.024 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2459 mV	2388 mV	

Groundwater Level

Dissipation Test

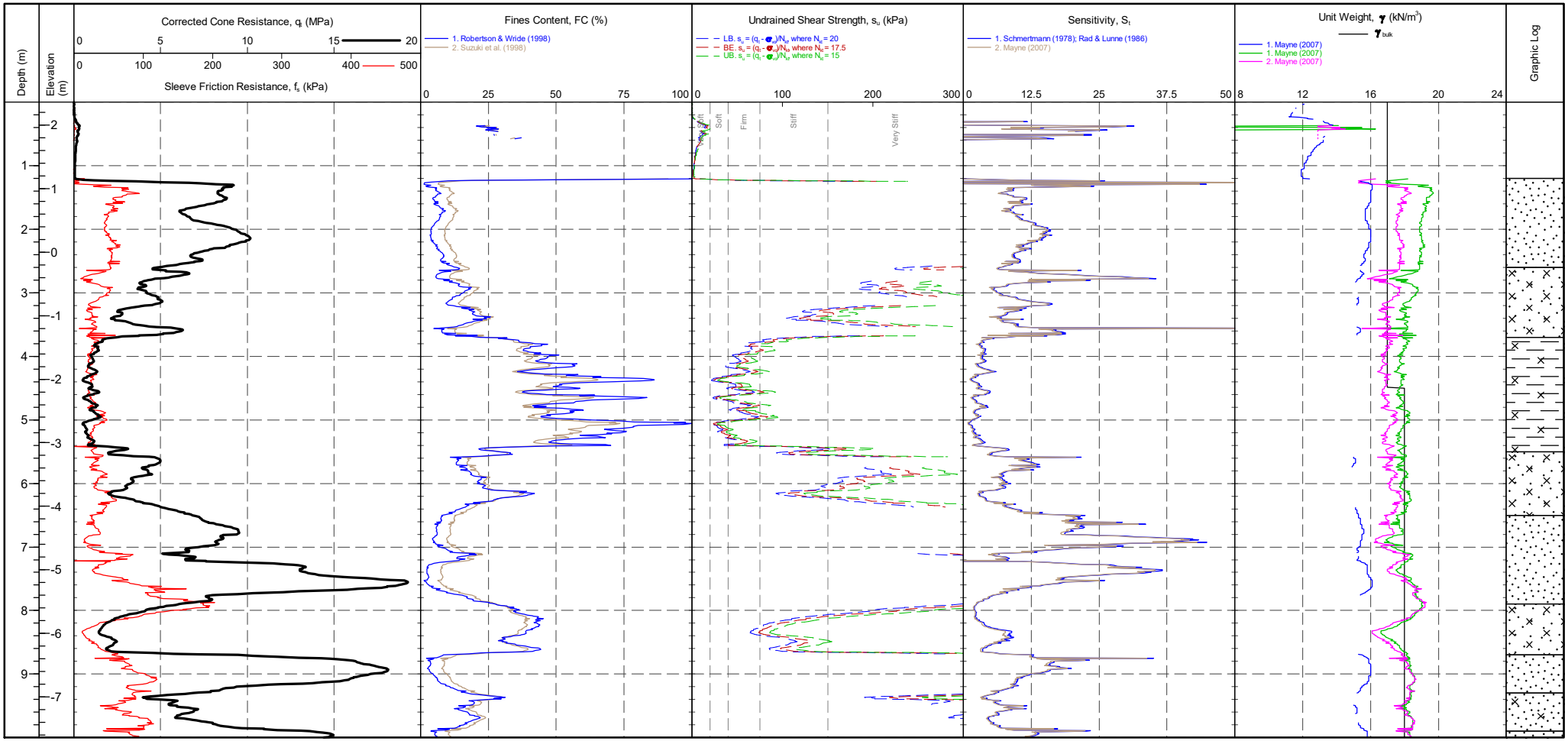
IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID

CPTC-05

CLIENT : Geosphere Environmental	EASTING	: 653834.7 m	REMARK	SHEET	: 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING	: 292996.4 m	Test refused on tip resistance.	STATUS	: Final
LOCATION : Lowerstoft	ELEVATION	: 2.36 m		TEST DATE	: 10/08/2017
PROJECT No. : 1170332	CHECKED BY	: LD		PLOT DATE	: 25/08/2017
	TERMINATION REASON	: Refusal		METHOD	: ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV	0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION

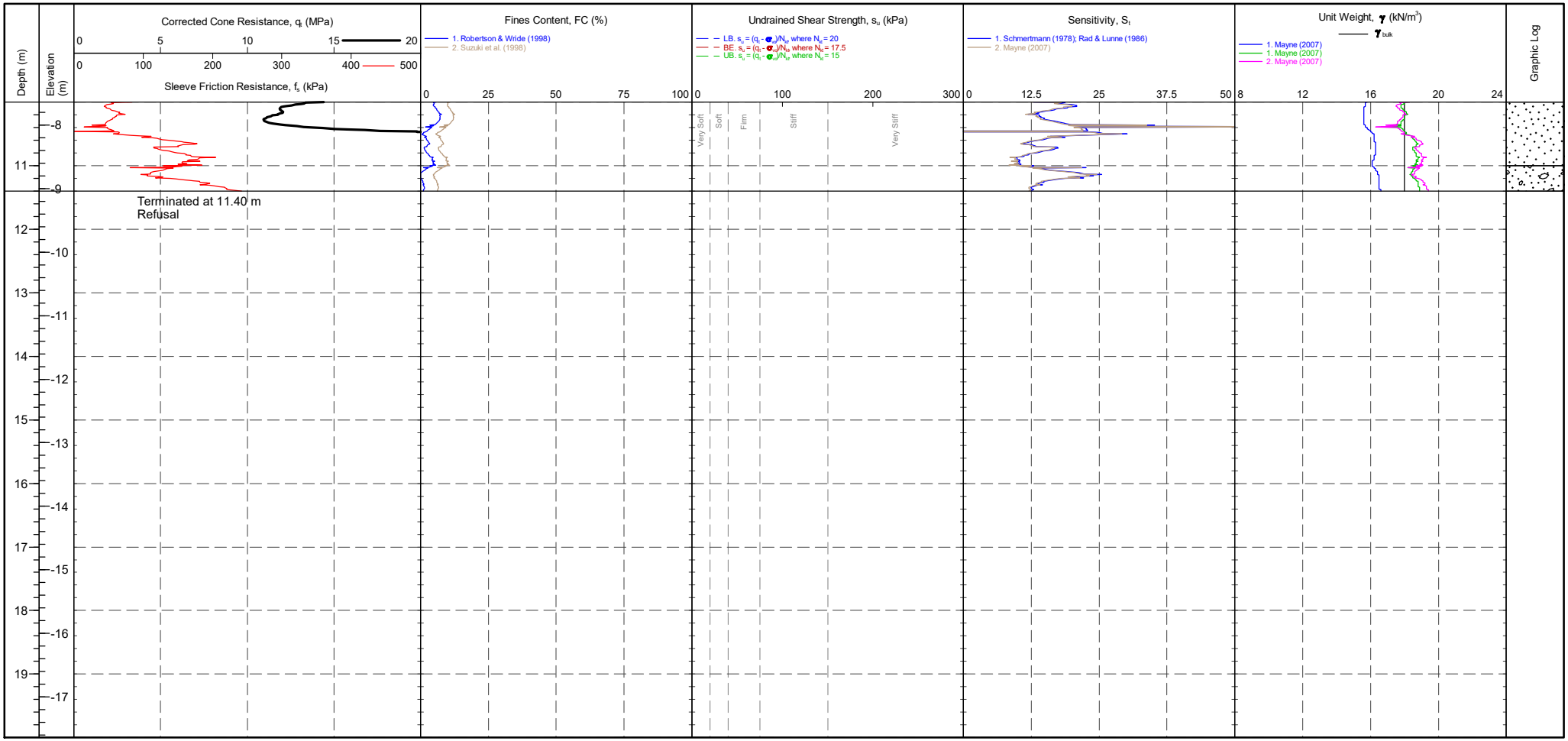
Working with: geosphere environmental ltd

CPT LOG 03

PointID

CPTC-05

CLIENT : Geosphere Environmental	EASTING : 653834.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292996.4 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.36 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	318 mV	0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	308 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-05	Pore Pressure 2	251 mV	341 mV	0.026 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2473 mV	2479 mV	

Groundwater Level

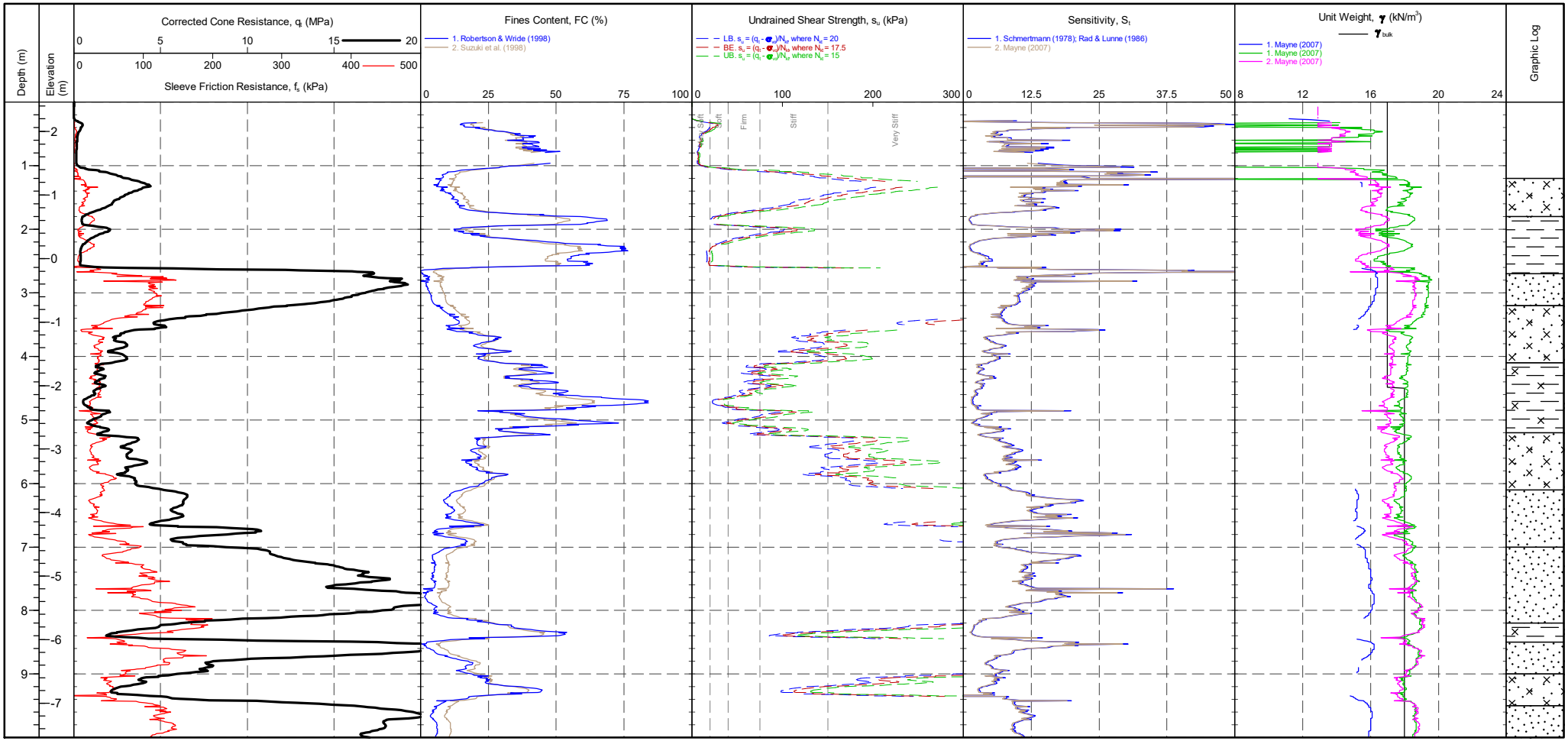
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

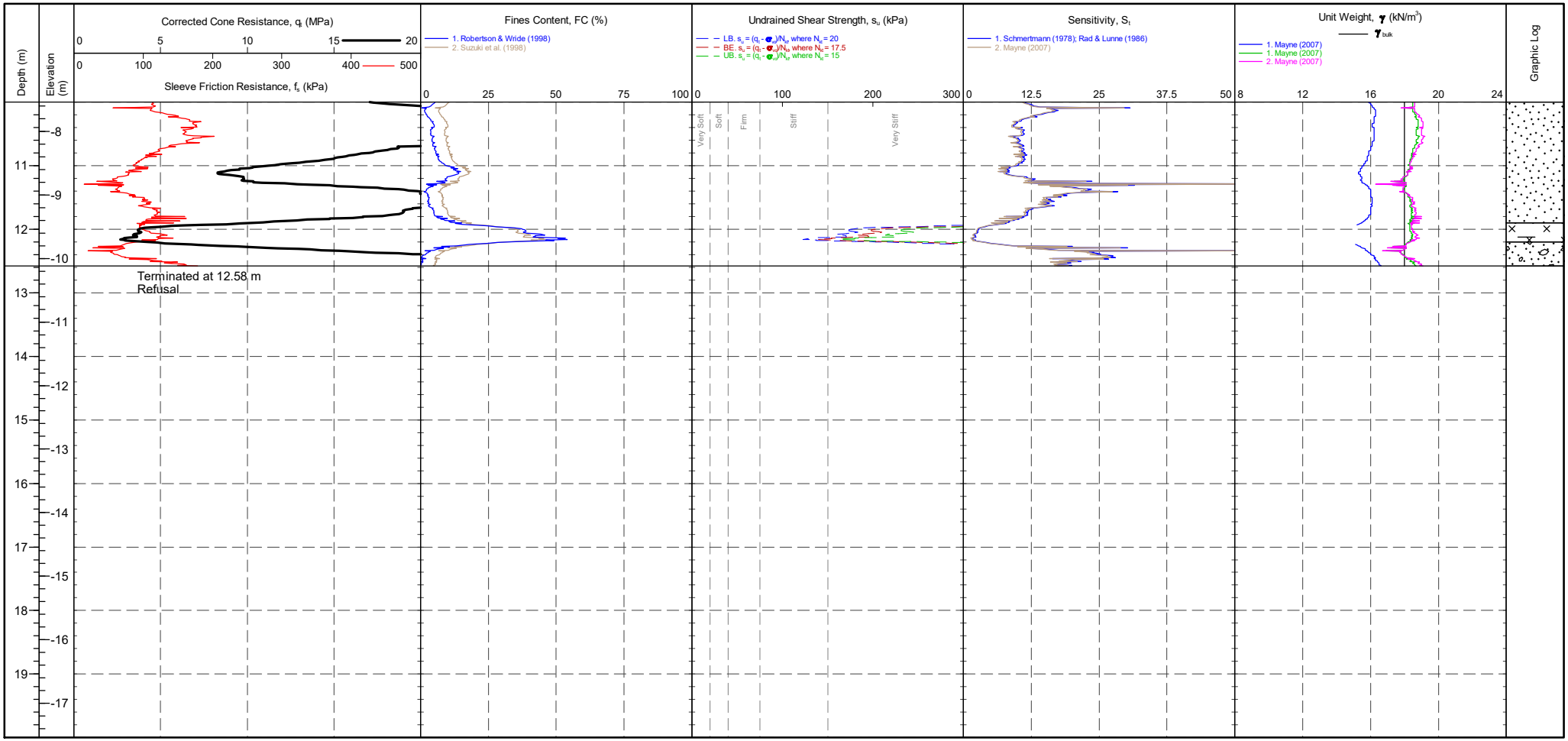
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-06**

CLIENT : Geosphere Environmental	EASTING : 653835.7 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292965.3 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.46 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	318 mV	0 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	305 mV	0 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-06	Pore Pressure 2	221 mV	317 mV	0.028 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2484 mV	2486 mV	

Groundwater Level

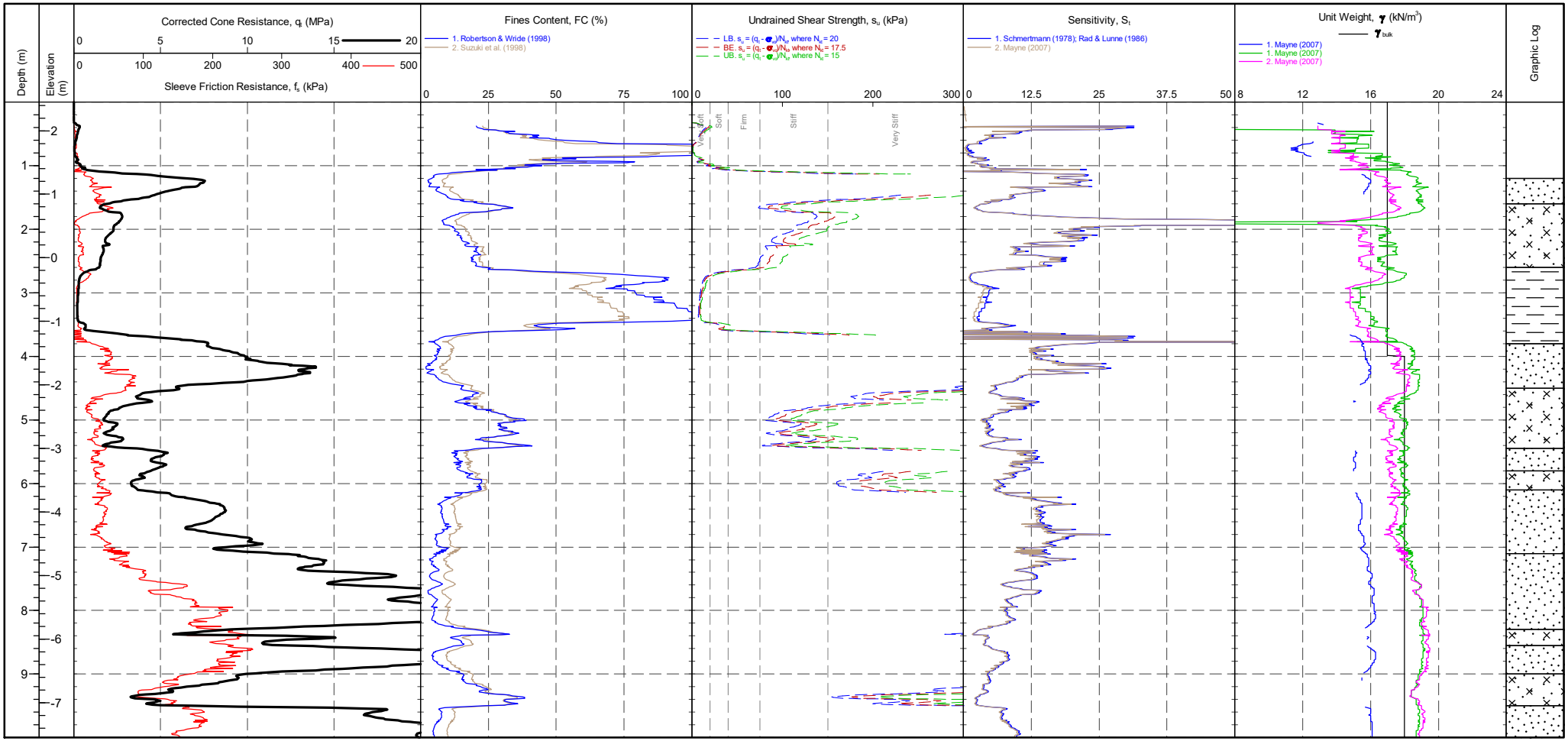
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-07**

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653858.5 m NORTHING : 292968.4 m ELEVATION : 2.45 m CHECKED BY : LD TERMINATION REASON : Machine Limit	REMARK Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 11/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV / -0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV / 0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV

Groundwater Level

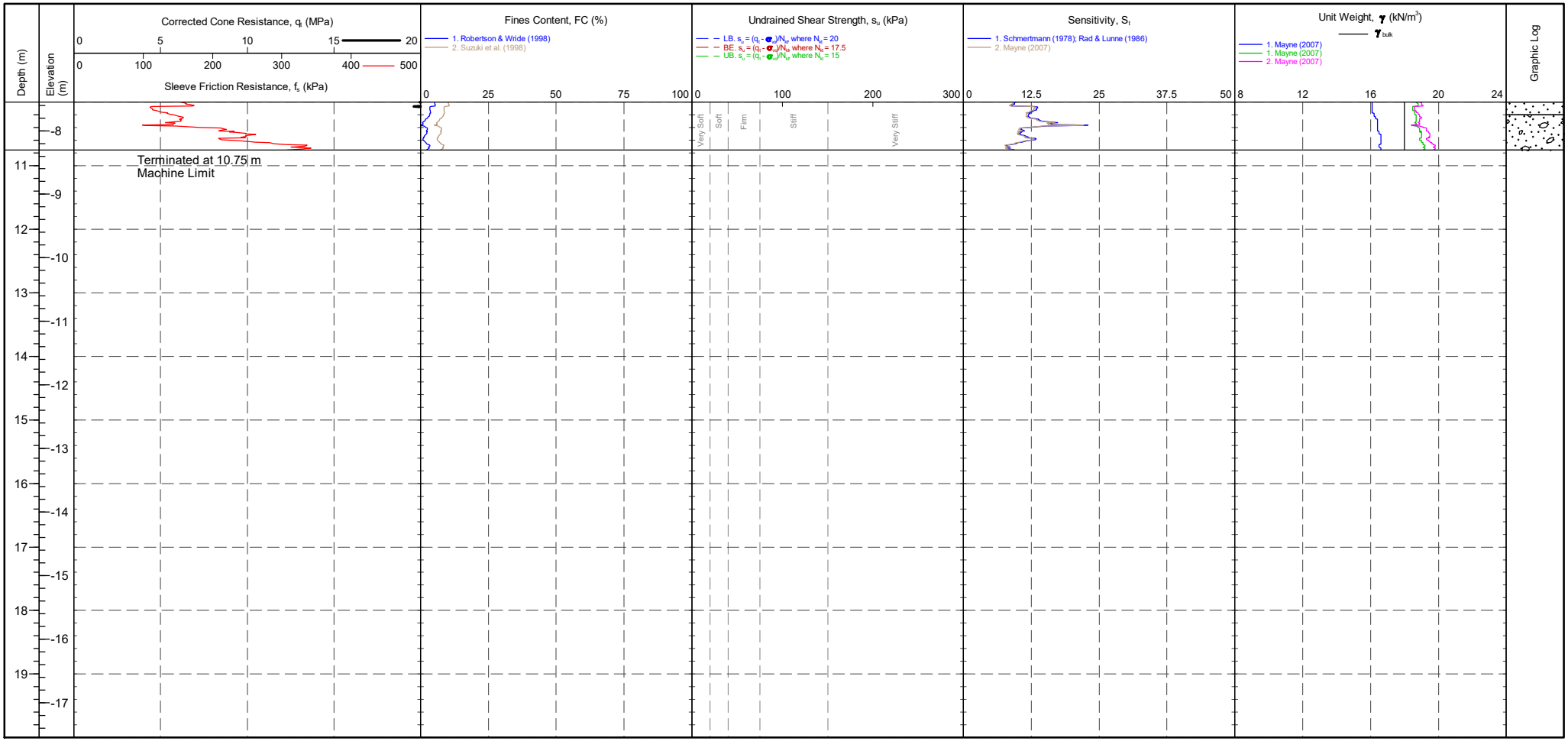
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-07**

CLIENT : Geosphere Environmental	EASTING : 653858.5 m	REMARK	SHEET : 2 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292968.4 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.45 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	315 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	304 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-07	Pore Pressure 2	211 mV	269 mV	0.017 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2473 mV	2490 mV	

Groundwater Level

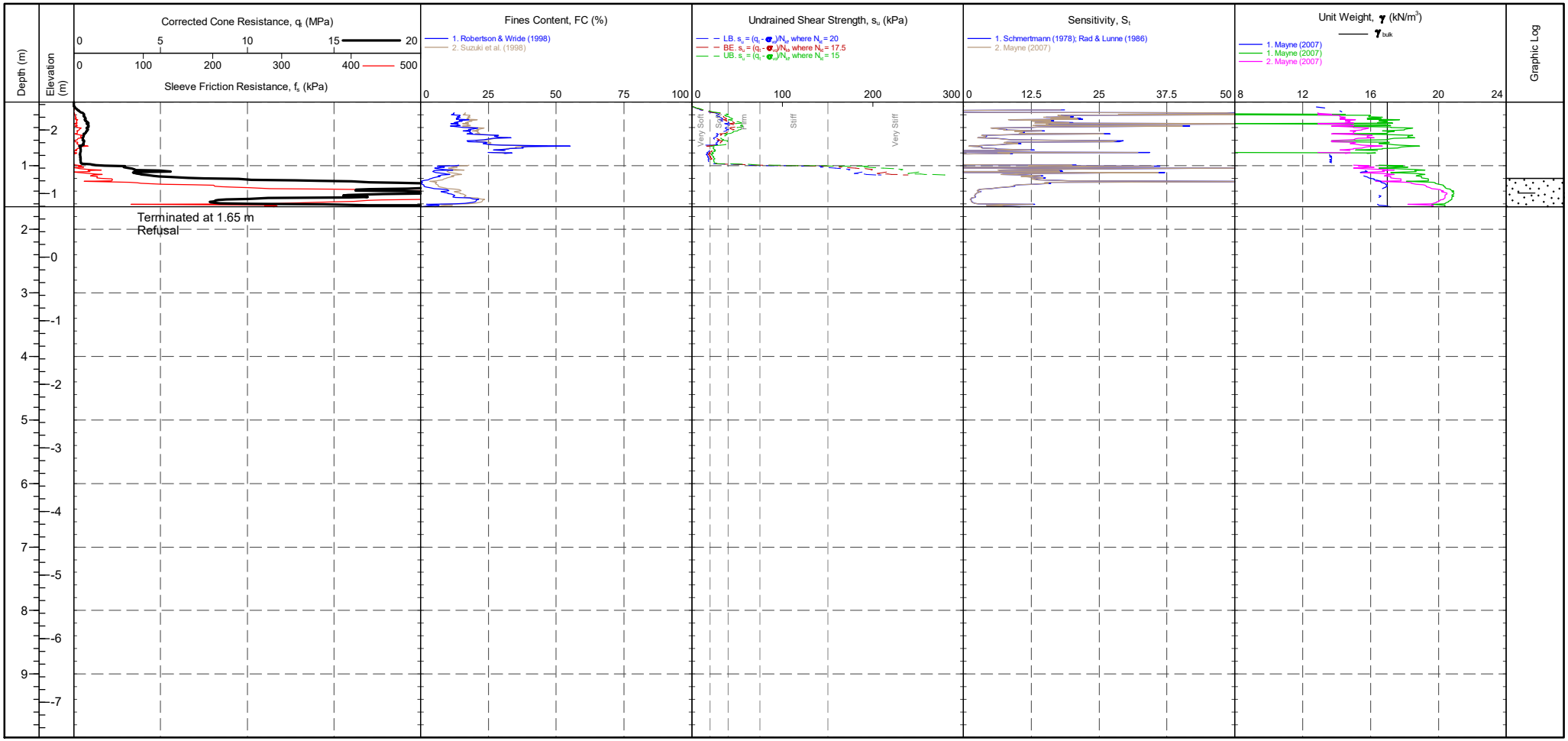
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-08**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 1
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	317 mV	311 mV	-0.064 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	309 mV	0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08	Pore Pressure 2	238 mV	263 mV	0.007 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2484 mV	

Groundwater Level

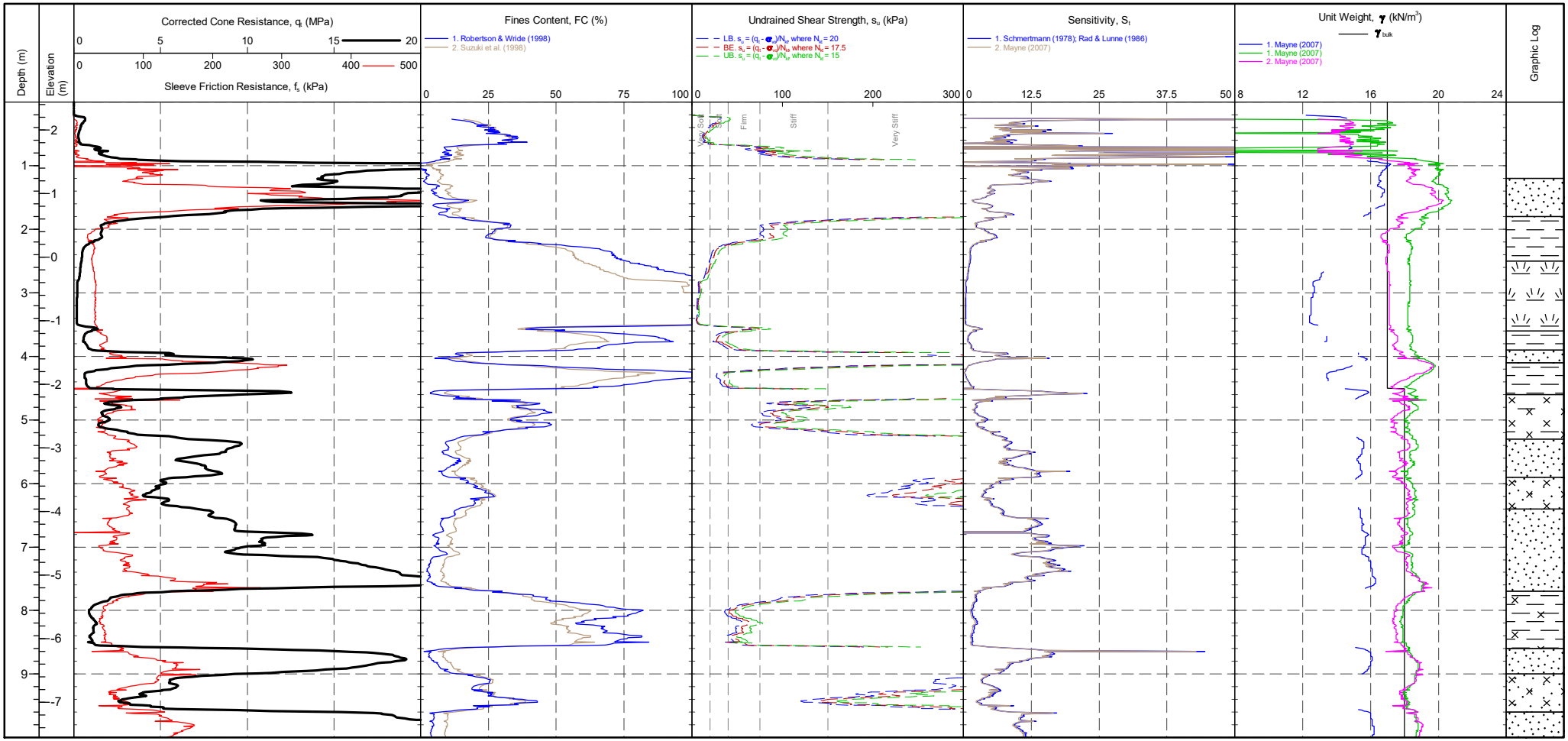
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-08A**

CLIENT : Geosphere Environmental	EASTING : 653888.0 m	REMARK	SHEET : 1 OF 2
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292957.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.44 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	318 mV	314 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	302 mV	317 mV	0.011 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A	Pore Pressure 2	217 mV	250 mV	0.01 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2488 mV	2510 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

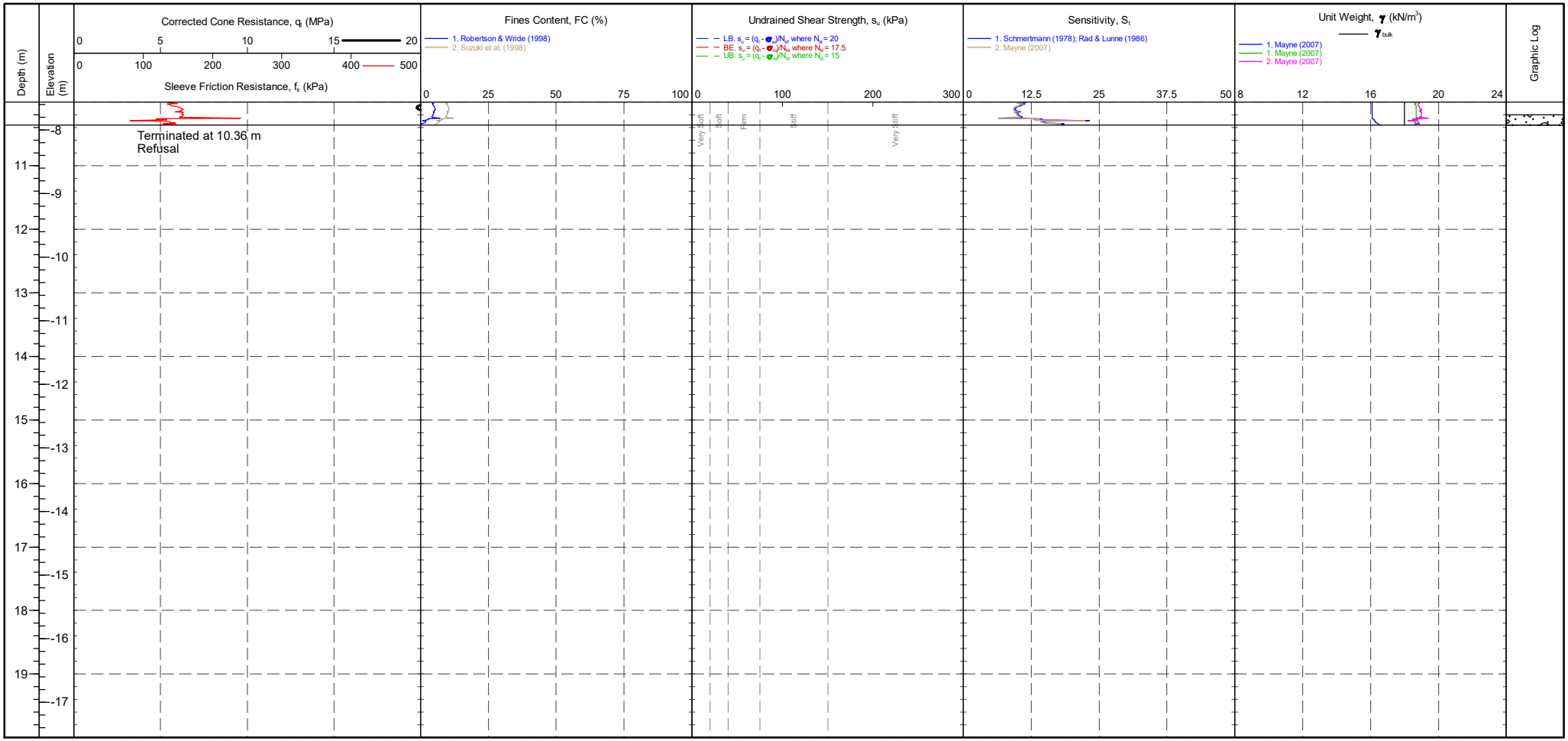
PointID **CPTC-08A**

CLIENT : Geosphere Environmental
PROJECT : Lake Lothing, Lowerstoft
LOCATION : Lowerstoft
PROJECT No. : 1170332

EASTING : 653888.0 m
NORTHING : 292957.6 m
ELEVATION : 2.44 m
CHECKED BY : LD
TERMINATION REASON : Refusal

REMARK
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 11/08/2017
PLOT DATE : 25/08/2017
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: LS & DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-08A		
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	318 mV	314 mV	-0.043 MPa
Sleeve	302 mV	317 mV	0.011 kPa
Pore Pressure 2	217 mV	250 mV	0.01 kPa
X-Y Inclinometer	2488 mV	2510 mV	

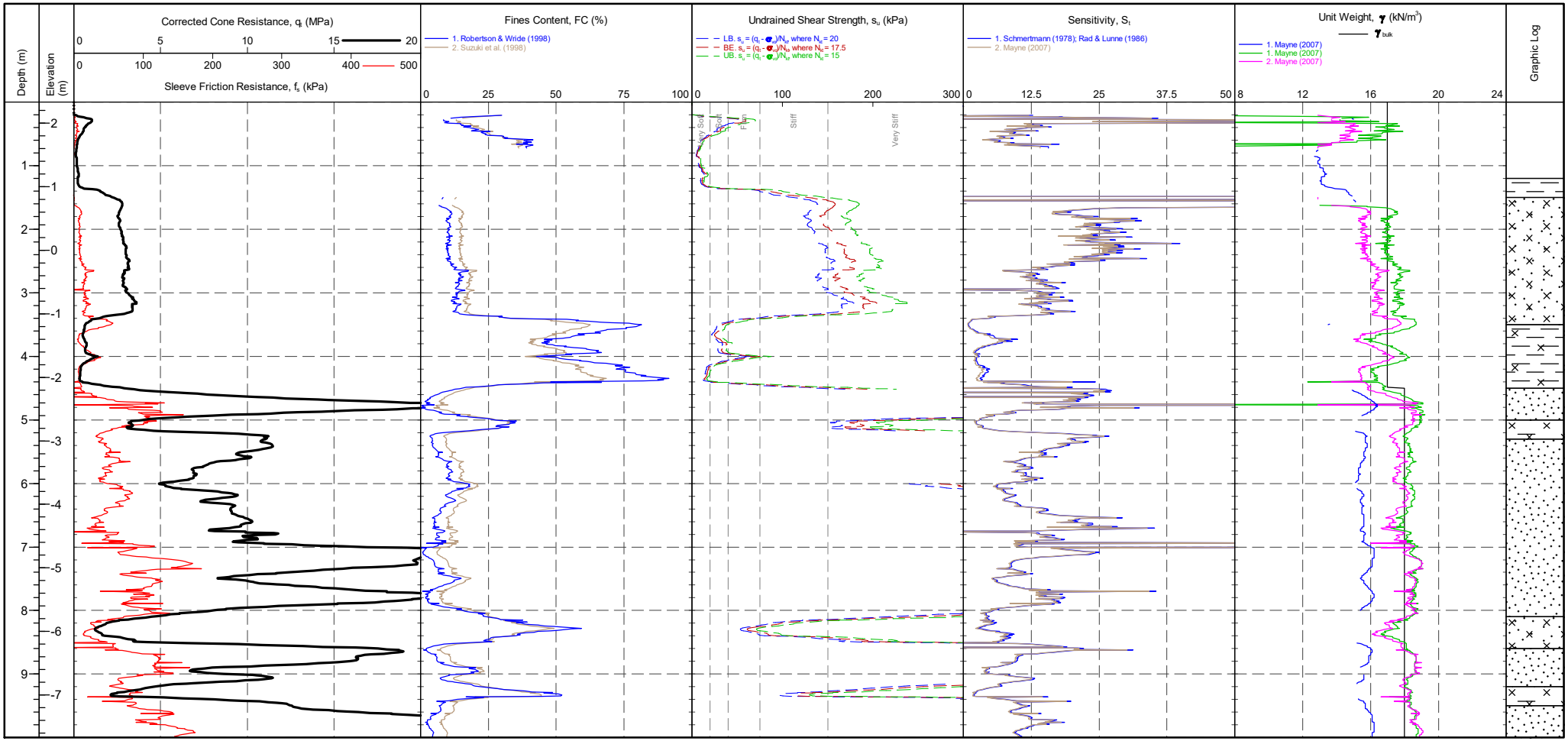
Groundwater Level
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 1 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

Groundwater Level

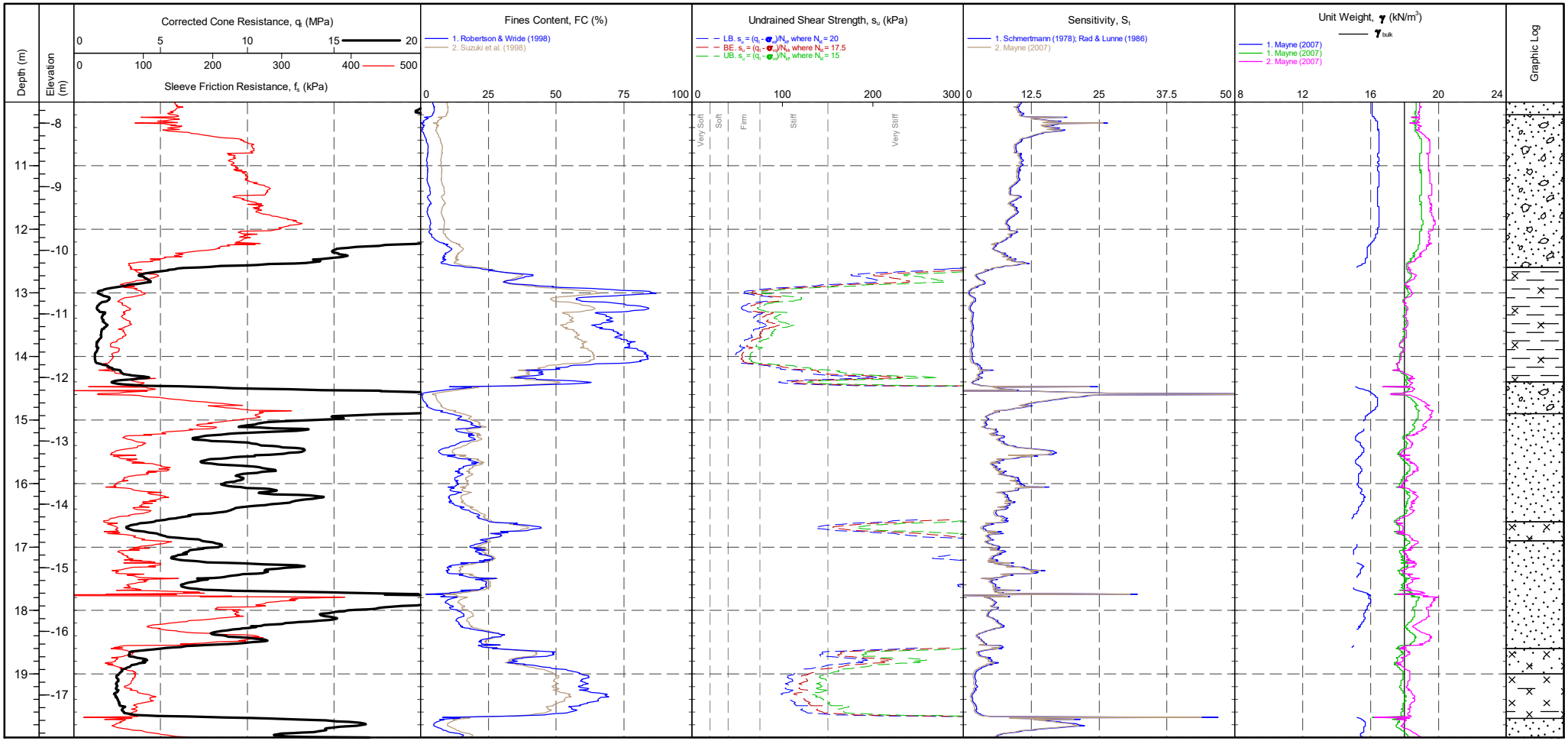
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

Groundwater Level

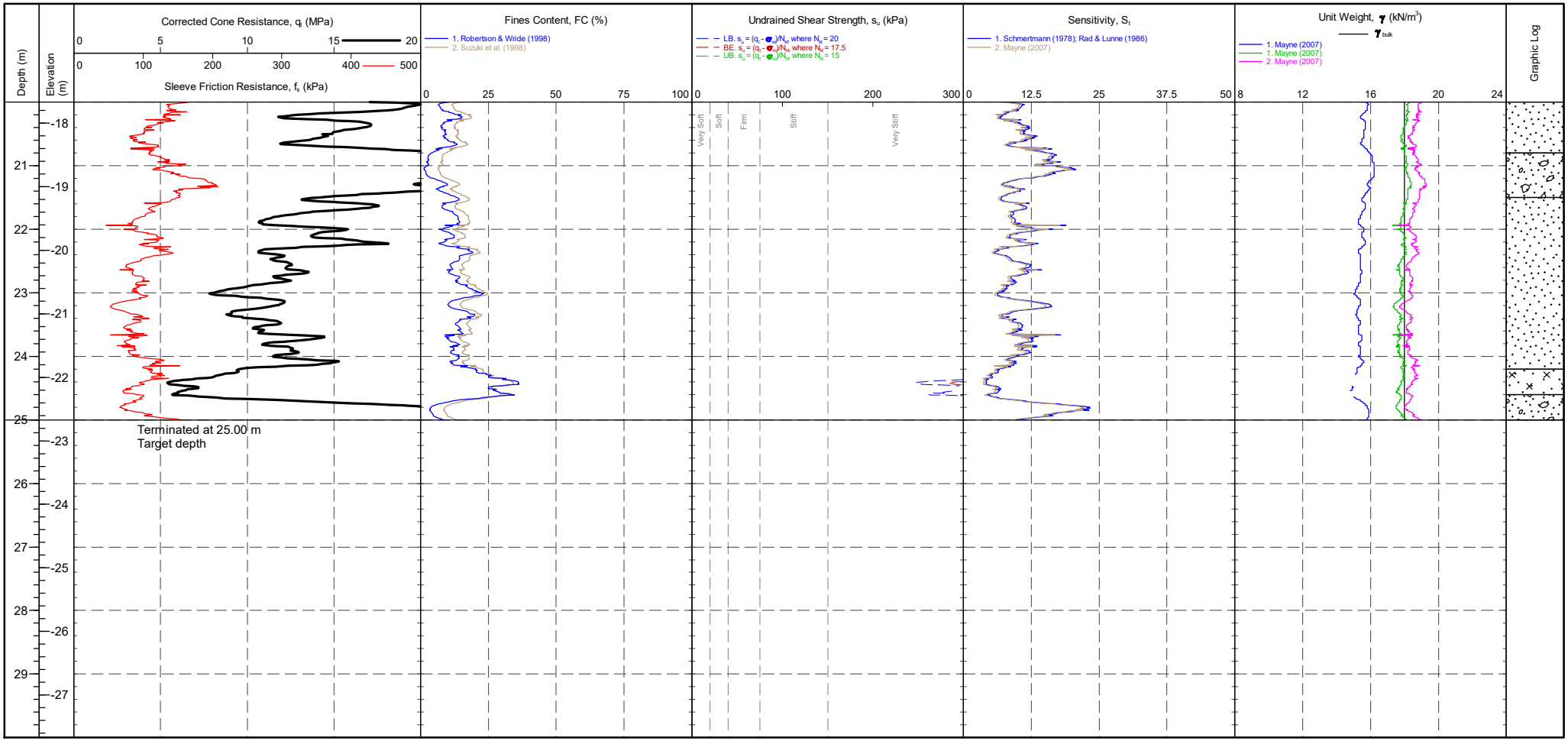
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-09**

CLIENT : Geosphere Environmental	EASTING : 653882.9 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 292937.4 m	Test completed at target depth.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.33 m		TEST DATE : 11/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Target depth		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	315 mV	318 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	306 mV	301 mV	-0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-09	Pore Pressure 2	228 mV	305 mV	0.022 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Mild	X-Y Inclinometer	2492 mV	2490 mV	

Groundwater Level

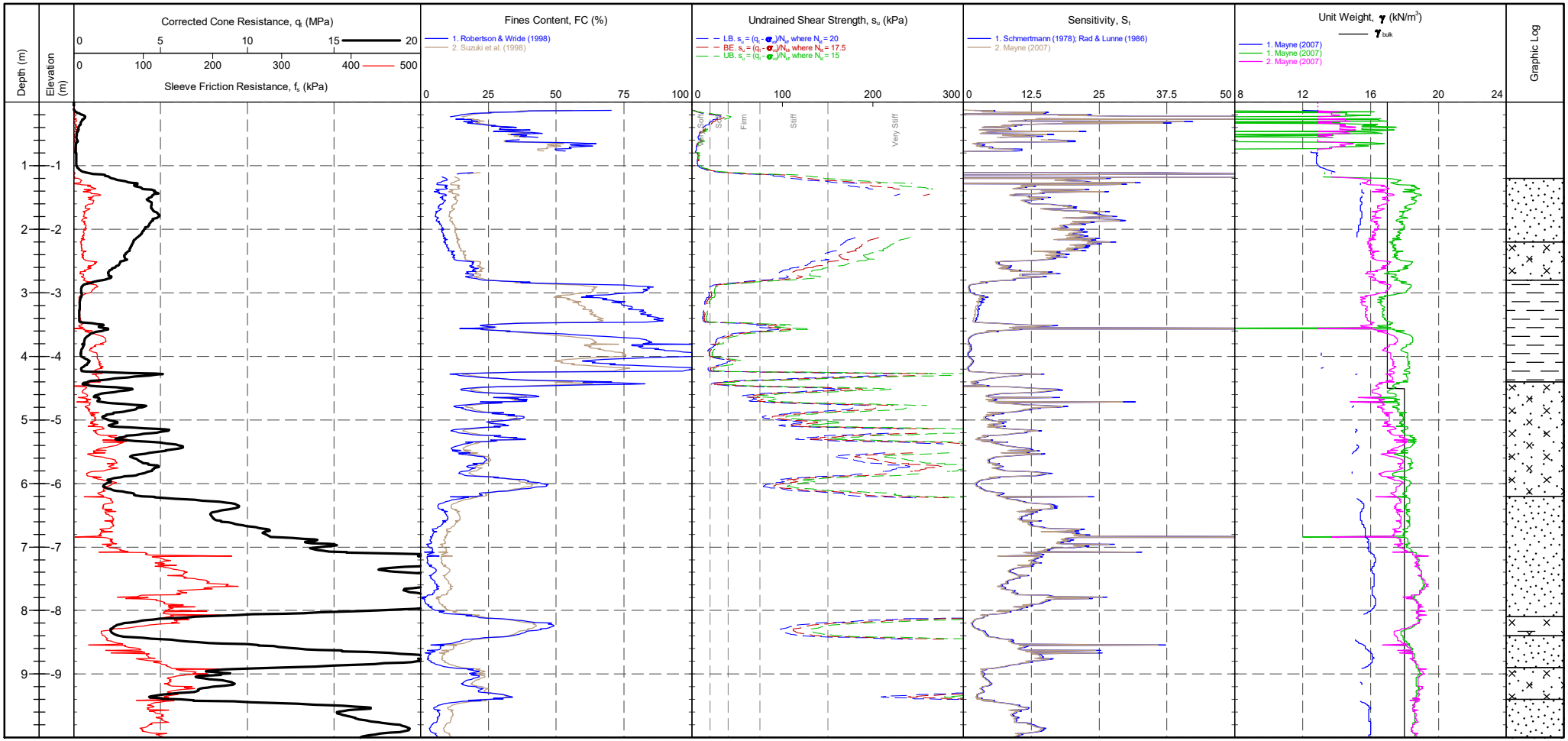
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-10**

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : NORTHING : ELEVATION : 0.00 m CHECKED BY : LD TERMINATION REASON : Refusal	REMARK Test refused on tip resistance.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 10/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

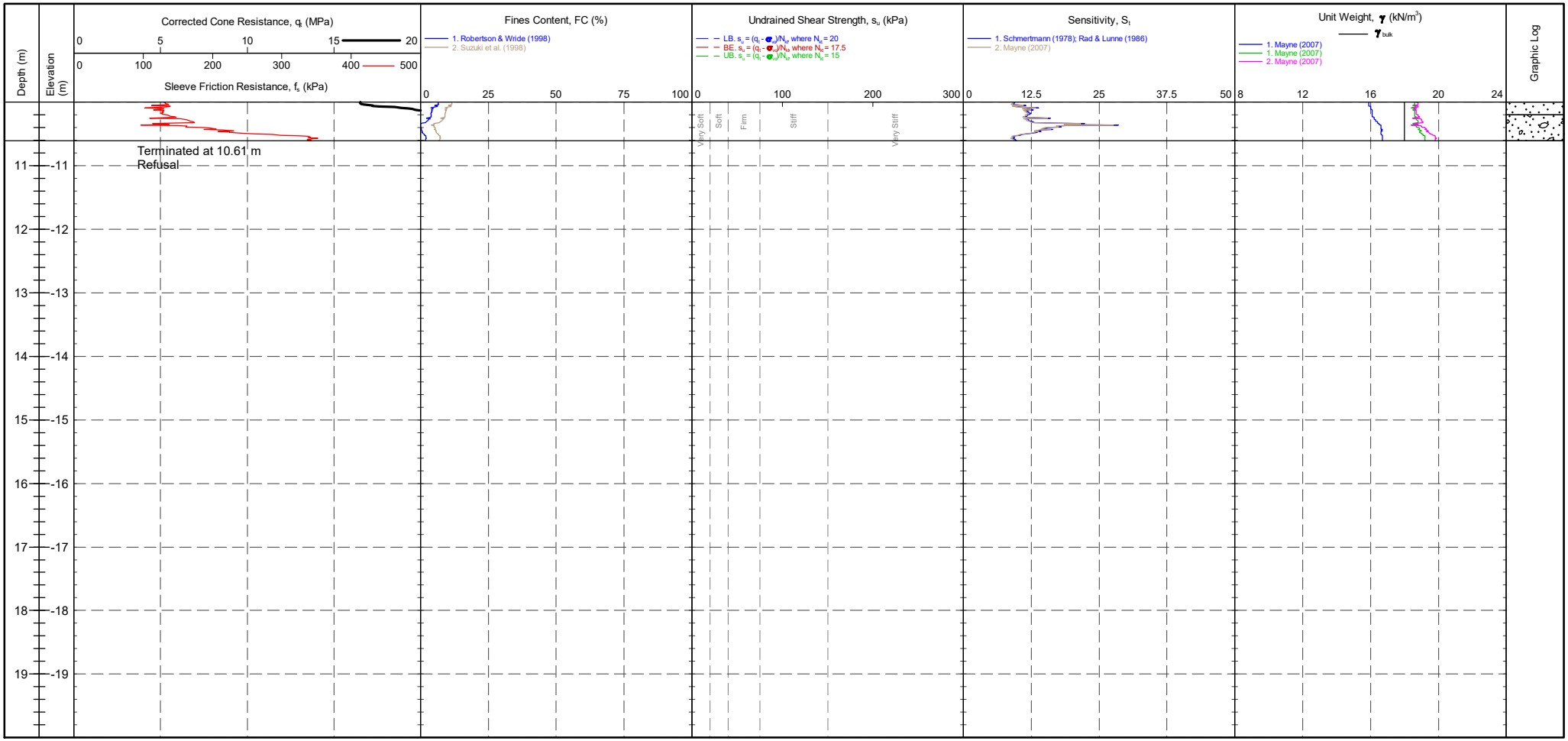
PointID **CPTC-10**

CLIENT : Geosphere Environmental
PROJECT : Lake Lothing, Lowerstoft
LOCATION : Lowerstoft
PROJECT No. : 1170332

EASTING :
NORTHING :
ELEVATION : 0.00 m
CHECKED BY : LD
TERMINATION REASON : Refusal

REMARK
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 10/08/2017
PLOT DATE : 25/08/2017
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	321 mV	0.021 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	305 mV	310 mV	0.004 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-10	Pore Pressure 2	255 mV	247 mV	-0.002 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2485 mV	2477 mV	

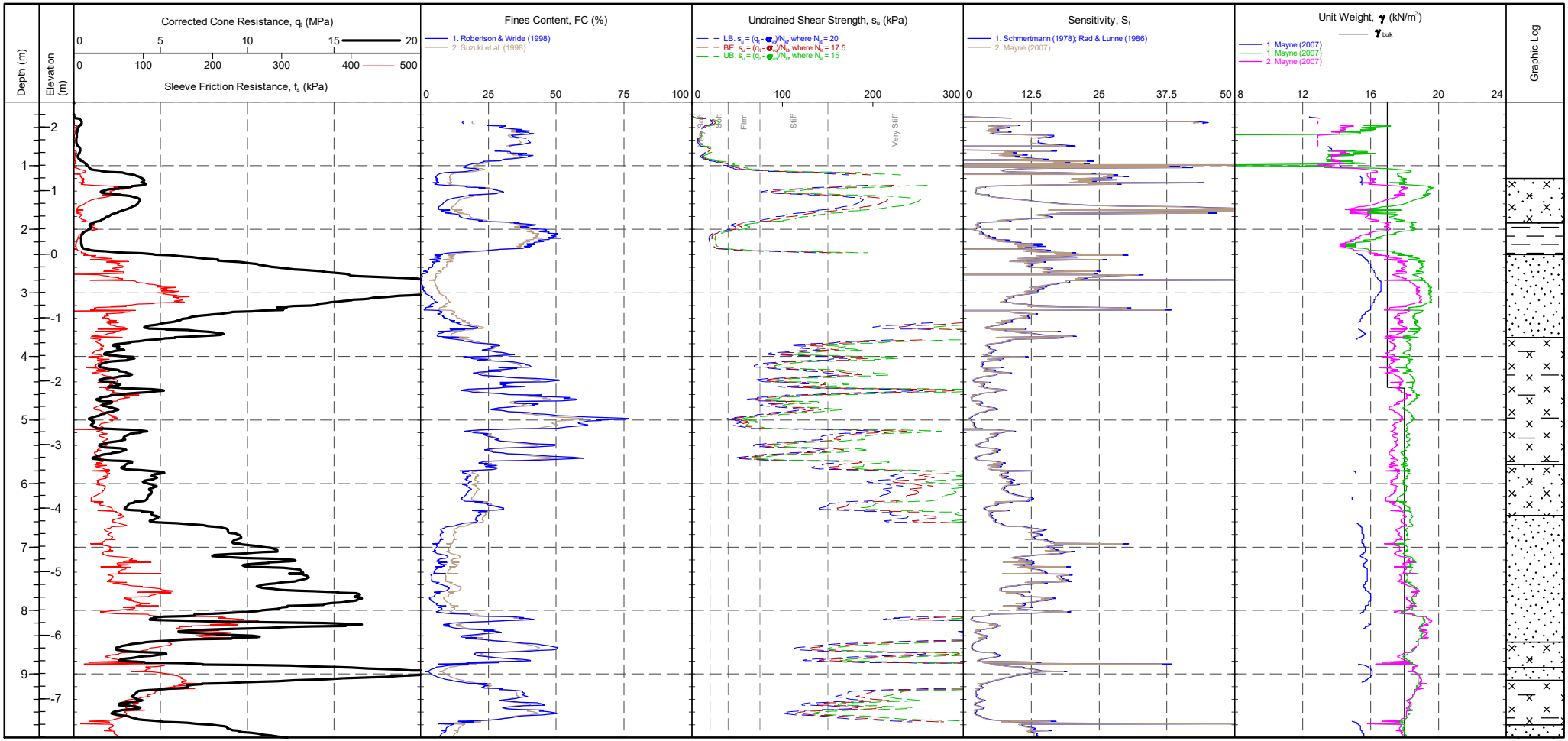
Groundwater Level
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-11**

CLIENT : Geosphere Environmental PROJECT : Lake Lothing, Lowerstoft LOCATION : Lowerstoft PROJECT No. : 1170332	EASTING : 653918.2 m NORTHING : 29234.5 m ELEVATION : 2.39 m CHECKED BY : LD TERMINATION REASON : Refusal	REMARK Test refused on tip resistance.	SHEET : 1 OF 3 STATUS : Final TEST DATE : 10/08/2017 PLOT DATE : 25/08/2017 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV / -0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV / -0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV / 0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV

Groundwater Level

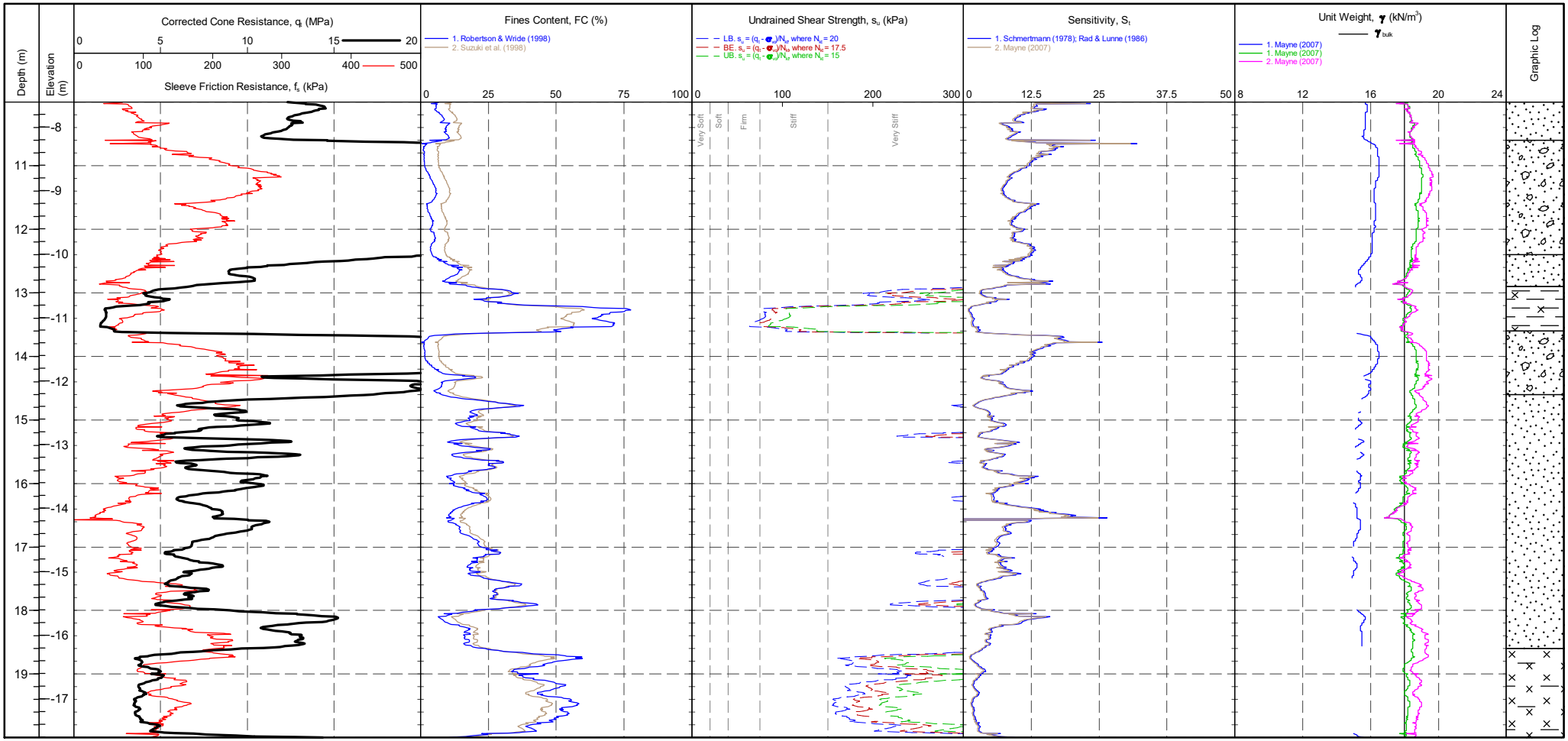
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 2 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

Groundwater Level

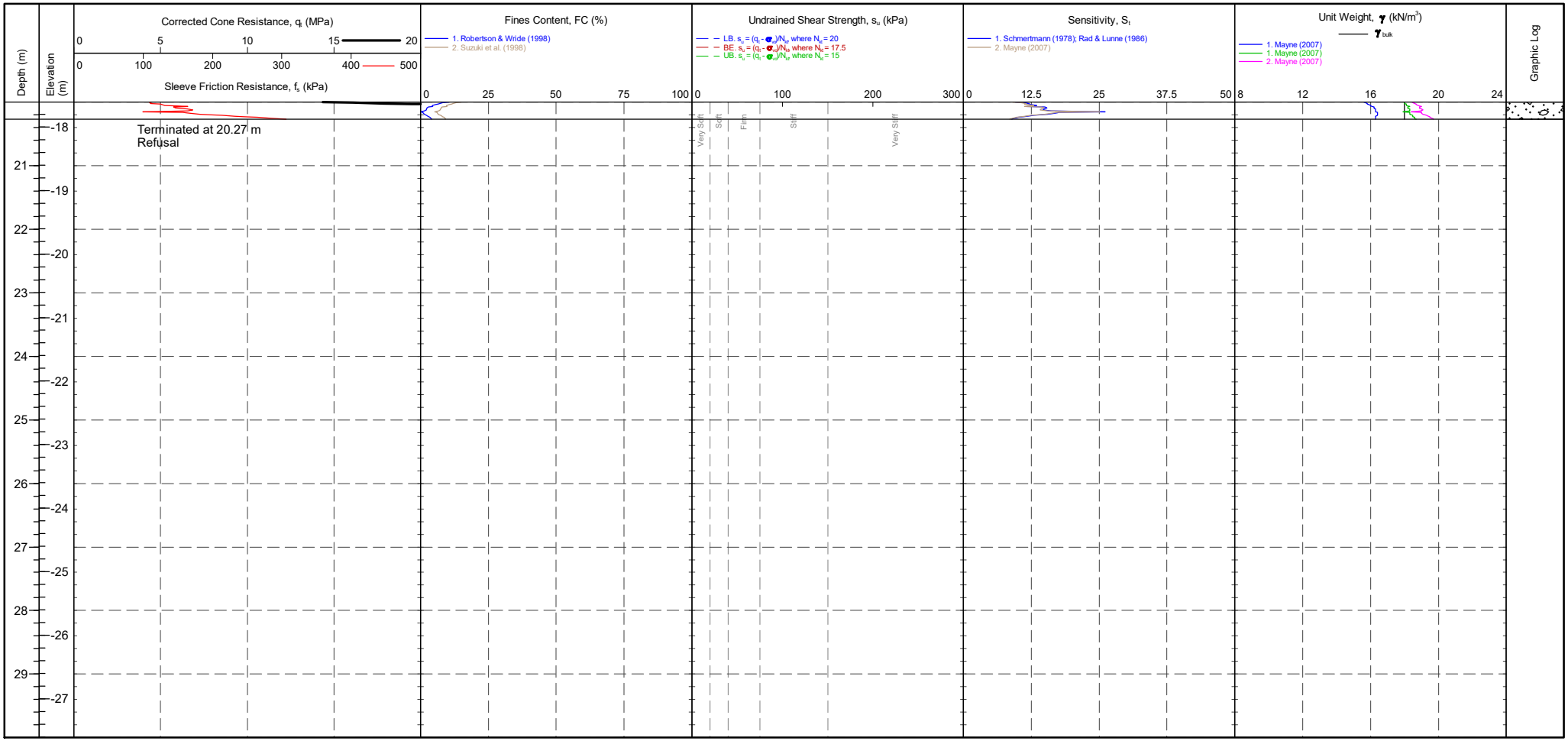
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental ltd

CPT LOG 03

PointID **CPTC-11**

CLIENT : Geosphere Environmental	EASTING : 653918.2 m	REMARK	SHEET : 3 OF 3
PROJECT : Lake Lothing, Lowerstoft	NORTHING : 29234.5 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowerstoft	ELEVATION : 2.39 m		TEST DATE : 10/08/2017
PROJECT No. : 1170332	CHECKED BY : LD		PLOT DATE : 25/08/2017
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1186	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	319 mV	318 mV	-0.011 MPa
FILTER POSITION	: u2	OPERATOR	: LS & DH	Sleeve	307 mV	306 mV	-0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170332-CPTC-11	Pore Pressure 2	223 mV	226 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Overcast & Mild	X-Y Inclinometer	2479 mV	2436 mV	

Groundwater Level

Dissipation Test



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

IN SITU
SITE INVESTIGATION



STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT GEOSPHERE ENVIRONMENTAL

PROJECT LOWESTOFT

Project	Lowestoft
Project No.	1170456
Client	Geosphere Environmental
Address	Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Attention: Mr Stephen Gilchrest

Dear Mr Stephen Gilchrest

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited

[redacted]

Darren Ward
Director

Report Issue

Issue	Date	Description	Prepared	Sign	Checked	Sign
02	03/10/2018	Final	Rachel Cleaver	[redacted]	Darren Ward	[redacted]

Table of Contents

1.0 INTRODUCTION 4

2.0 FIELDWORK 5

2.1 CONE PENETRATION TESTS 5

2.1.1 Rig Information 5

2.1.2 CPTU Cone 5

2.1.3 CPTU Cone Calibration 6

2.1.4 CPTU Cone Saturation 6

2.1.5 Test Procedure 6

2.1.6 In Situ Pore Pressure (u_0) 7

2.2 POSITIONING 7

3.0 CONE PENETRATION MEASURED PARAMETERS 8

3.1 DATA PROCESSING 8

3.1.1 Zero Measurements 8

3.2 MEASURED PARAMETERS 8

3.2.1 Cone Resistance (q_c) 8

3.2.2 Sleeve Friction (f_s) 8

3.2.3 Porewater pressure (u_2) 9

3.2.4 Inclination (I_x, I_y) 9

3.3 ESTIMATED SOIL BEHAVIOUR TYPE 9

3.3.1 Friction Ratio (R_f) 9

3.3.2 Estimated Soil Behaviour Type (SBT) 9

3.3.3 Pore Pressure Ratio (B_q) 10

3.4 APPLIED CORRECTIONS 11

3.4.1 Corrected Cone Resistance (q_t) 11

3.4.2 Depth Correction 11

4.0 GEOTECHNICAL DERIVED PARAMETERS 12

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c) 12

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60}) 14

4.3 RELATIVE DENSITY (D_r) 14

4.4 FRICTION ANGLE (φ') 16
4.5 FINES CONTENT (*FC*) 17
4.6 UNDRAINED SHEAR STRENGTH (s_u) 17
4.7 SENSITIVITY (S_t) 18
4.8 SOIL UNIT WEIGHT (γ) 18
5.0 REFERENCES 20
APPENDIX A 24
APPENDIX A1 – Site Map 25
APPENDIX A2 – Cone Datasheet 26
APPENDIX A3 – Cone Calibration Certificate 27
APPENDIX A4 – Project Summary Sheet 28
CPT Tests Summary Sheet 28
APPENDIX A5 – CPT Rig Datasheet 29
APPENDIX A6 – Symbol List 30
English 30
Greek 31
APPENDIX A7 – Abbreviations 32
APPENDIX A8 – Glossary 33
APPENDIX A9 – Soils Description Tables 35
APPENDIX B 36
Cone Penetration Measured and Geotechnical Derived Parameters 36

1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Lowestoft at the request of Geosphere Environmental (the client). The site investigation consisted of completing 6 *Static Piezocone Penetration Tests (CPTU)* to provide information on the soil conditions and derived geotechnical parameters at:

Riverside Road

Lowestoft

NR33 0TU

All test locations were provided by the client, as shown on the site map, in *Appendix A.1*. The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in *Appendix A.2* and on each CPTU log.

The fieldwork was carried out on 07/12/2017 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *BS EN ISO 22475-1:2012*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Darren Hughes
Date Started	07/12/2017
Date Finished	07/12/2017
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Joseph Glenwright

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.3*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT010	21 tonne Wheeled Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2012*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section Area**	**Filter Position**
S15-CFIIP.1214	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.4*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
6 CPTU to a maximum depth of 24.56m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters and AGS data.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2012* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site is presented in *Appendix A.5*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000 CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test (ISO 22476-1:2012)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.2*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 2cm/s ±10% except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B* and *C*.

2.1.6 *In Situ Pore Pressure (u_0)*

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. These values are presented on the pore pressure plot, *Form 01*, which is included in *Appendix B*. For this report, the values were estimated by our client.

2.2P POSITIONINGP

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in *Appendix A.1*.



3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *Lunne et al. (1997)*, *Robertson (2015)* and *BS EN ISO 22475-1:2012.* Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B* and *C*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

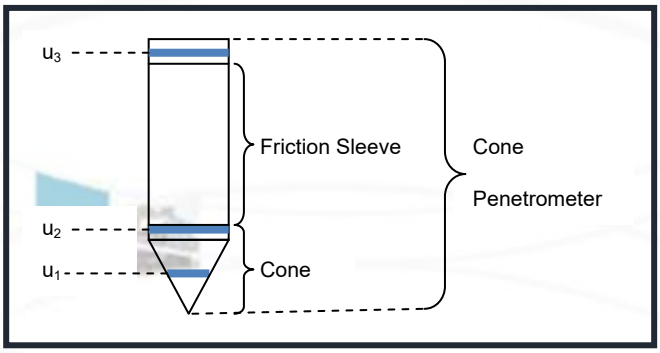


Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3P ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The

friction ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et. al. (1986)*, which is shown in Figure 3.2. The results are presented on *Log 01*, in *Appendix B*.

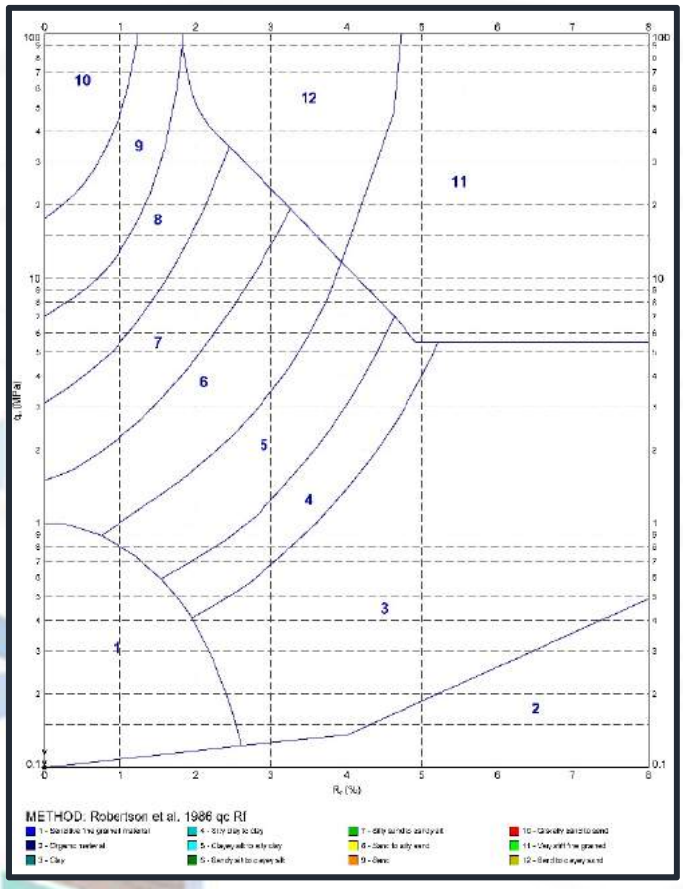


Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4P APPLIED CORRECTIONSP

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ''unequal area effect'' due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone used on this project has a cone area ratio of *0.79*. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2012*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*
l is penetration length, in *m*
C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *Log 02* and *Log 03* in *Appendix C*.

Please note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A6* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, `*(Lunne et al., 1997)*.

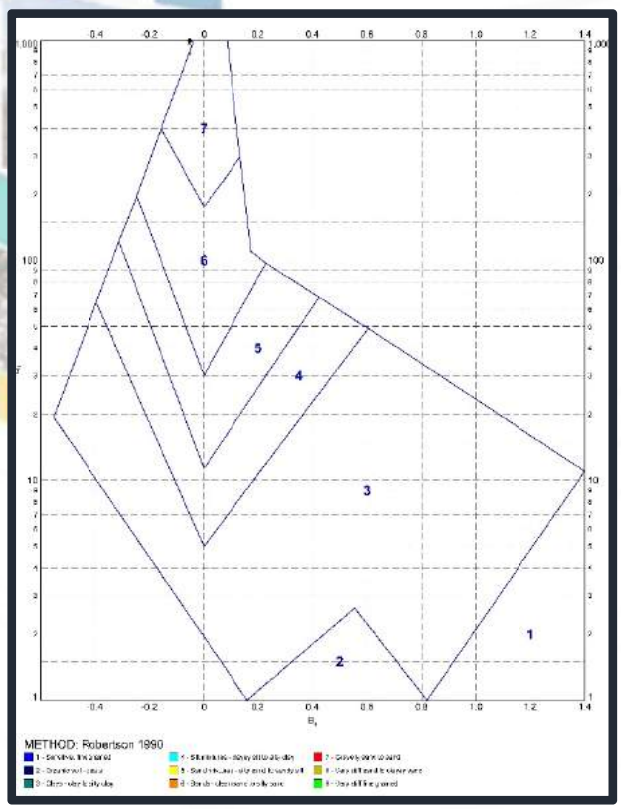


Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%***P**

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily overconsolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT, N_{60}*, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)* and *Jefferson and Davies (1998)*

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferson and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

where

q_c	is the cone resistance
p_a	is the atmospheric pressure equal to *100 kPa*
I_c	is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that this method provides a better estimation of the *N* value than the actual *SPT* test, due to its poor repeatability. But in fine grained soil with high sensitivity these methods of estimating N_{60} may overestimate it *(Jefferies and Davies, 1991).*

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamilkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4P FRICTION ANGLE (φ')

Friction angle, *φ'*, is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot [0.256 + 0.336 \cdot B_q + logQ_t]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Roberston and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily overconsolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies *0.1* < B_q < *1.0*. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$

$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75I_C^{3.25} - 3.7$$

$$3.5 < I_C: FC = 100\%$$

2) Suzuki et al (1998)

$$FC(\%) = 2.8I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)

σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear direction of lading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays , $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

1) Mayne (2007)

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log(f_s) + 18.5$

G_s is the specific gravity of solids, typically between *2.40* and *2.90*



5.0P REFERENCESP

ASTM D7400-14 (2015), "Standard and ISSMGE TC10 guideline", by *Butcher, A. P. et al.*

Baldi et al. (1986) / Al-Hamoud and Wehr (2006), "Interpretation of CPTs and CPTUs; 2nd part: drained penetration of sands / Experience of vibrocompaction in calcareous sand of UAE"

Been at al (1987), "Cone Penetration Test Calibration For Erksak (Beaufort Sea) Sand", Canadian Geotechnical Journal, 24, 4, pp. 601-610

Been and Jefferies (1992), "Towards Systematic CPT Interpretation", Proceedings Wroth Memorial Symposium, Thomas Telford, London, pp. 121–134

Boulanger and Idriss (2014), "CPT and SPT Based Liquefaction Triggering Procedures", Report No. UCD/CGM-14/01, Center of Geotechnical Modelling, Department of Civil and Environmental Engineering, College of Engineering, University of California at Davis

British Standard BS5930:1999, "Code of practice for site investigations". BSI, 1999

British Standard BS EN ISO 22475-1:2012

Burns and Mayne (2002), "Analytical Cavity Expansion Critical State Model for Piezocone Dissipation in Fine Grained Soils, Soils and Foundations", Vol. 42, No. 2, 2002

Houlsby, G.T. and Teh, C. I. (1998), "Analysis of the piezocone in clay". Proceedings of the International Symposium on Penetration Testing, ISOPT-1, Orlando, 2, 777-83, Balkema Pub., Rotterdam

Idriss and Boulanger (2008), "Soil liquefaction during earthquakes", Earthquake Engineering Research Institute, MNO-12

International Standard for Electrical Cone and Piezocone Penetration Test, ISO 22476-1:2012

International Standard, "Geotechnical Investigation and testing- field testing – part 1: electrical cone and piezocone penetration test", ISO/ FDIS 22476-1.

Jamiolkowski et al. (2001), Evaluation of relative density in shear strength of sands from cone peonetration tests (CPT) and flat dilatometer (DMT), Soil Behaviour and Soft Ground Construction (GSP 119), American Society of Civil Engineers, Reston, Va., 2001, pp. 201-238

Jefferies, M.G. and Davies, M.P. (1991), "Soil classification by the cone penetration test": Discussion. Canadian Geotechnical Journal, 28(1), 173-6

Jefferis and Been (2006), "Soil liquefaction: a critical state approach", Taylor and Frencis.

Jones, G.A. and Rust, E. (1995), "Piezocone settlement prediction parameters for embankments on alluvium". Proceedings of the International Symposium on Cone Penetration Testing, CPT '95, Linköping, Sweden, 2, 501-8, Swedish Geotechnical Society

Kulhawy, F.H. and Mayne, P.H. (1990) "Manual on estimating soil properties for foundation design". Electric Power Research Institute, EPRI, August, 1990.

Keaveny and Mitchel (1986), "Strength of Fine-Grained Soils Using the Piezocone," Use of In-Situ Tests in Geotechnical Engineering (GSP 6), American Society of Civil Engineers, Reston, Va., 1986, pp. 668–699

Lord, J.A., Clayton, C.R.I., and Mortimore, R.N. (2002), "Engineering in chalk". Ciria Guide C574.

Lunne, T. And Kleven, A. (1981), "Role of CPT in North Sea foundation engineering". Session at the ASCE National Convention: Cone Penetration Testing and Materials, St. Louis, 76-107, American Society of Engineers (ASCE).

Lunne, T. And Christophersen, H.P. (1983), "Interpretation of cone penetrometer data for offshore sands". Proceedings of the Offshore Technology conference, Richardson, Texas, Paper No. 4464.

Lunne, T., Robertson, P. K. And Powell, J. J. M. (1997), "Cone Penetration testing in Geotechnical Practice". Blackie.

Mayne and Rix (1995) / Lune et al. (1997), "Gmax-qc relationships for clays", Geotechnical Testing Journal, ASTM, 16 (1), pp. 54-60/ CPT in Geotechnical Practice (1997)

Mayne (2001), "Stress-Strain-Strength-Flow Parameters from Enhanced In-Situ Tests", International Conference on In-Situ Measurement of Soil Properties and Case Histories, Indonesia, 2001, pp. 27–48

Mayne and Campanella (2005), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mayne (2007), "National Cooperative Highway Research Program", Synthesis 368 (2007)

Mitchell, J.K. and Gardner, W.S. (1975), "In situ measurement of volume change characteristics". Proceedings of the ASCE Specialty Conference on In Situ

Measurements os Soil Properties, Raleigh, North Carolina, 2, 279-345, American Society of Engineers (ASCE)

Rix, G.J. and Stokoe, K.H. (1992), "Correlation of Initial Tangent Modulus and Cone Resistance", Proceedings of the International Symposium on Calibration Chamber Testing, Potsdam, New York, 1991, pp. 351-362, Elsevier

Robertson, P.K. and Campanella, R.G. (1983) "Interpretation of cone penetrometer test: Part 1: Sand". Canadian Geotechnical Journal, 20(4), 718-33

Robertson, P.K., Campanella, R.G., Gillespie, D. And Greig, J (1986), "Use of piezometer cone data". Proceedings of the ASCE Specialty Conference In Situ '86: Use of In Situ Tests in Geotechnical Engineering, Blacksburg, 1263-80, American Society of Engineers (ACE)

Robertson, P.K. (1990), "Soil classification using the cone penetration test". Canadian Geotechnical Journal, 27(1), 151

Robertson, P.K. and Fear, C.E. (1995), "Liquefaction of sands and its evaluation. IS TOKYO '95". First International Conference on Earthquake Geotechnical Engineering, Keynote Lecture, November, 1995

Robertson, P.K. and Wride (Fear), C.E. (1998), "Evaluating cyclic liquefaction potential using the cone penetration test". Can. Geotech. J. Vol. 35

Robertson (2010), "Soil behaviour type from the CPT: an update", Gregg Drilling and Testing Inc. Signal Hill, California, USA, CPT 10, paper 2-56

Robertson (2015), "Guide to Cone Penetration Testing", 6th Edition (2015)

Senneset K. And Janbu, N. (1985), "Shear strength parameters obtained from static cone penetration tests. Strength Testing of Marine Sediments; Laboratory and In Situ Measurements". Symposium, San Diego, 1984, ASTM Special technical publication, STP 883, 41-54

Senneset, K., Sandven, R. And Janbu, N. (1989), "The evaluation of soil parameters from piezocone tests". Transportation Research Record, No. 1235, 24-37

Schmertmann, J.H (1978), "Guidelines for cone penetration test, performance and design", US Federal Highway Administration, Washington, DC, Report, FHWA-TS-78-209, 145

Shuttle and Jefferies (1998), "Dimensionless and unbiased CPT interpretation in sand", International Journal for Numerical and Analythical Methods in Geomechanics, 22, pp. 351-391.

Suzuki, Y., Tokimatsu, K., Taya, Y. And Kubota, Y. (1995), "Correlation between CPT data and dynamc properties of in situ frozen samples". Proceedings of the Third

International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, St. Louis, 1, 249-52, University of Missouri Rolla.

Topp, G.C., Davis, J.L. and Anna, A.P. (1980),. “Electromagnetic determination of soil water content: Measurements in coaxial transmission lines”. Water Resiur. Res., 16, 574-582.



P

P

P

P

P

P

P

P

APPENDIXPAP

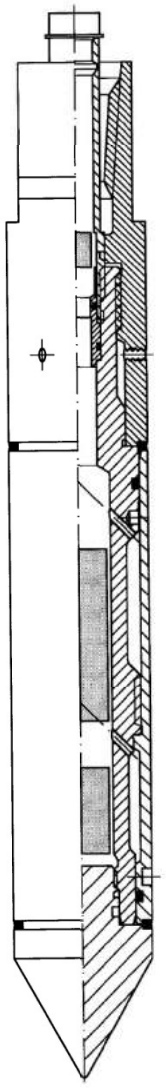
APPENDIX A1 – Site Map

Not provided



APPENDIX A2 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS
S15 SERIES
ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.

APPENDIX A3 – Cone Calibration Certificate

Sondeerapparatuur Waterspanningsmeters Hellingmeters Veldmeet-apparatuur

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
BTW : NL814690178.B01
IBAN : NL28 INGB0682301396
BIC : INGBNL2A

Cone Calibration Certificate

Certificate:	**GS-1214-005**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	1214	
Calibration date:	20-04-2016	
Client:	Soil Mechanics	
Calibrated by:	M. van Es	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
HBM certificate no. :	49046	
Calibration conditions		
Ambient temperature:	19.8	°C
Atmospheric pressure:	1033	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	50	kN
Friction sleeve area:	20000	mm2
Load tip + local friction (nom.):	50	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0270		0250		0261			
	0	0	0	0	0	0	0	2393	2601
	5	0307	5	0320	0.4	1286	-20	0311	0559
	10	0615	10	0643	0.8	2567	20	4408	4571
	15	0926	15	0964	1.2	3844			
	20	1235	20	1285	1.6	5116			
	25	1544	25	1608	2.0	6385			
	30	1853	30	1932					
	35	2163	35	2256					
	40	2474	40	2580					
	45	2783	45	2904					
	50	3091	50	3226					

Max. eror, abs. qc: 35 kPa
Max. error, abs. fs: 2 kPa
Max. error, abs. u2: 10 kPa
Max. error, abs. I: 1 °

This calibration is compliant with GeoPoint Systems internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (inter-) National Standards.

Approved by: B. van
Date: 20-04-2

[redacted]

www.geopoint.nl
www.geopoint.eu

Ingeschreven in het handelsr der nummer 28106251.

APPENDIX A – Project Summary Sheet

CPT Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPTC-12	12.56	07/12/2017	S15CFIIP.1214	Test stopped due to buckling rods.
CPTC-13	2.07	07/12/2017	S15CFIIP.1214	Test refused on tip resistance.
CPTC-14	13.72	07/12/2017	S15CFIIP.1214	Test refused on tip resistance.
CPTC-15	5.80	07/12/2017	S15CFIIP.1214	Test refused on tip resistance.
CPTC-18	11.36	07/12/2017	S15CFIIP.1214	Test stopped due to buckling rods.
CPTC-20	24.56	07/12/2017	S15CFIIP.1214	Test refused on total pressure.



APPENDIX A – CPT Rig Datasheet

RIGS

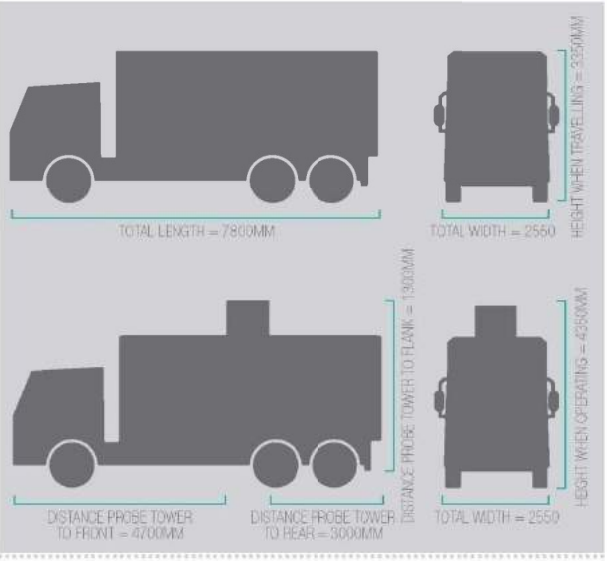
21 TONNE WHEELED RIG (CPT010)

This rig is ideal for geotechnical testing on hardstanding sites such as car parks, motorways and docks. Fitted with reflective yellow and red chevrons, these high visibility rear markings meet the 'Chapter 8' requirements for vehicles working on highways. In addition, there are beacons fitted to the front and strobes to the back corners to ensure further safety and visibility for night work on the motorways. This efficient truck is capable of pushing to a depth of 30 to 40 metres depending on the ground conditions of the site. Furthermore, the interior is large enough to house our MiHpt equipment for environmental testing.

CPT RIG DETAILS

DRIVE SYSTEM	6 X 2 WHEELED DRIVE
TOTAL WEIGHT	21 TONNES
GROUND BEARING PRESSURE	75KPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M CF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	HARDSTANDING SITES E.G. ROADS INCLUDING MOTORWAYS, CAR PARKS, DOCKS. DRY NON HARDSTANDING SITES.

CPT RIG DIMENSIONS





Dublin Port


A557 Liverpool


Southampton Docks

IN SITU SITE INVESTIGATION INSITUSI.COM

APPENDIX A6P – Symbol List

English

a	is area ratio of the cone ($= {}^{A_n}/_{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {}^{(u_2 - u_0)}/_{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {}^{f_s}/_{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {}^{G}/_{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {}^{\sigma'_{h0}}/_{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	measured cone resistance
q_e	effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)

q_t	is corrected cone resistance ($= q_c - (1-a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= {q_t - \sigma_{v0}}/{\sigma'_{v0}}$)
R_f	is friction ratio ($= \left({f_t}/{q_t}\right) x100\%$ or alternatively $= \left({f_t}/{q_t}\right) x100\%$)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at $U = 50\ \%$
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure ($= u - u_0$)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ_h'	is horizontal stress (total, effective)
σ_v, σ_v'	is horizontal stress (total, effective)
σ_{v0},σ_{v0}'	is overburden stress (total, effective)
τ_{av}	average cyclic shear stress
τ_{cy}	cyclic shear stress
φ'	effective friction angle

APPENDIX A7 – Abbreviations

ASTM is American Society for Testing and Materials
CPTU Cone Pentration Test with Pore Pressure Measurement (Piezocone Test)
CRR Cyclic Resistance Ratio
CSR Cyclic Stress Ratio
GWT Ground Water Table
NC Normally Consolidated
OC Overconsolidated
OCR Overconsolidation Ratio
PL Limit Pressure
SDMT Seismic Dilatometer Marchetti
SPT Standard Penetration Test
TC Technical Committee



APPENDIX A8 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone Resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected Cone Resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected Sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data Acquisition System
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter Element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction Ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction Reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction Sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized Cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net Cone Resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized Friction Ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, u
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure Ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {}^{F_s}/_{A_s}$

APPENDIX A9 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX B

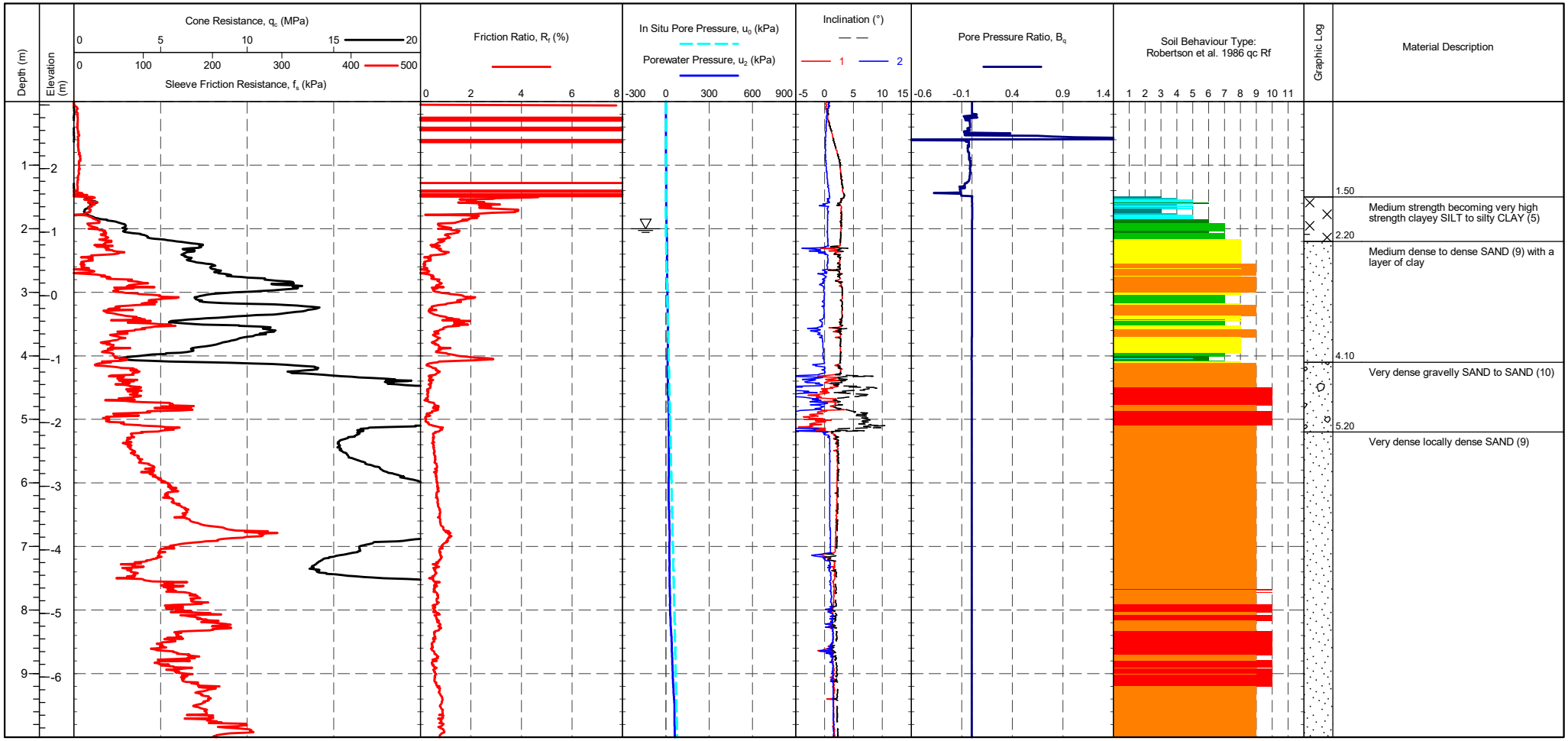
Cone Penetration Measured and Geotechnical Derived Parameters

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-12**

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

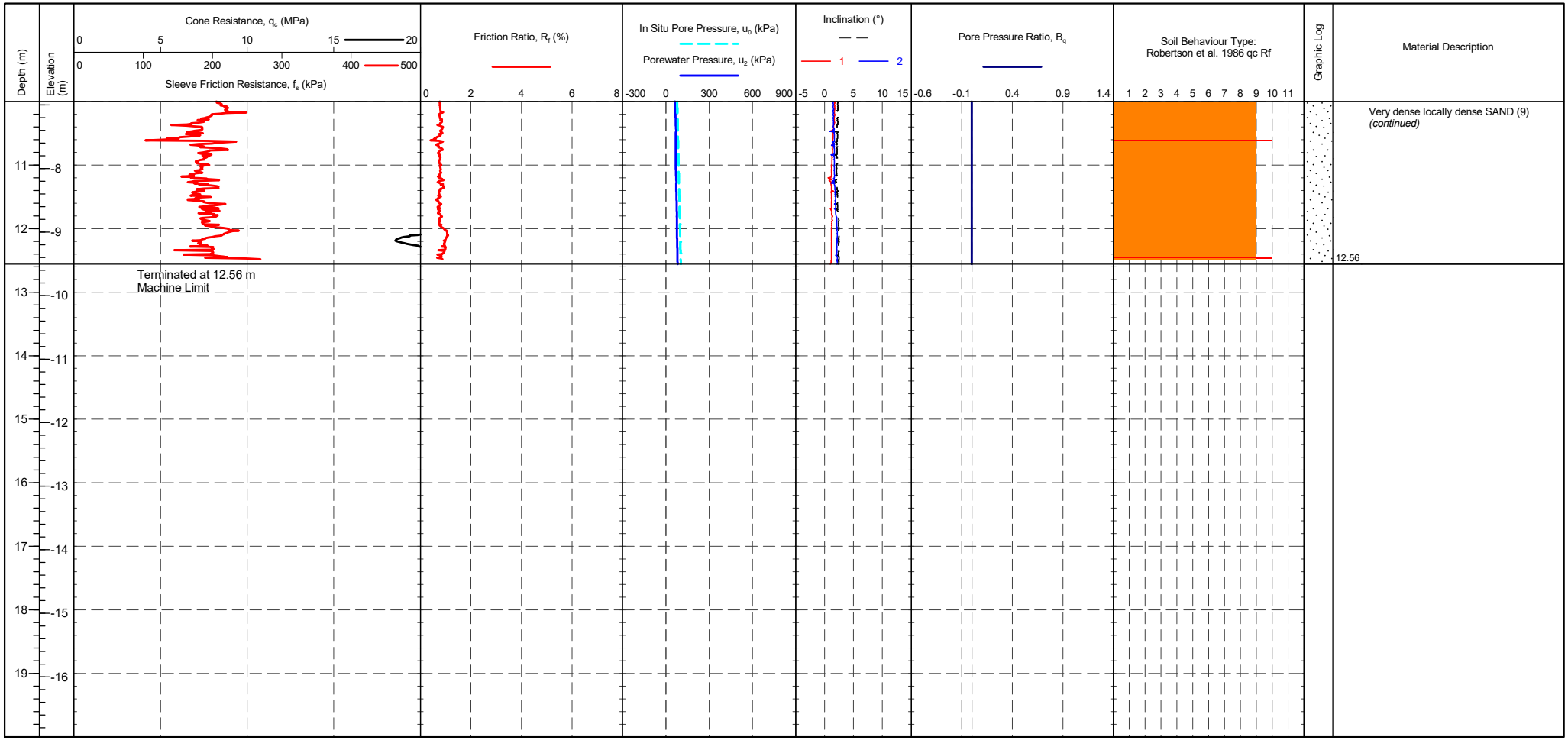
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-12**

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

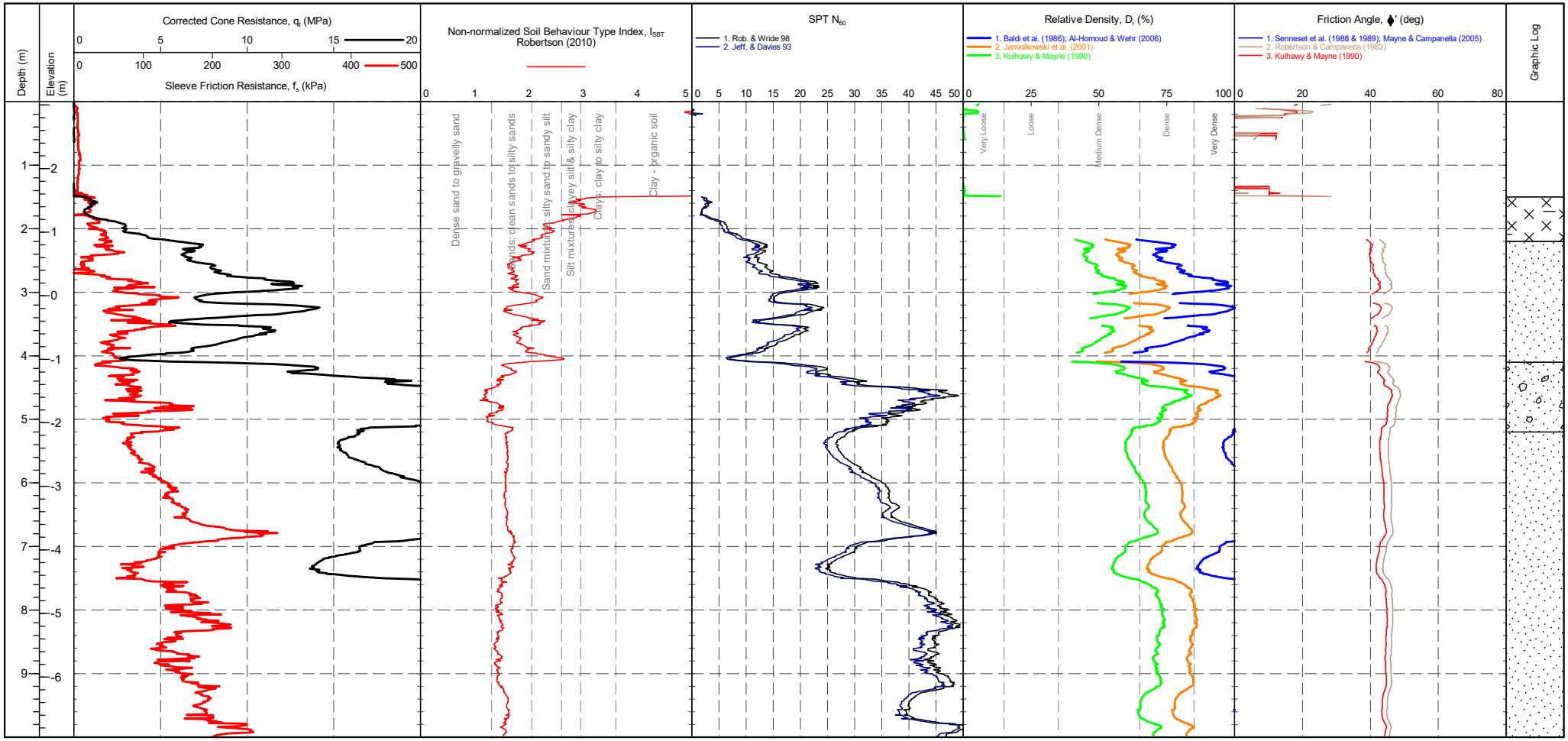
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-12

CLIENT : Geosphere Environmental	EASTING : 653880.9 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292683.9 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.05 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level

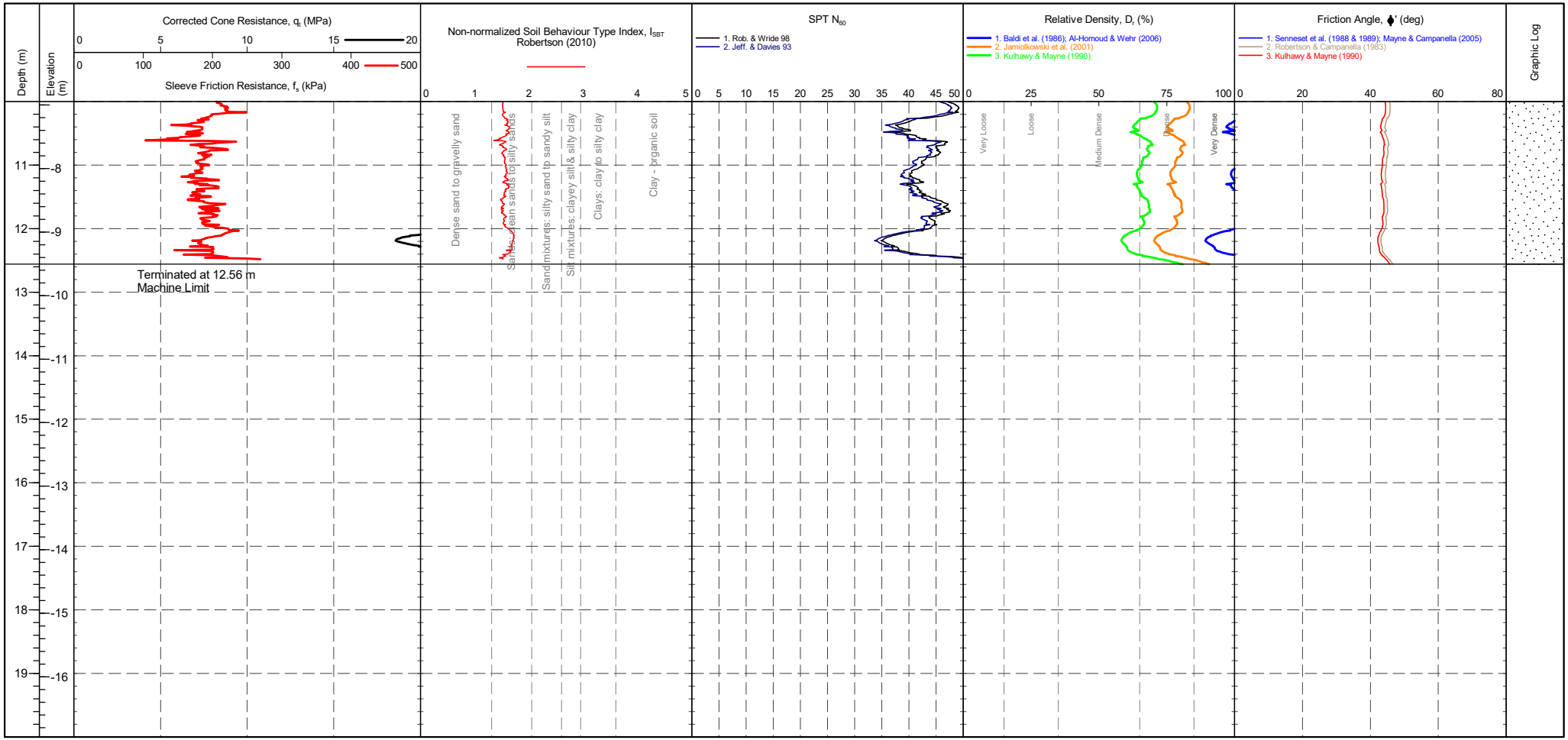
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID **CPTC-12**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.9 m NORTHING : 292683.9 m ELEVATION : 3.05 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level

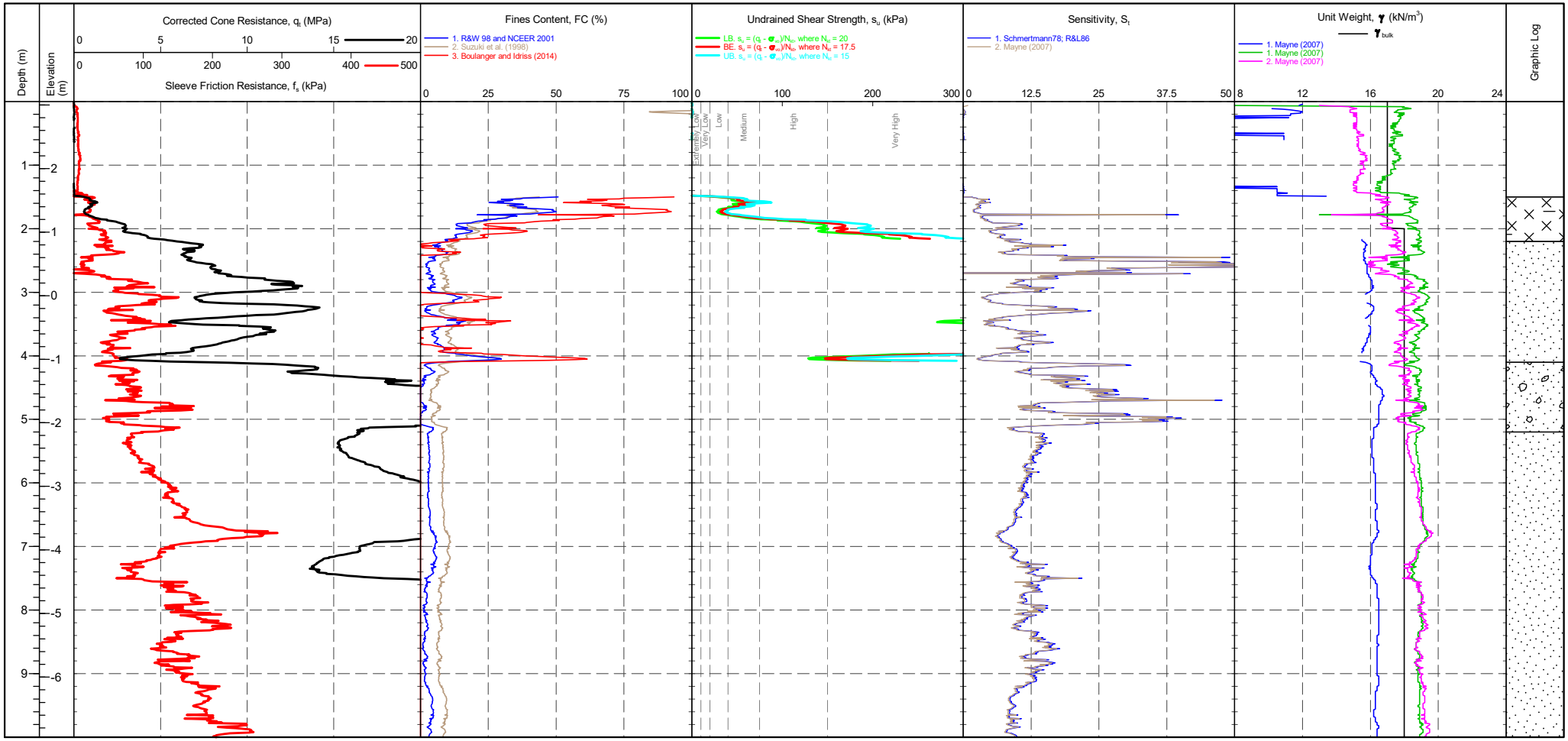
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-12**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.9 m NORTHING : 292683.9 m ELEVATION : 3.05 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

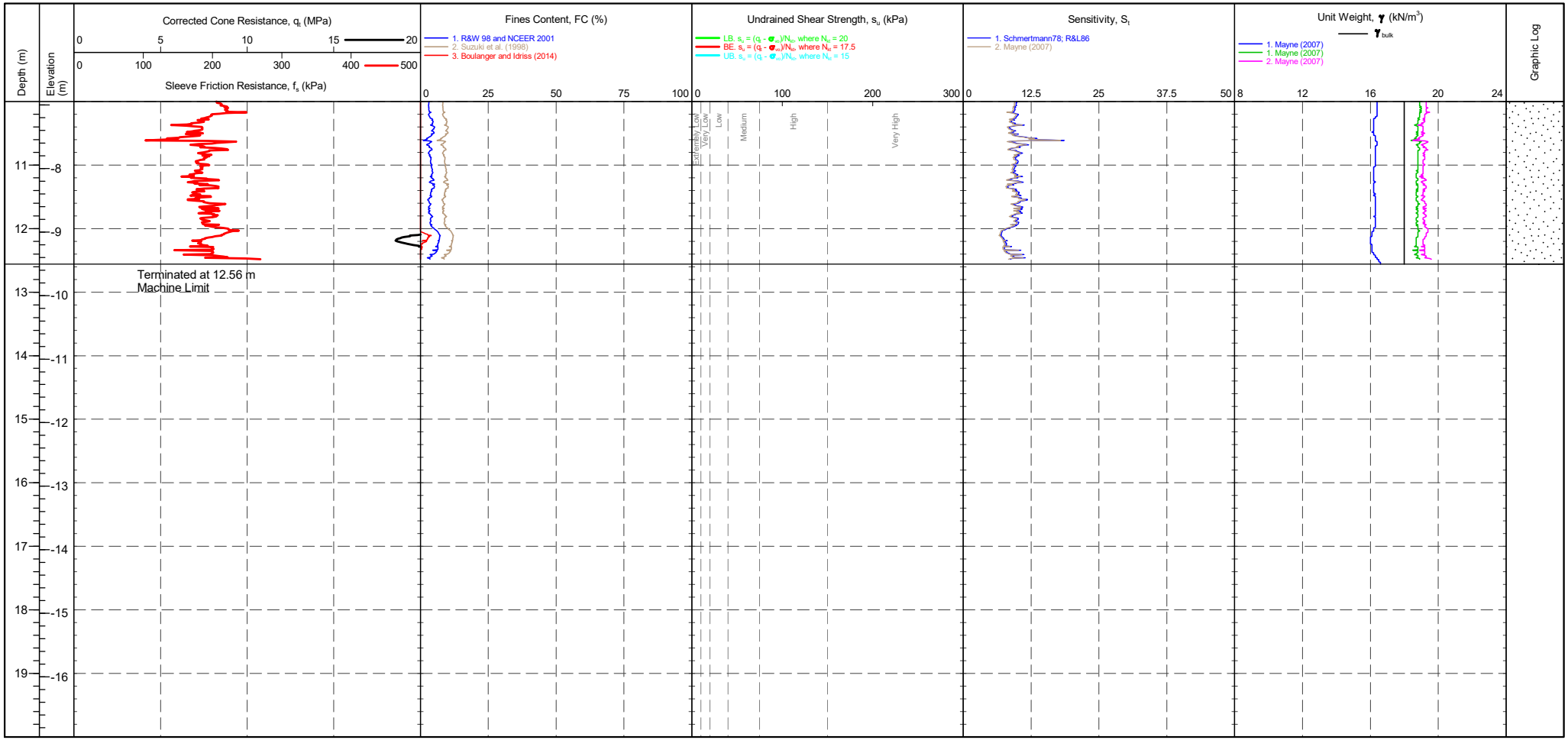
PointID **CPTC-12**

CLIENT : Geosphere Environmental
PROJECT : Lowestoft
LOCATION : Lowestoft
PROJECT No. : 1170456

EASTING : 653880.9 m
NORTHING : 292683.9 m
ELEVATION : 3.05 m
CHECKED BY : LD
TERMINATION REASON : Machine Limit

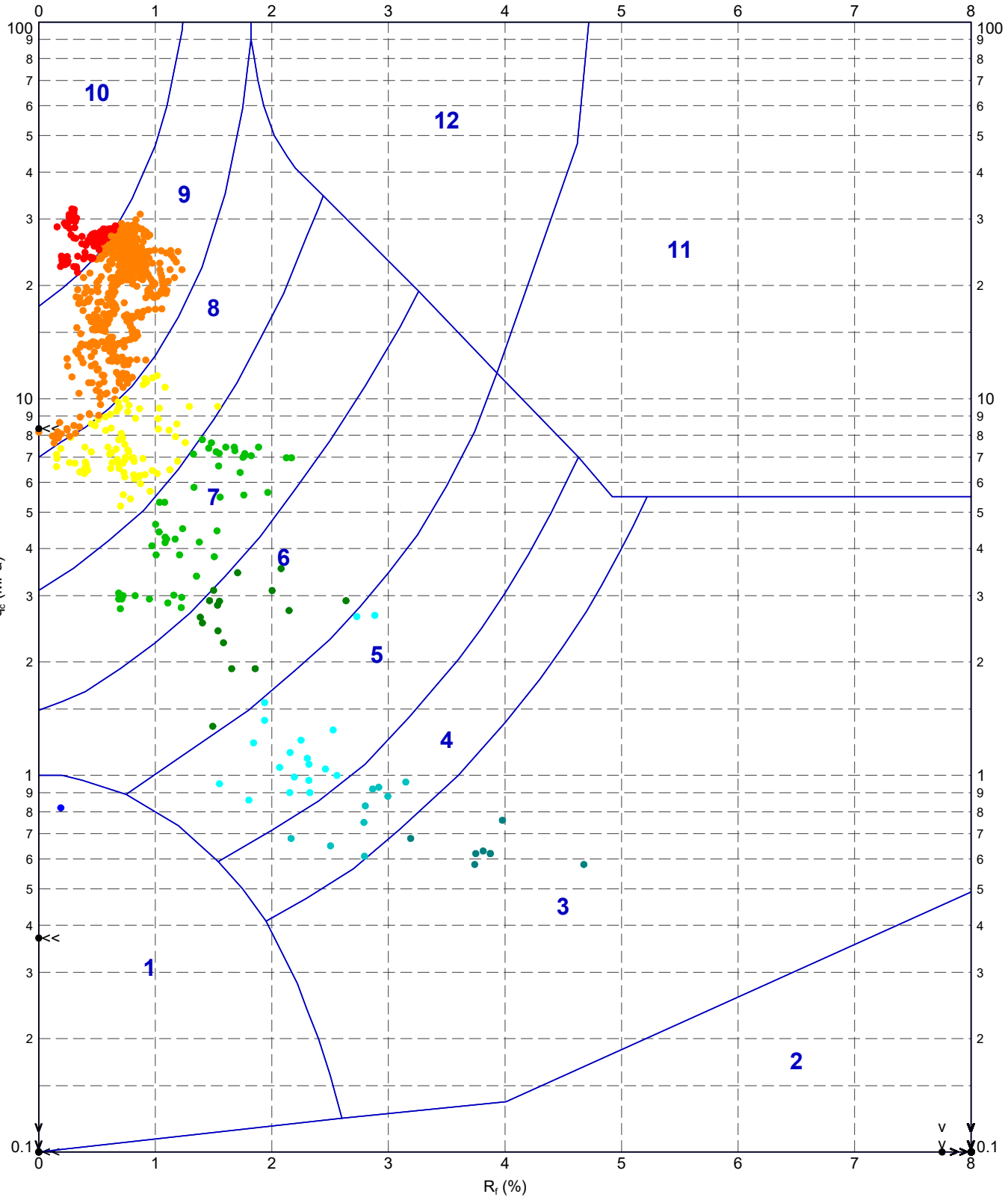
Remark:
Test stopped due to buckling rods.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 07/12/2017
PLOT DATE : 02/10/2018
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

Groundwater Level
Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-12

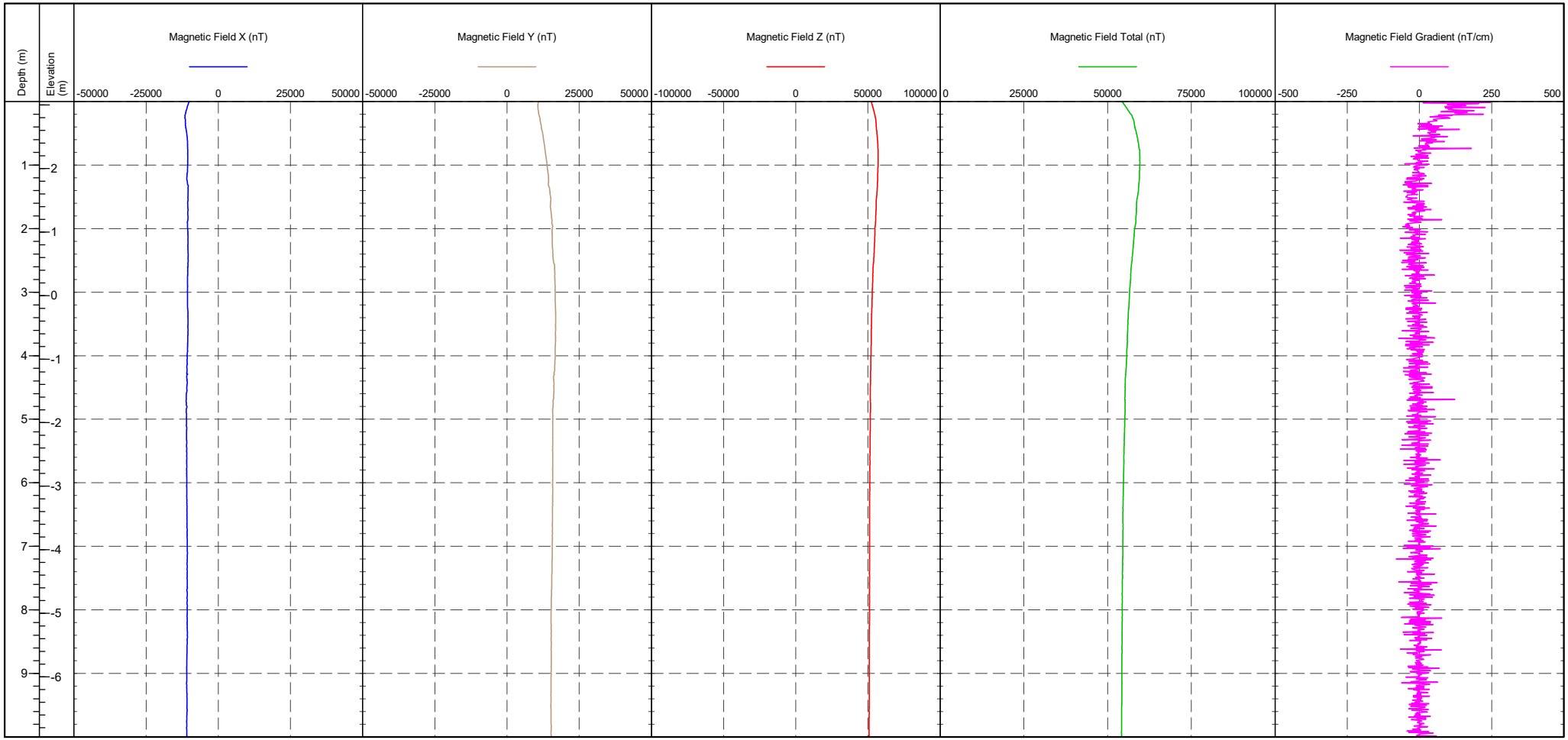
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:30 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID
CPTC-12

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.9 m NORTHING : 292683.9 m ELEVATION : 3.05 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

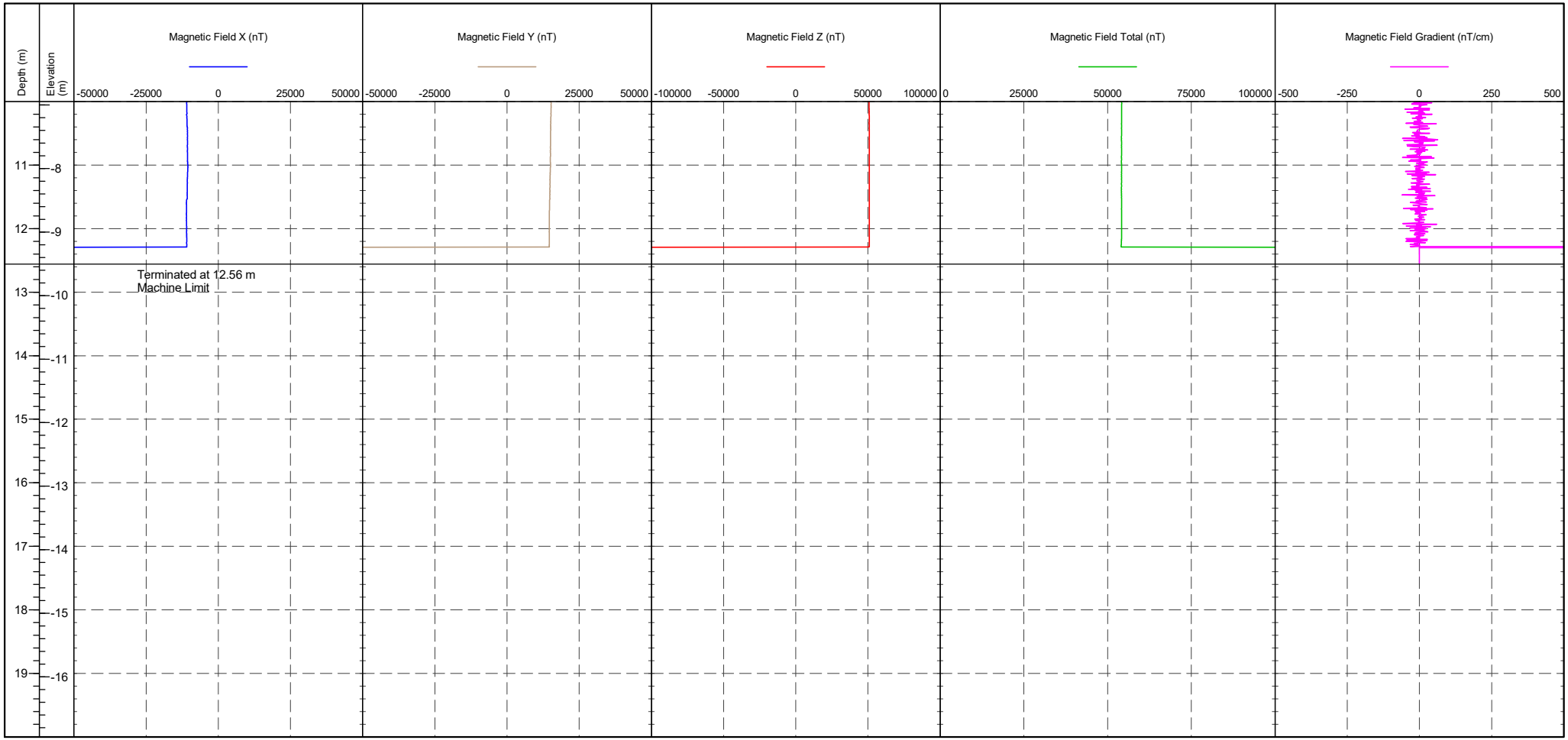


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-12**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.9 m NORTHING : 292683.9 m ELEVATION : 3.05 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



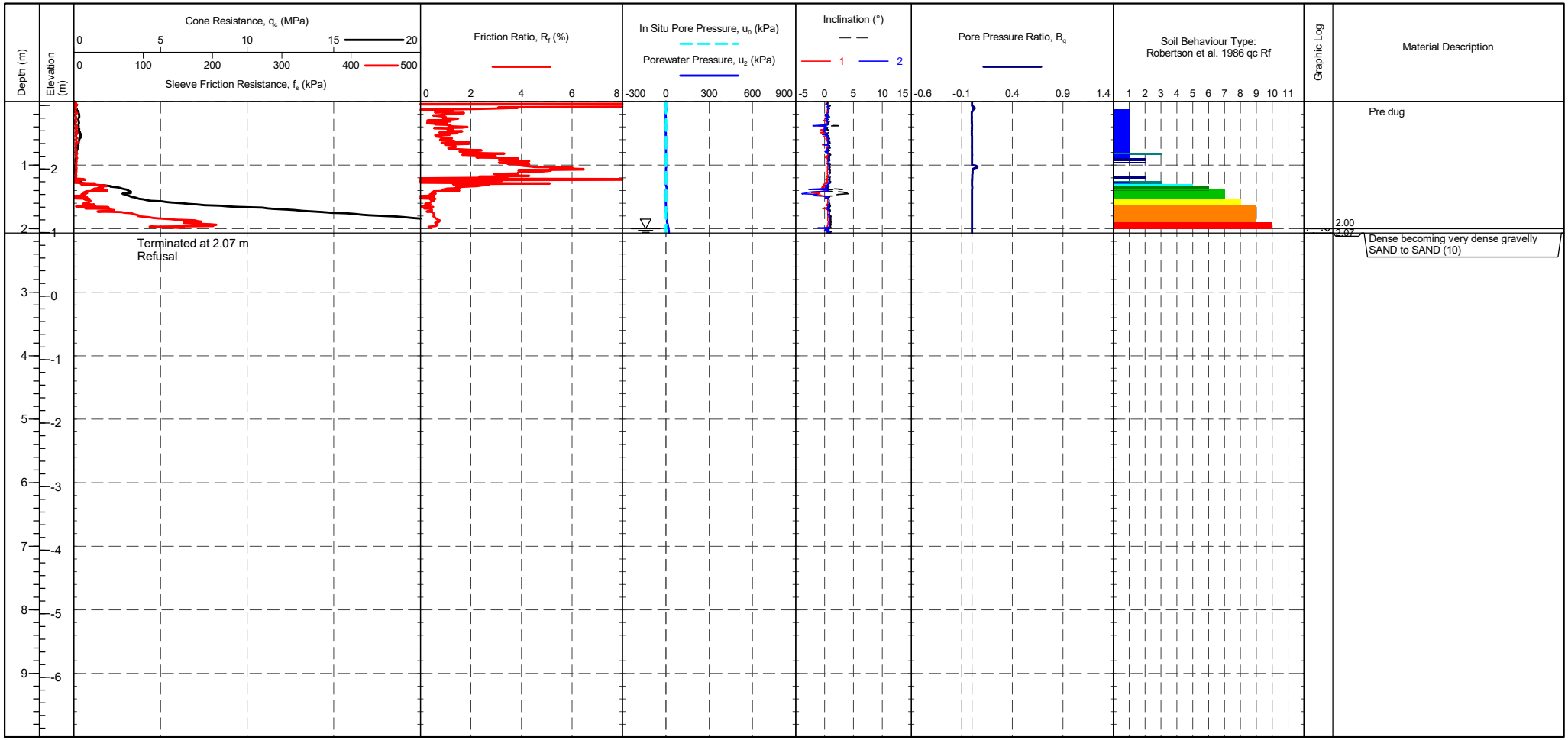
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	206 mV	209 mV	0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	318 mV	314 mV	-0.003 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-12	Pore Pressure 2	308 mV	343 mV	0.011 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2466 mV	2364 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-13**

CLIENT : Geosphere Environmental	EASTING : 653880.2 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292664.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.06 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

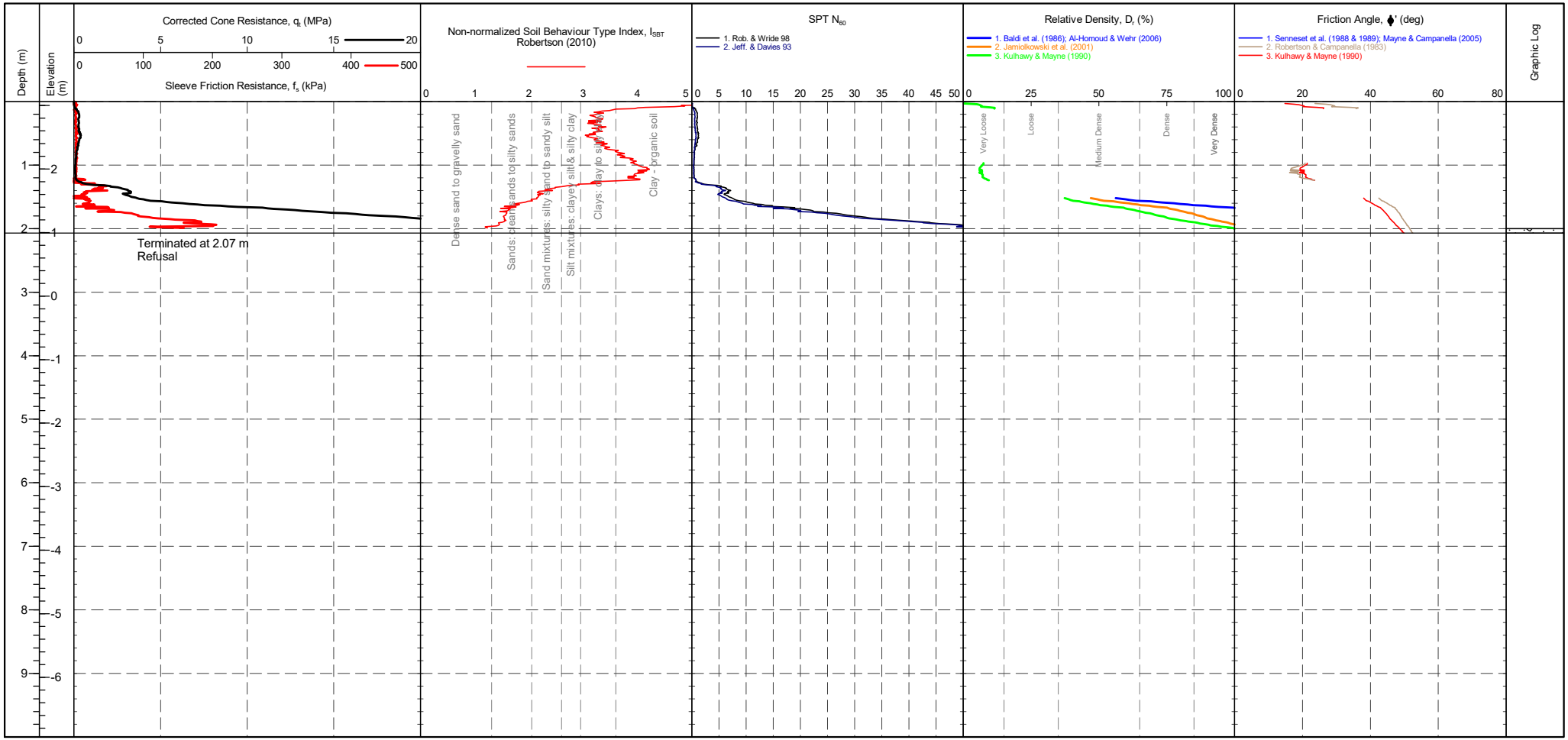
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-13

CLIENT : Geosphere Environmental	EASTING : 653880.2 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292664.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.06 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre / Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV / 205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV / 295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV / 288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV / 2476 mV	

Groundwater Level

Dissipation Test

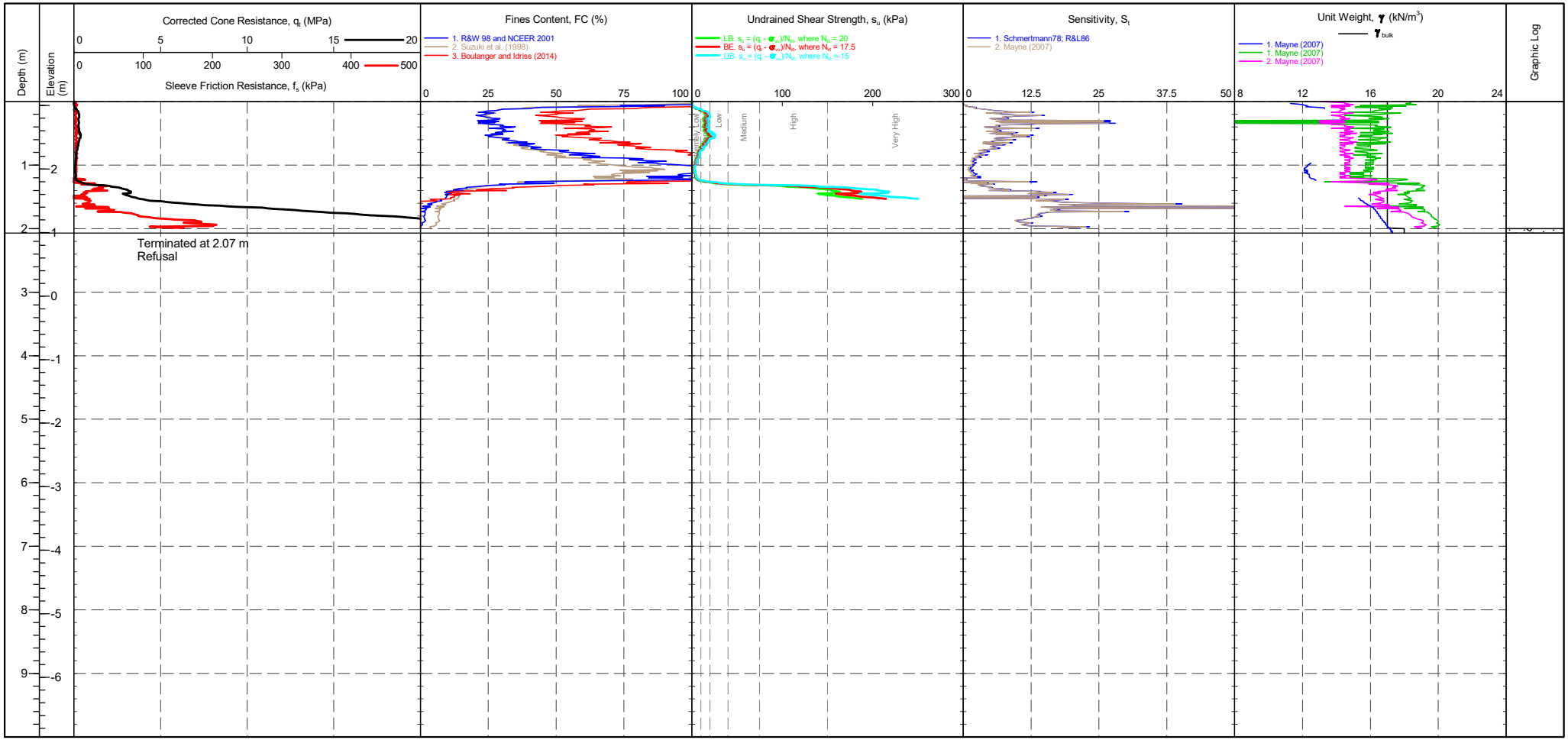
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID

CPTC-13

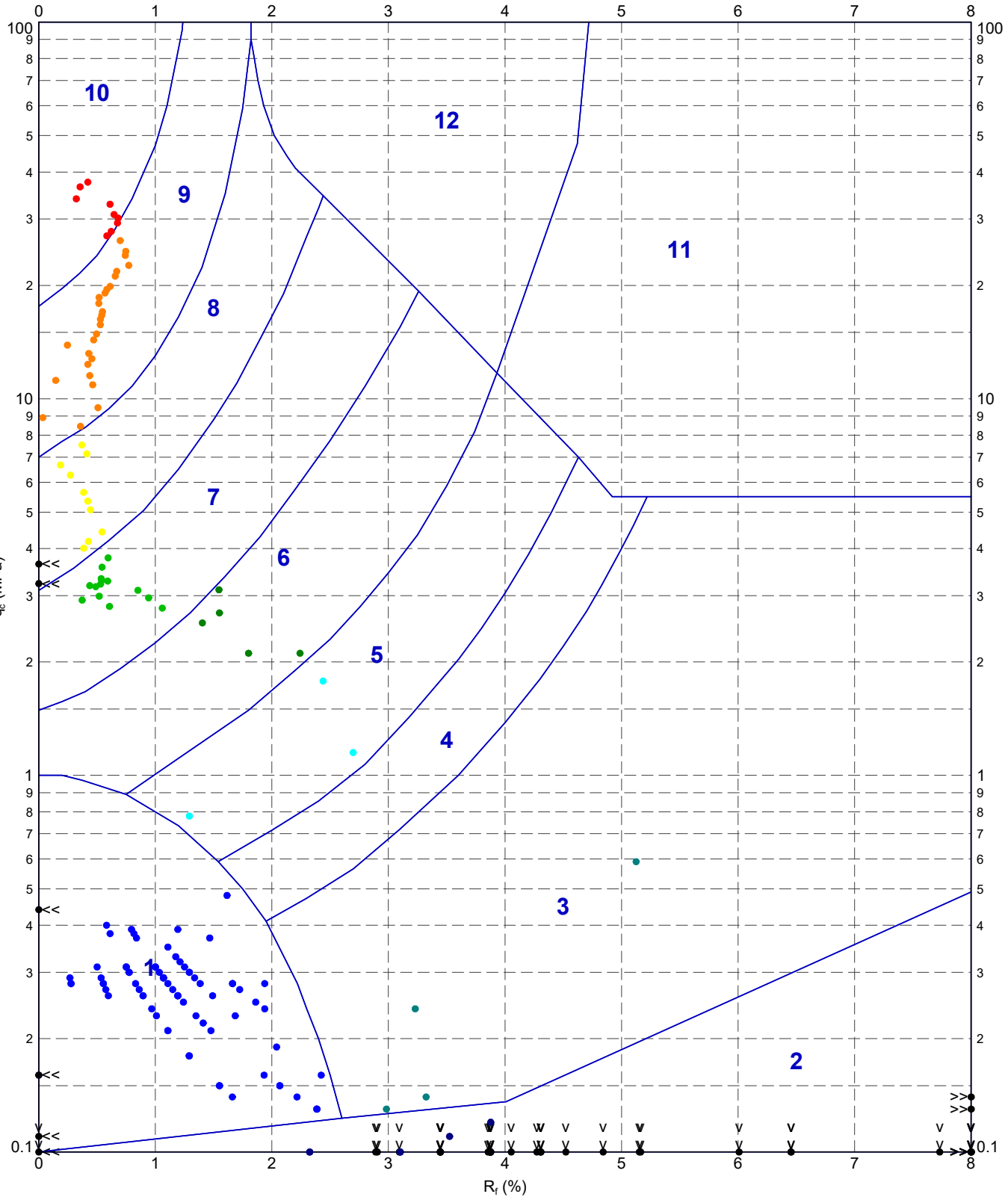
CLIENT : Geosphere Environmental	EASTING : 653880.2 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292664.6 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.06 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV / -0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV / 0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV / -0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-13

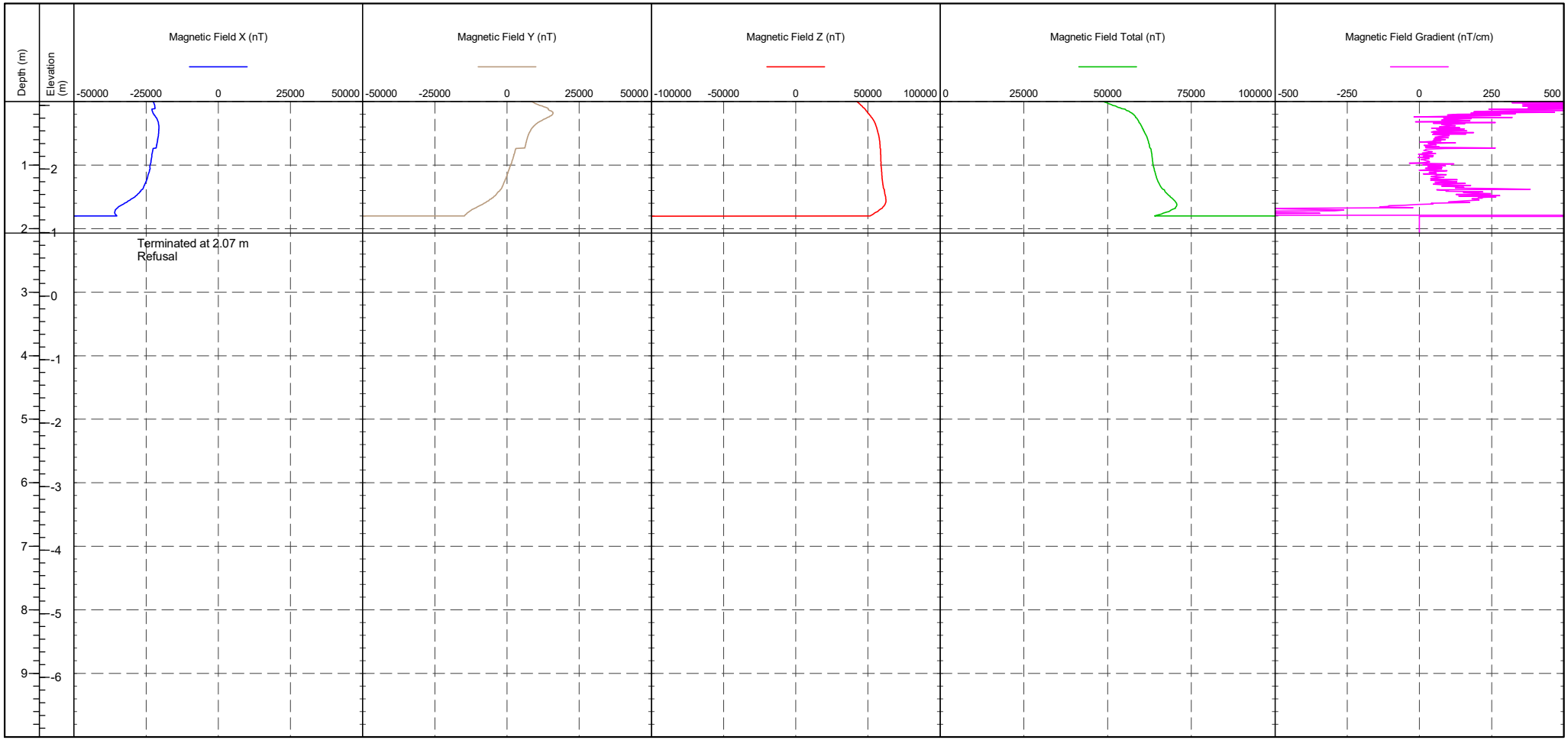
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:31 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-13**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653880.2 m NORTHING : 292664.6 m ELEVATION : 3.06 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	205 mV	-0.043 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	289 mV	295 mV	0.005 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-13	Pore Pressure 2	297 mV	288 mV	-0.003 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2472 mV	2476 mV	

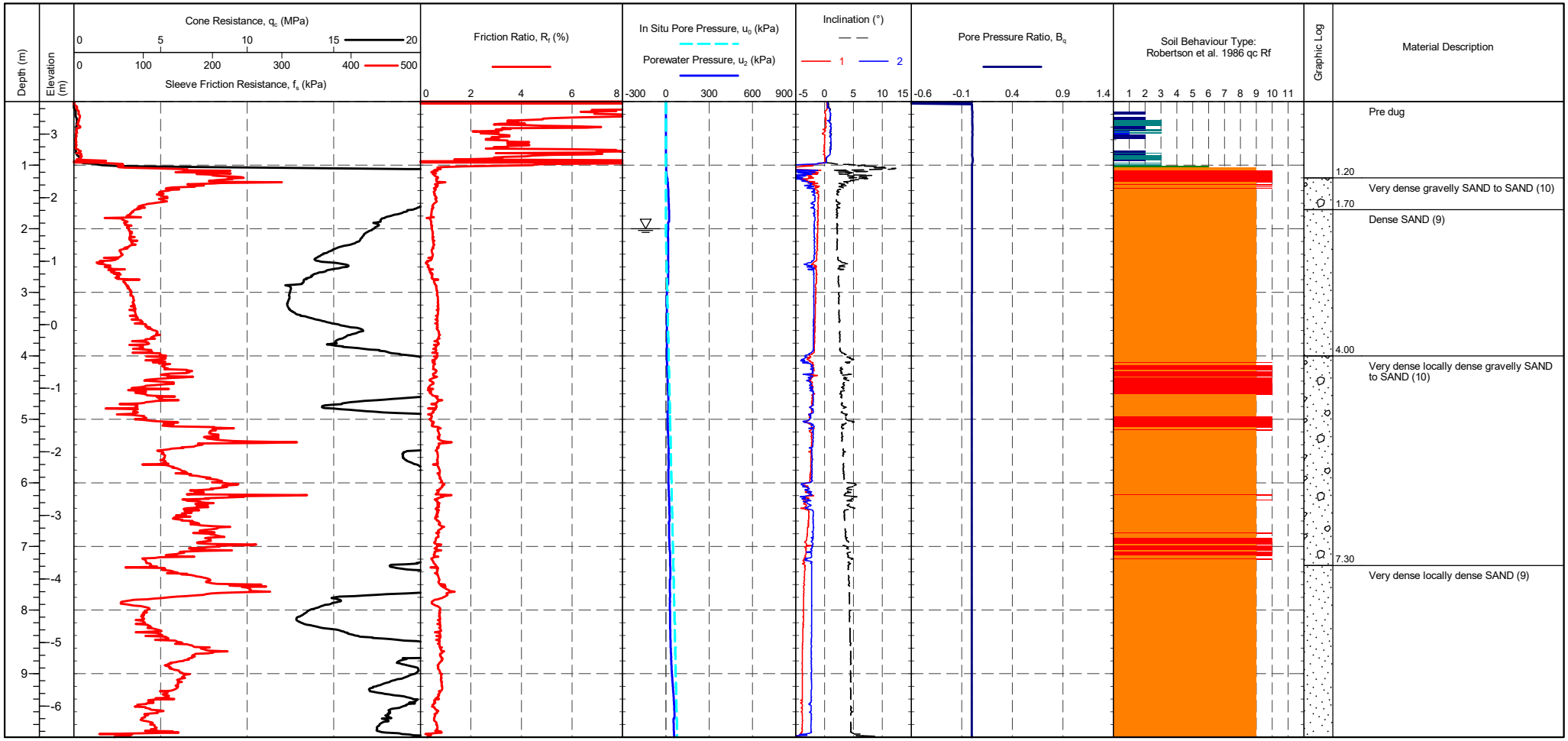
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID

CPTC-14

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

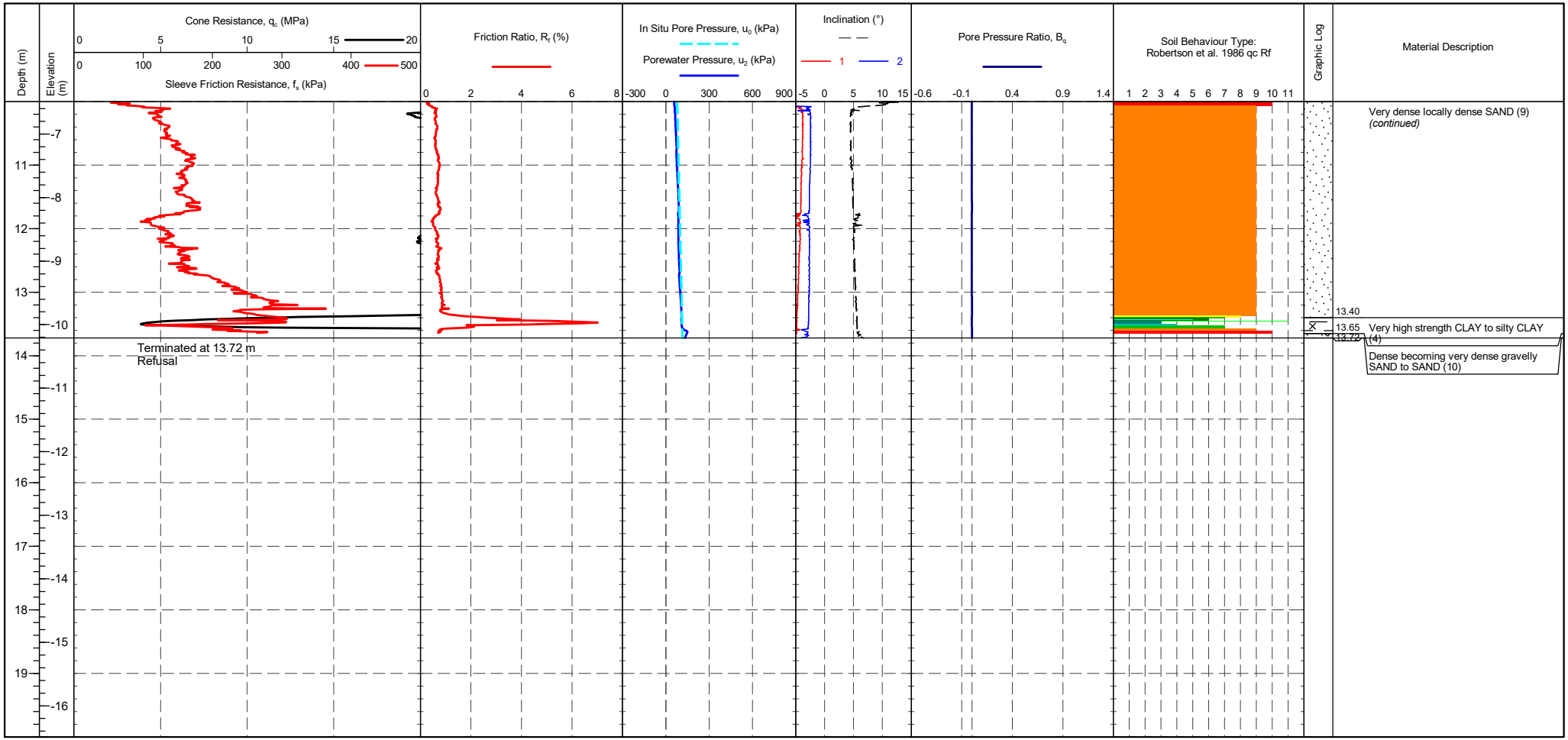
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-14**

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

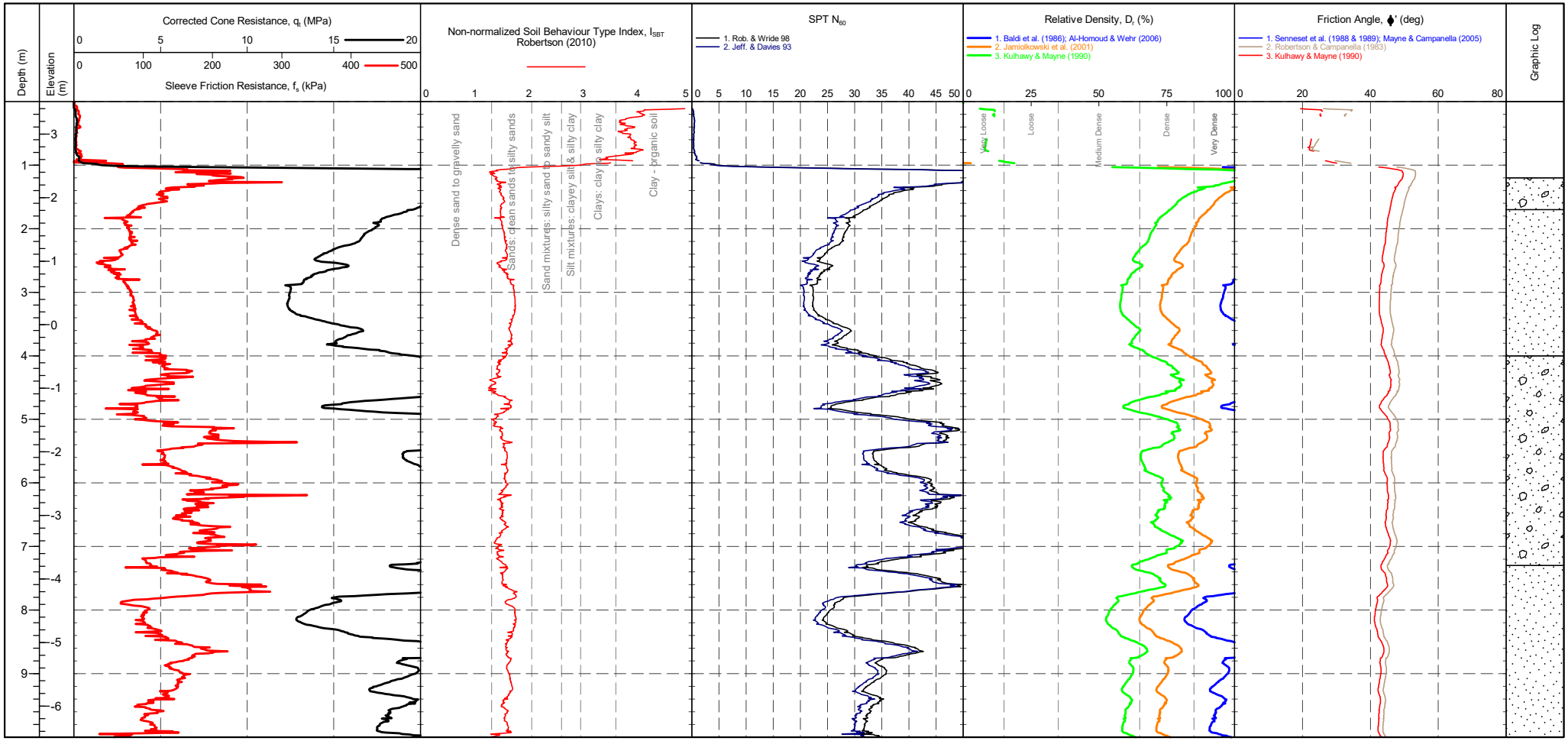
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID **CPTC-14**

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV / -0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV / 0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV / 0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV

Groundwater Level

Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

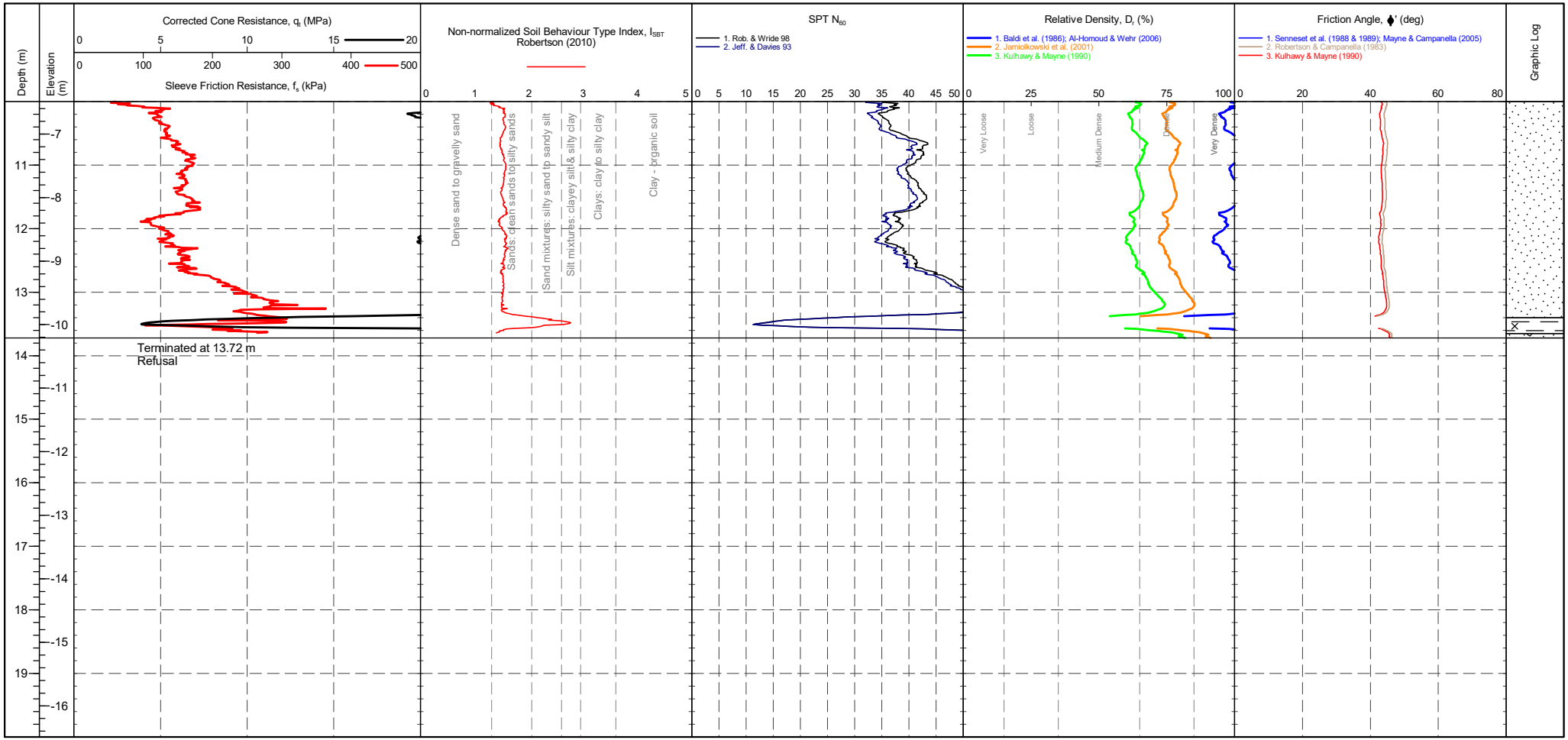
CPTC-14

CLIENT : Geosphere Environmental
PROJECT : Lowestoft
LOCATION : Lowestoft
PROJECT No. : 1170456

EASTING : 653887.3 m
NORTHING : 292609.8 m
ELEVATION : 3.51 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 07/12/2017
PLOT DATE : 02/10/2018
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

Groundwater Level

Dissipation Test

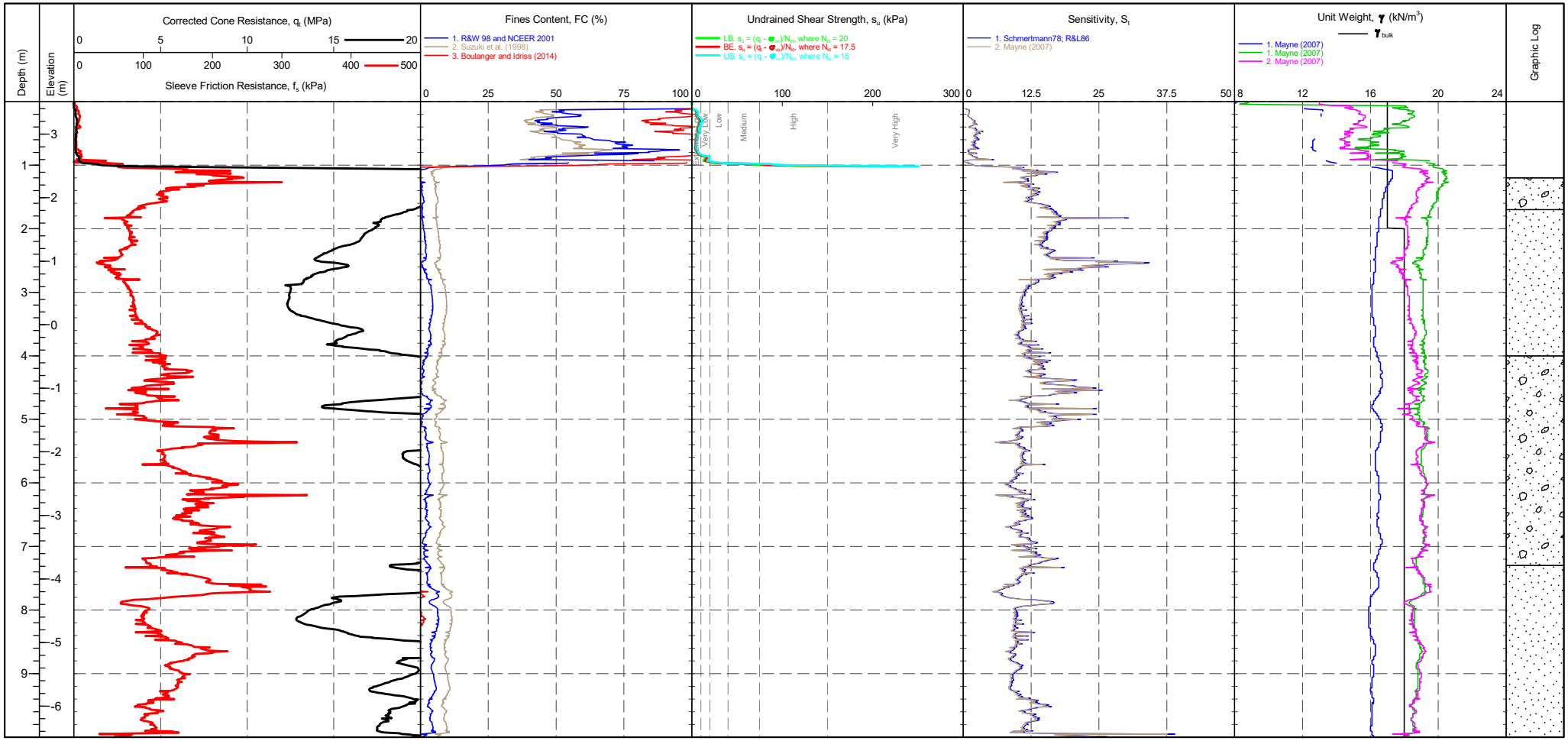
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID

CPTC-14

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

Groundwater Level

Dissipation Test

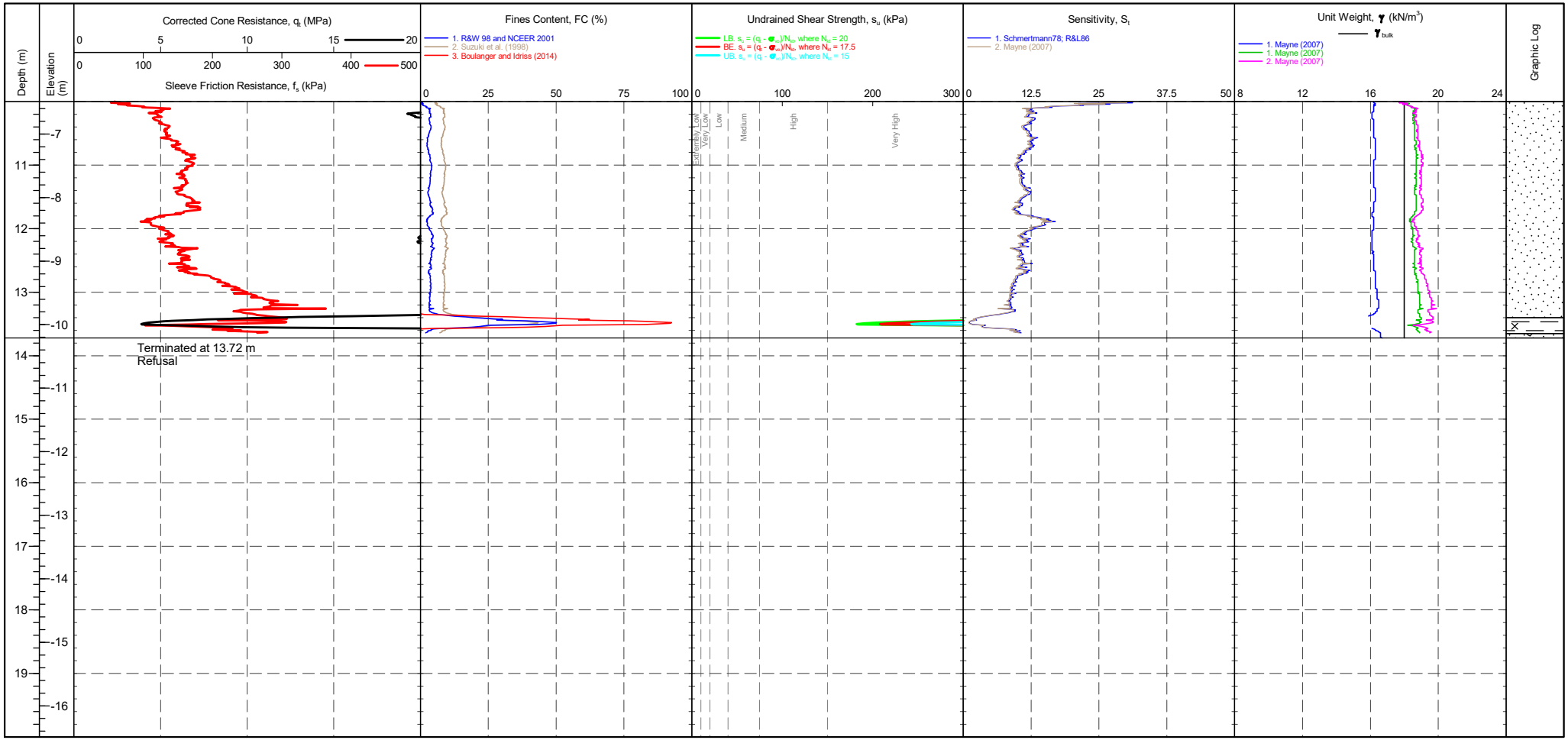
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID

CPTC-14

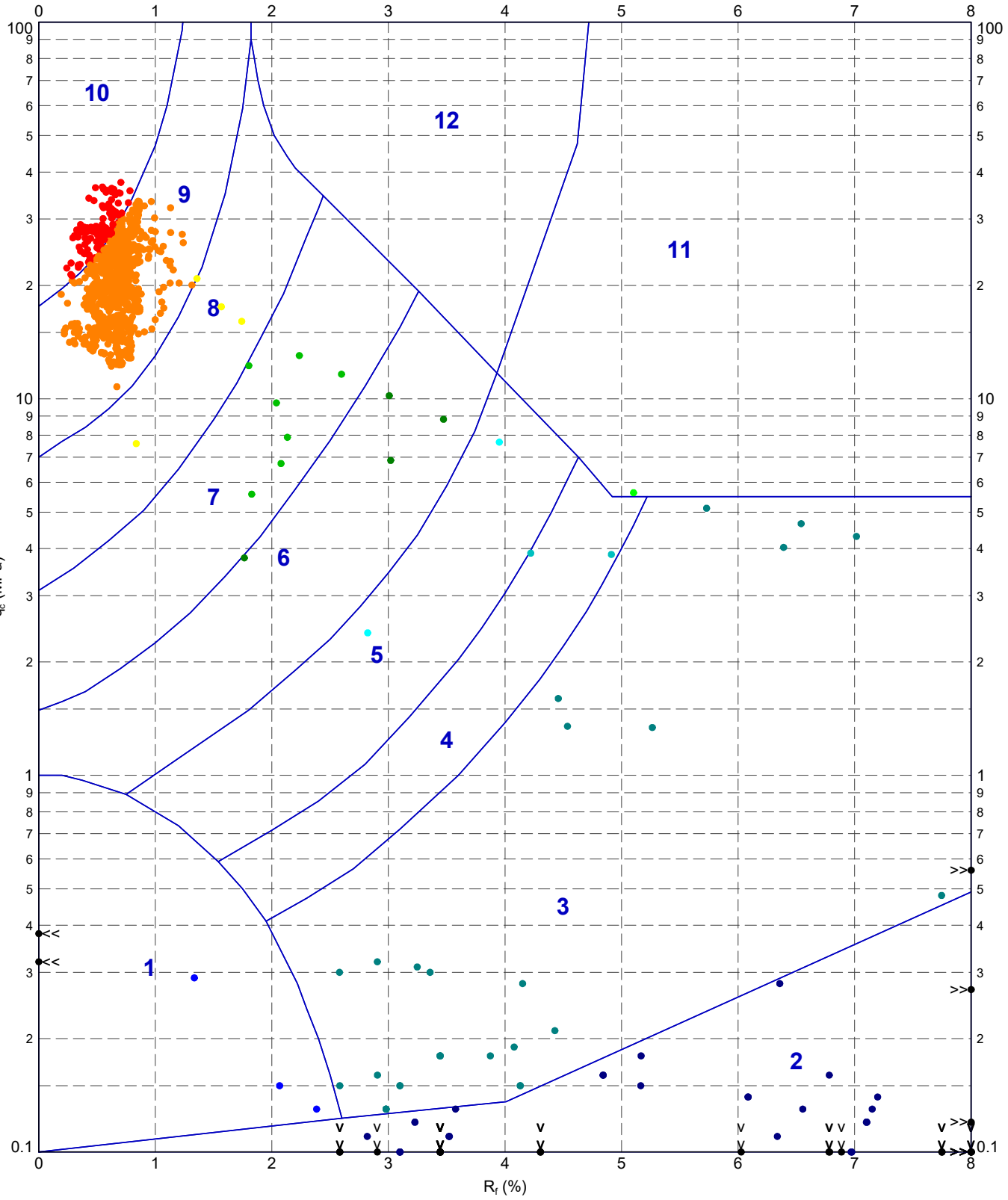
CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-14

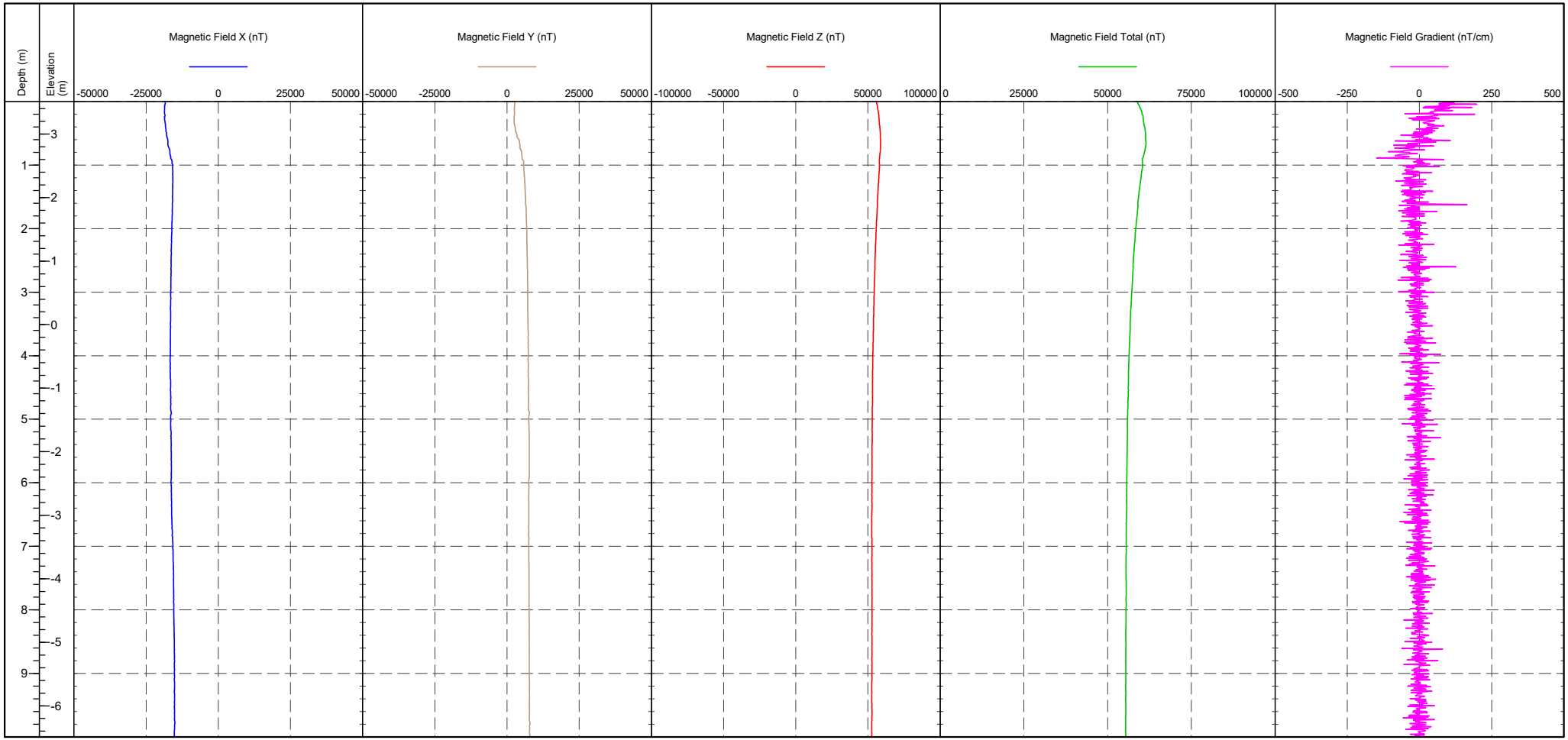
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:33 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID
CPTC-14

CLIENT : Geosphere Environmental	EASTING : 653887.3 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292609.8 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.51 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012

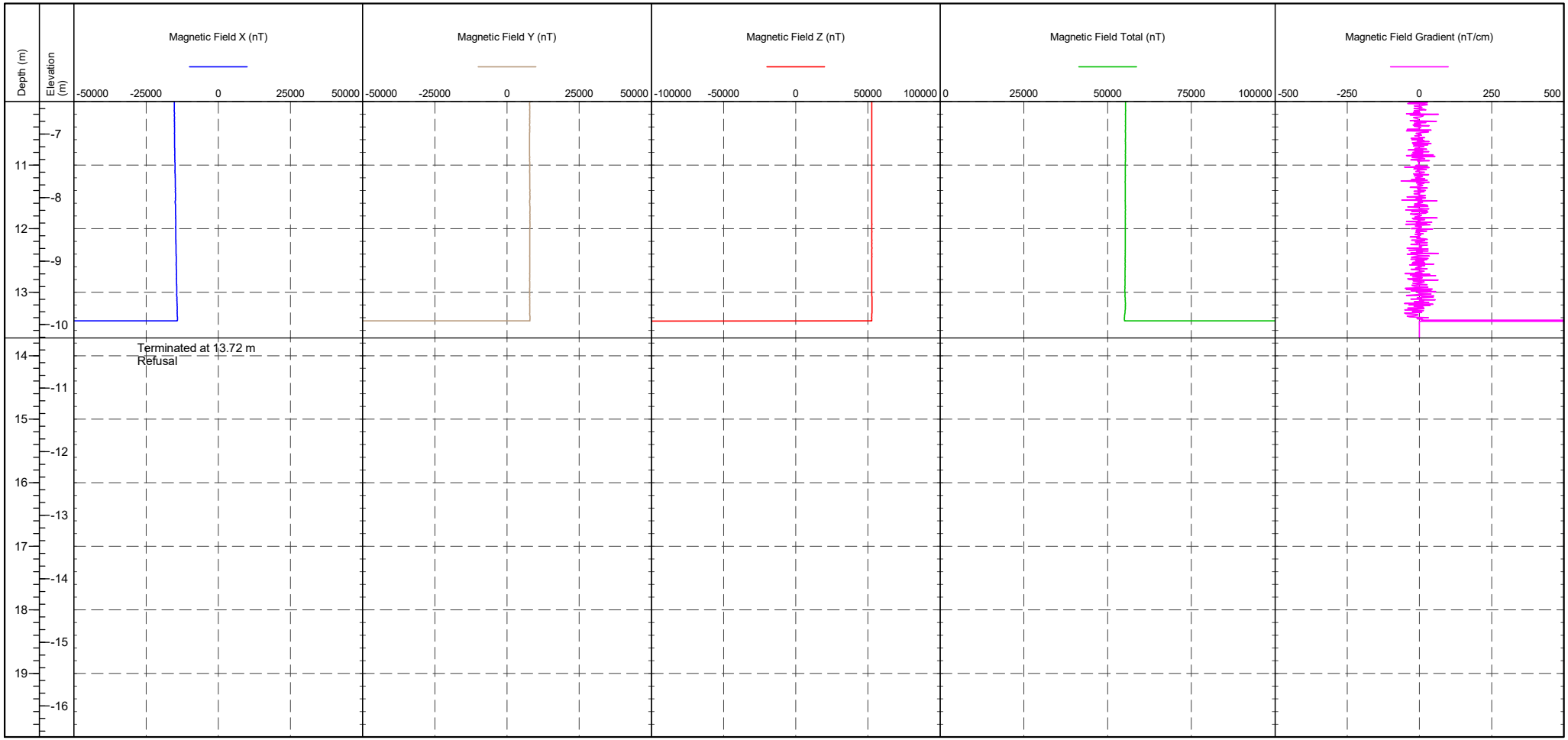


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV	-0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV	0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV	0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-14**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653887.3 m NORTHING : 292609.8 m ELEVATION : 3.51 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



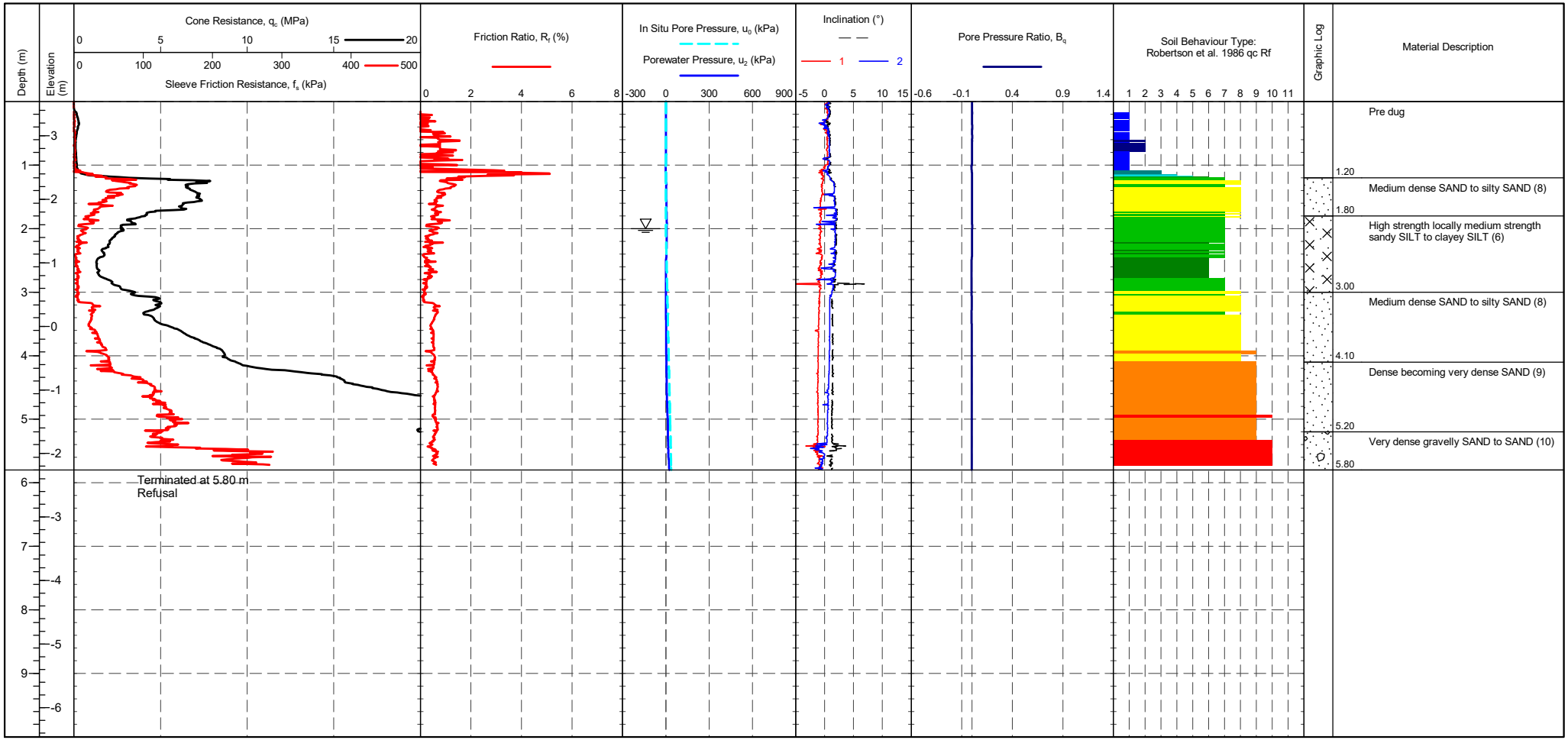
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	205 mV	202 mV / -0.032 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	316 mV	319 mV / 0.002 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-14	Pore Pressure 2	297 mV	416 mV / 0.037 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2462 mV	2415 mV

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-15**

CLIENT : Geosphere Environmental	EASTING : 653901.0 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292568.7 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.54 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre / Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV / 201 mV	-0.086 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	295 mV / 317 mV	0.017 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	Pore Pressure 2	311 mV / 313 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2470 mV / 2467 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

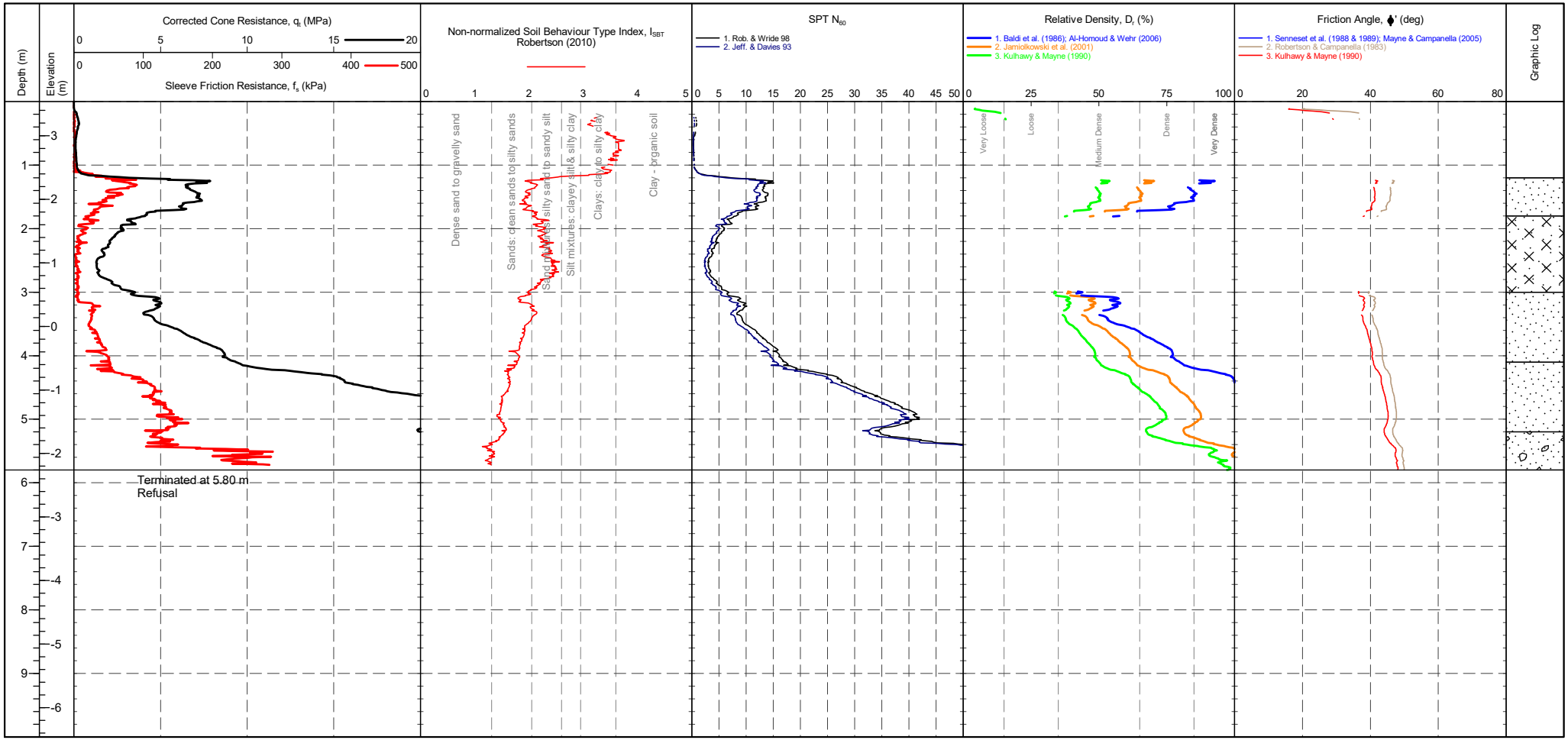
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID **CPTC-15**

CLIENT : Geosphere Environmental	EASTING : 653901.0 m	Remark:	SHEET : 1 OF 1
PROJECT : Lowestoft	NORTHING : 292568.7 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.54 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	209 mV	201 mV	-0.086 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	295 mV	317 mV	0.017 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	311 mV	313 mV	0.001 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	X-Y Inclinometer	2470 mV	2467 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

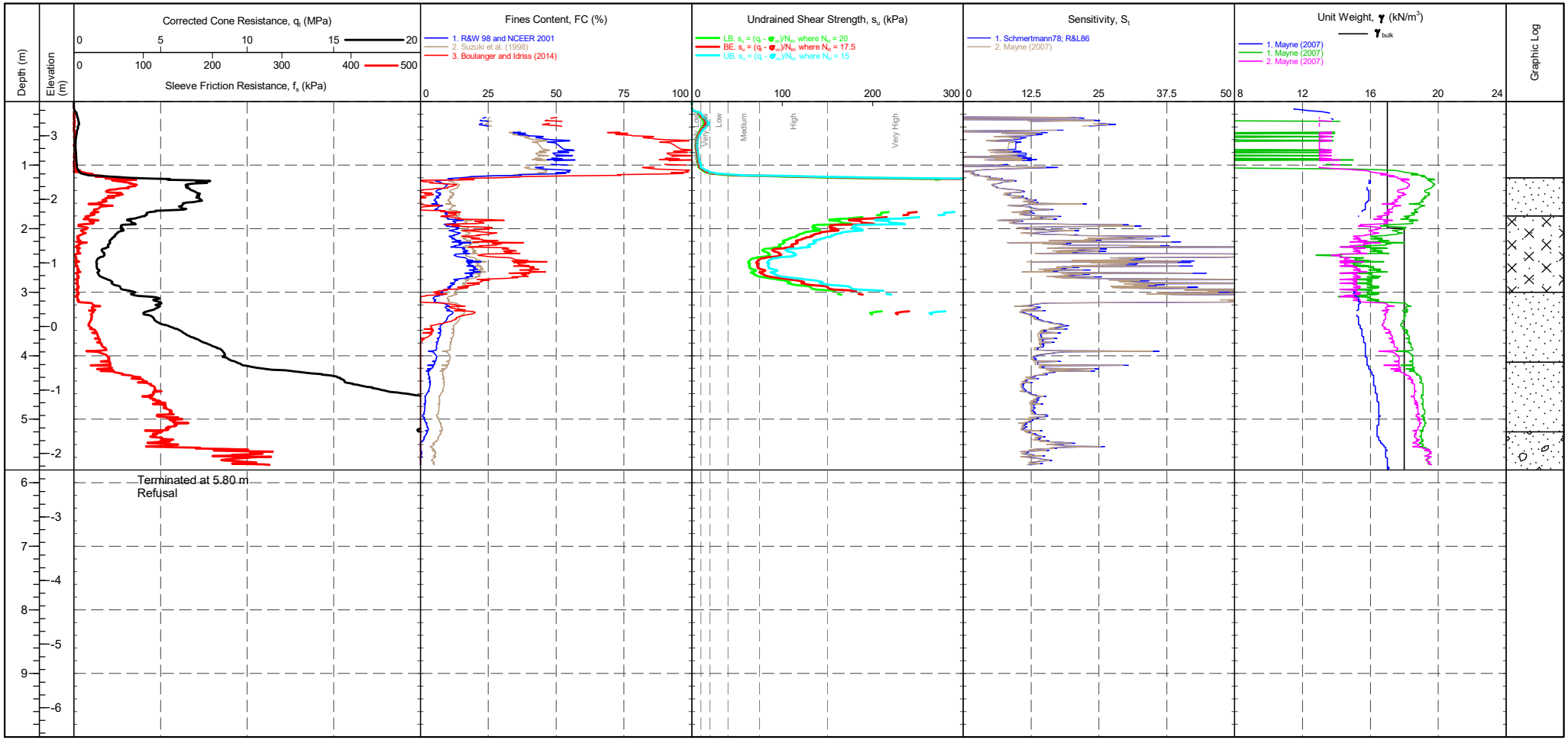
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-15**

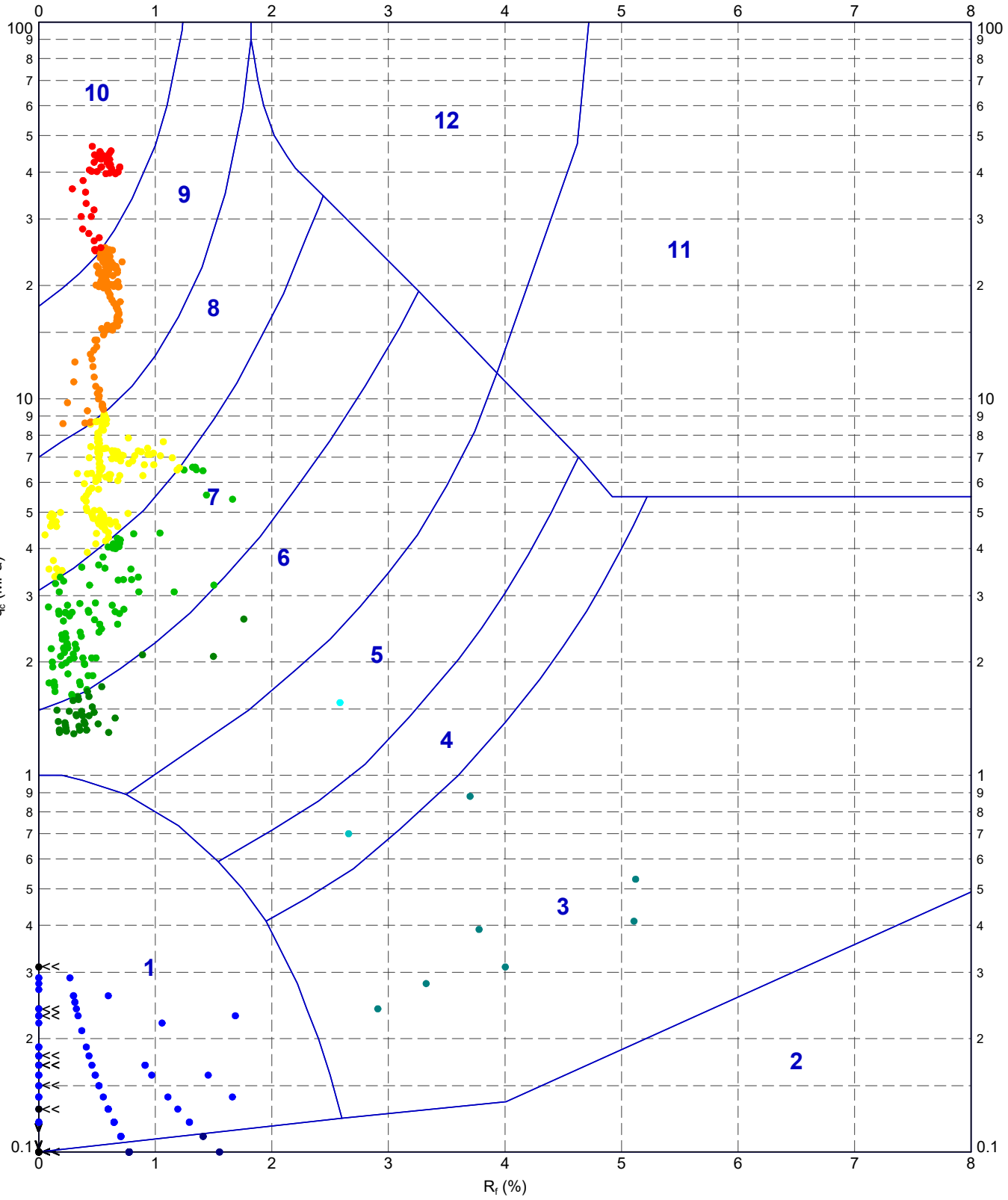
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653901.0 m NORTHING : 292568.7 m ELEVATION : 3.54 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre / Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV / 201 mV	-0.086 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	295 mV / 317 mV	0.017 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	Pore Pressure 2	311 mV / 313 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2470 mV / 2467 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-15

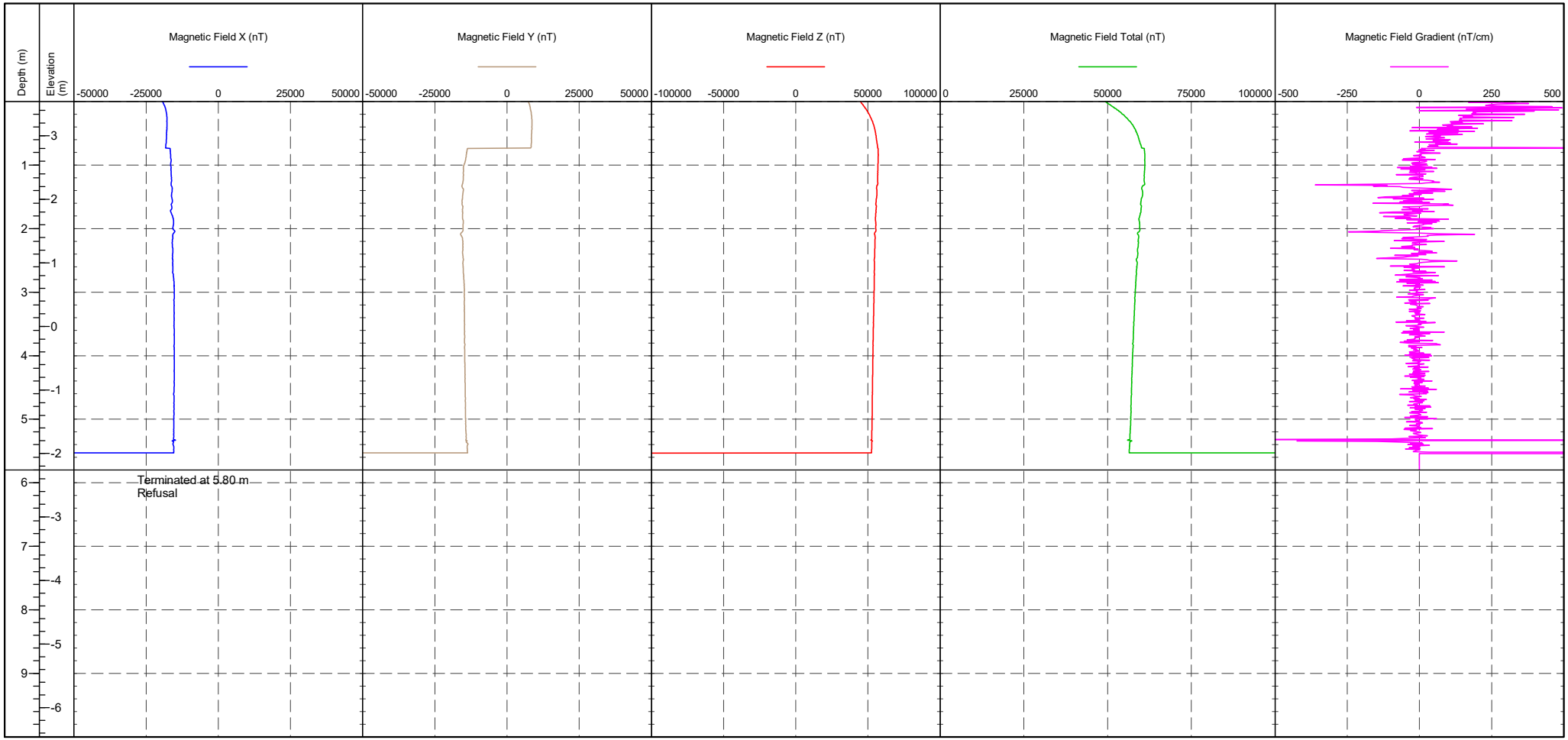
DRAWN		DATE	02/10/2018
CHECKED		DATE	02/10/2018
SCALE	Not To Scale		A4
PROJECT No	1170456	FIGURE No	

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:34 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-15**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653901.0 m NORTHING : 292568.7 m ELEVATION : 3.54 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	209 mV	201 mV	-0.086 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	295 mV	317 mV	0.017 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-15	Pore Pressure 2	311 mV	313 mV	0.001 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2470 mV	2467 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID

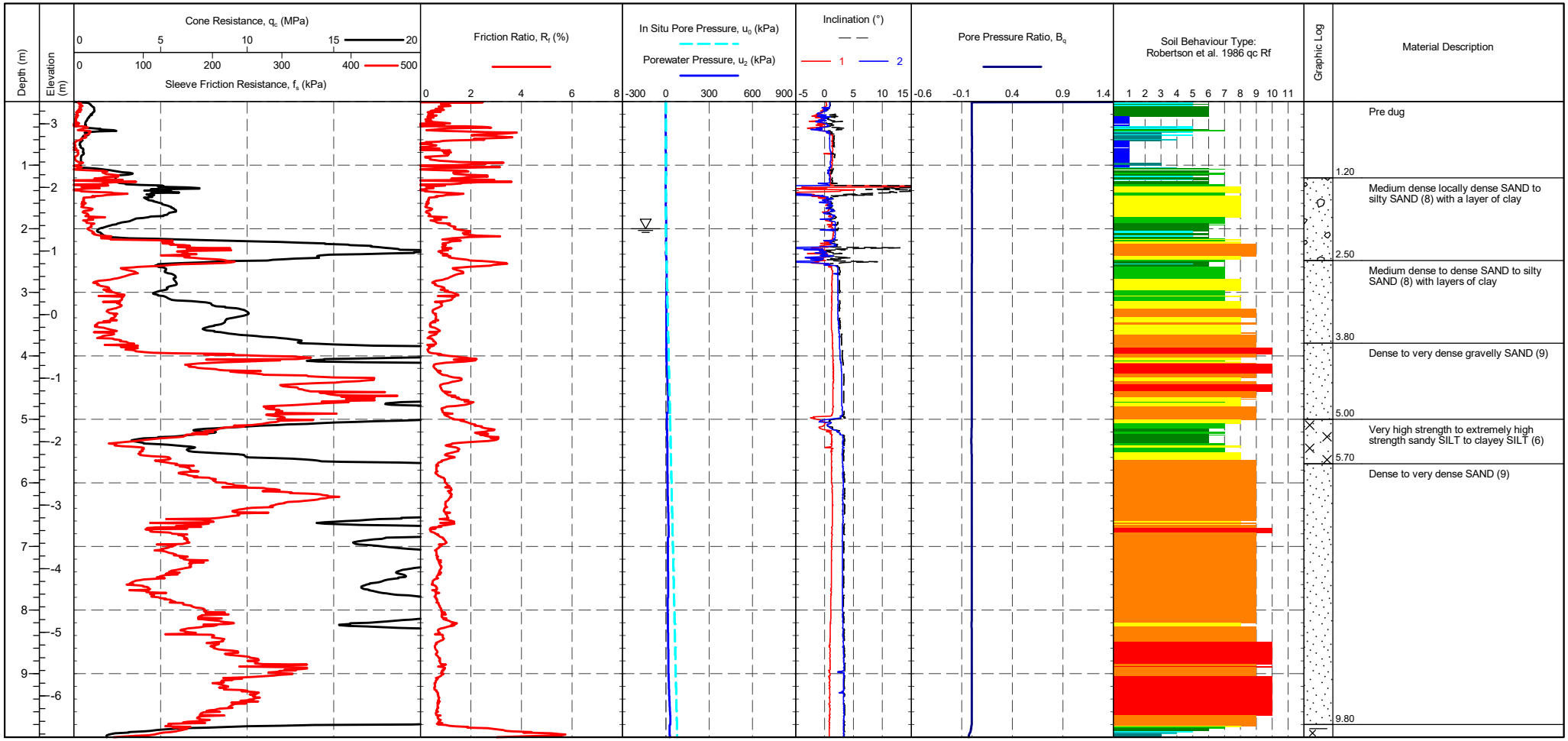
CPTC-18

CLIENT : Geosphere Environmental
PROJECT : Lowestoft
LOCATION : Lowestoft
PROJECT No. : 1170456

EASTING : 653951.1 m
NORTHING : 292447.8 m
ELEVATION : 3.35 m
CHECKED BY : LD
TERMINATION REASON : Machine Limit

Remark:
Test stopped due to buckling rods.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 07/12/2017
PLOT DATE : 02/10/2018
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2
CONE AREA RATIO	: 0.79	RIG	: CPT 010
FILTER POSITION	: u2	OPERATOR	: DH
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	208 mV	190 mV	-0.194 MPa
Sleeve	317 mV	304 mV	-0.01 kPa
Pore Pressure 2	327 mV	377 mV	0.016 kPa
X-Y Inclinometer	2465 mV	2416 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

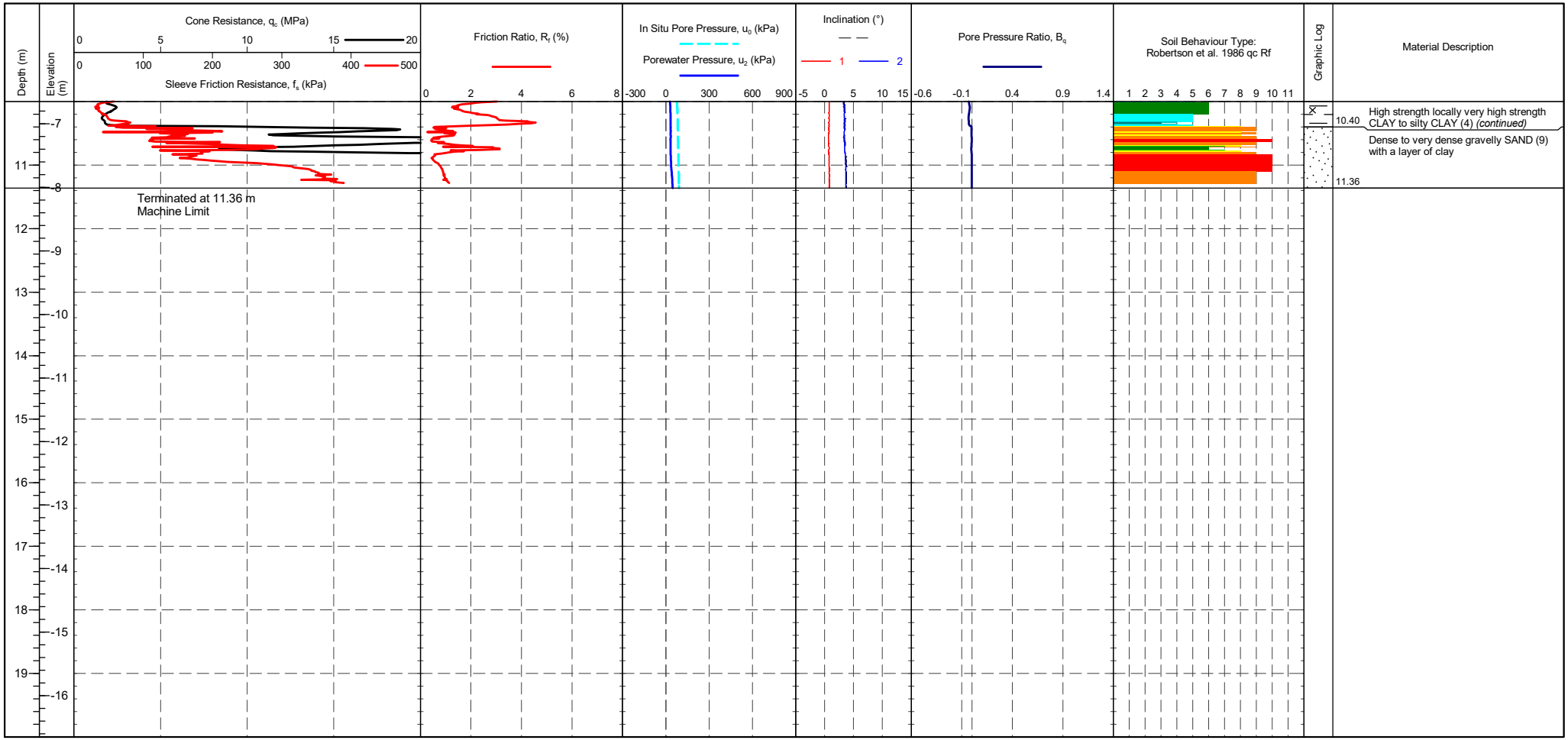
Groundwater Level
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-18**

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18		
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	208 mV	190 mV	-0.194 MPa
Sleeve	317 mV	304 mV	-0.01 kPa
Pore Pressure 2	327 mV	377 mV	0.016 kPa
X-Y Inclinometer	2465 mV	2416 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

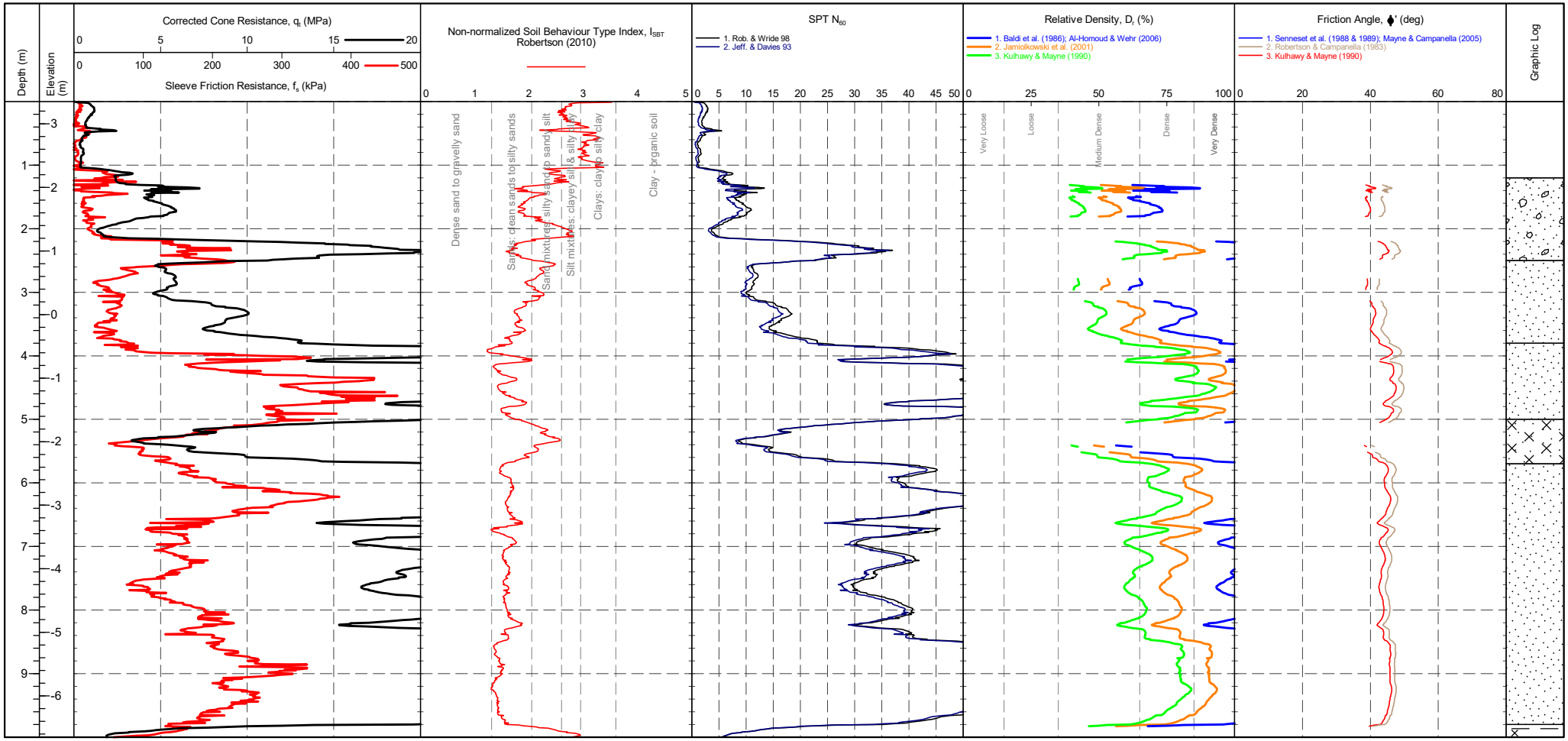
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-18

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 1 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

Groundwater Level

Dissipation Test

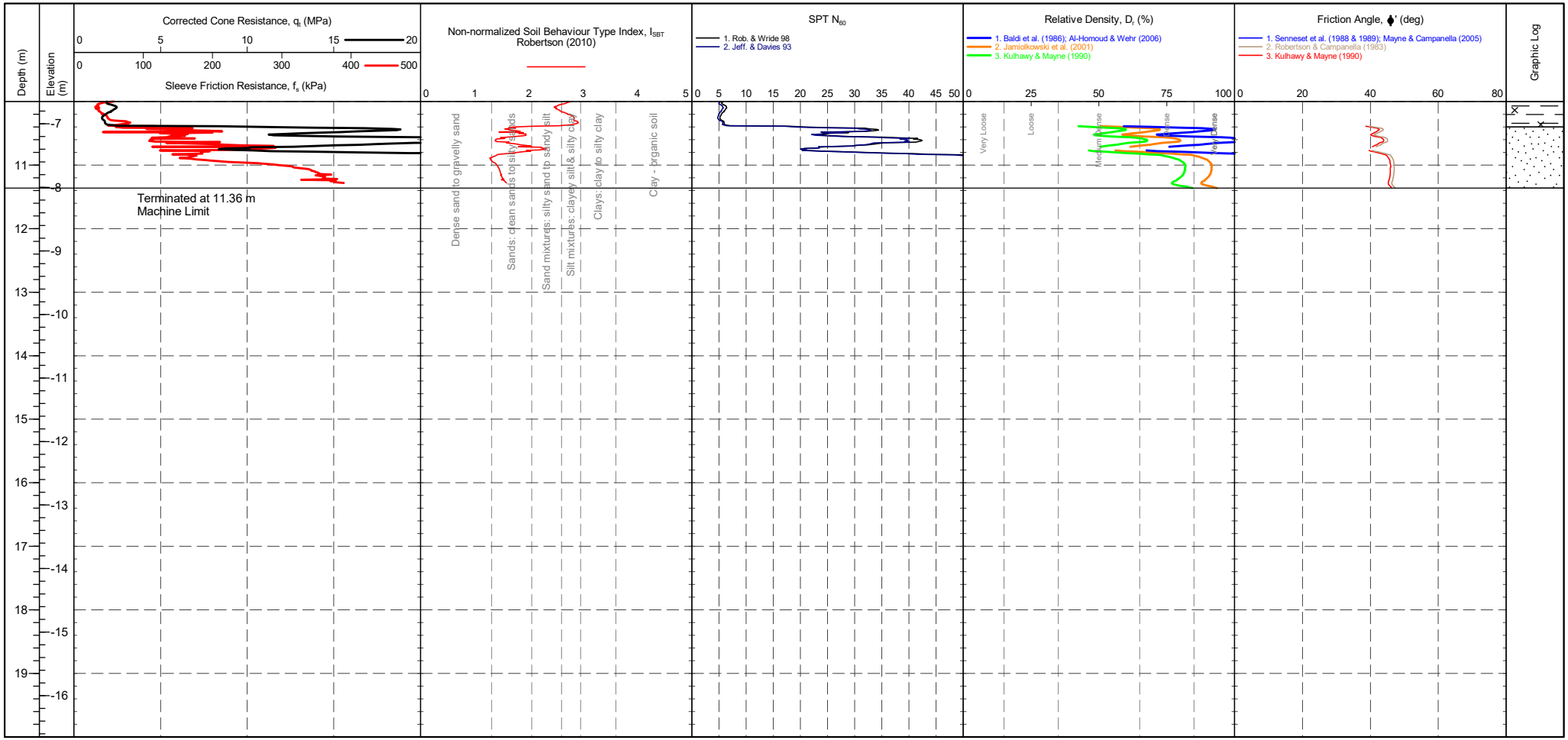
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-18

CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	208 mV	190 mV	-0.194 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	X-Y Inclinometer	2465 mV	2416 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

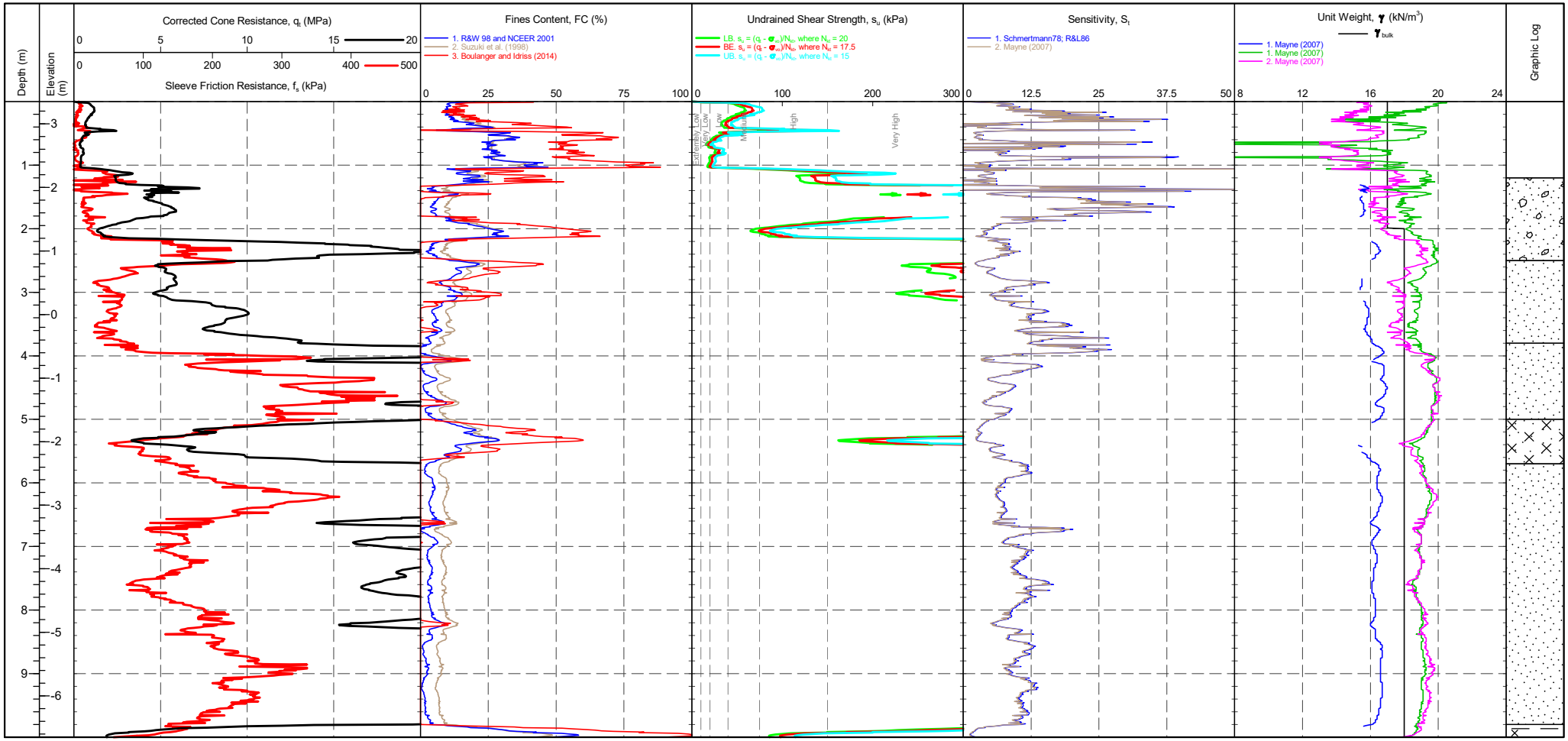
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-18**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653951.1 m NORTHING : 292447.8 m ELEVATION : 3.35 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

Groundwater Level

Dissipation Test

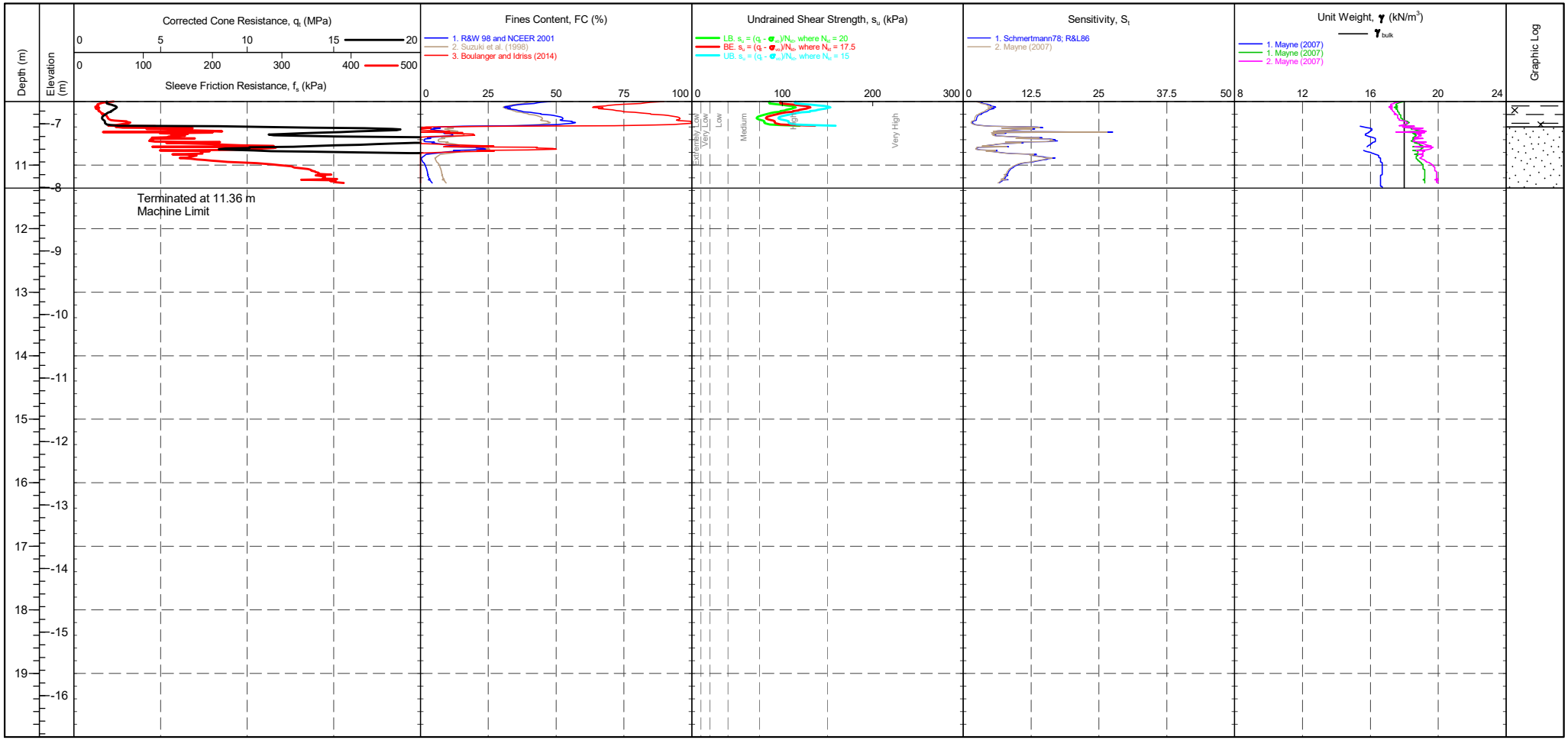
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID

CPTC-18

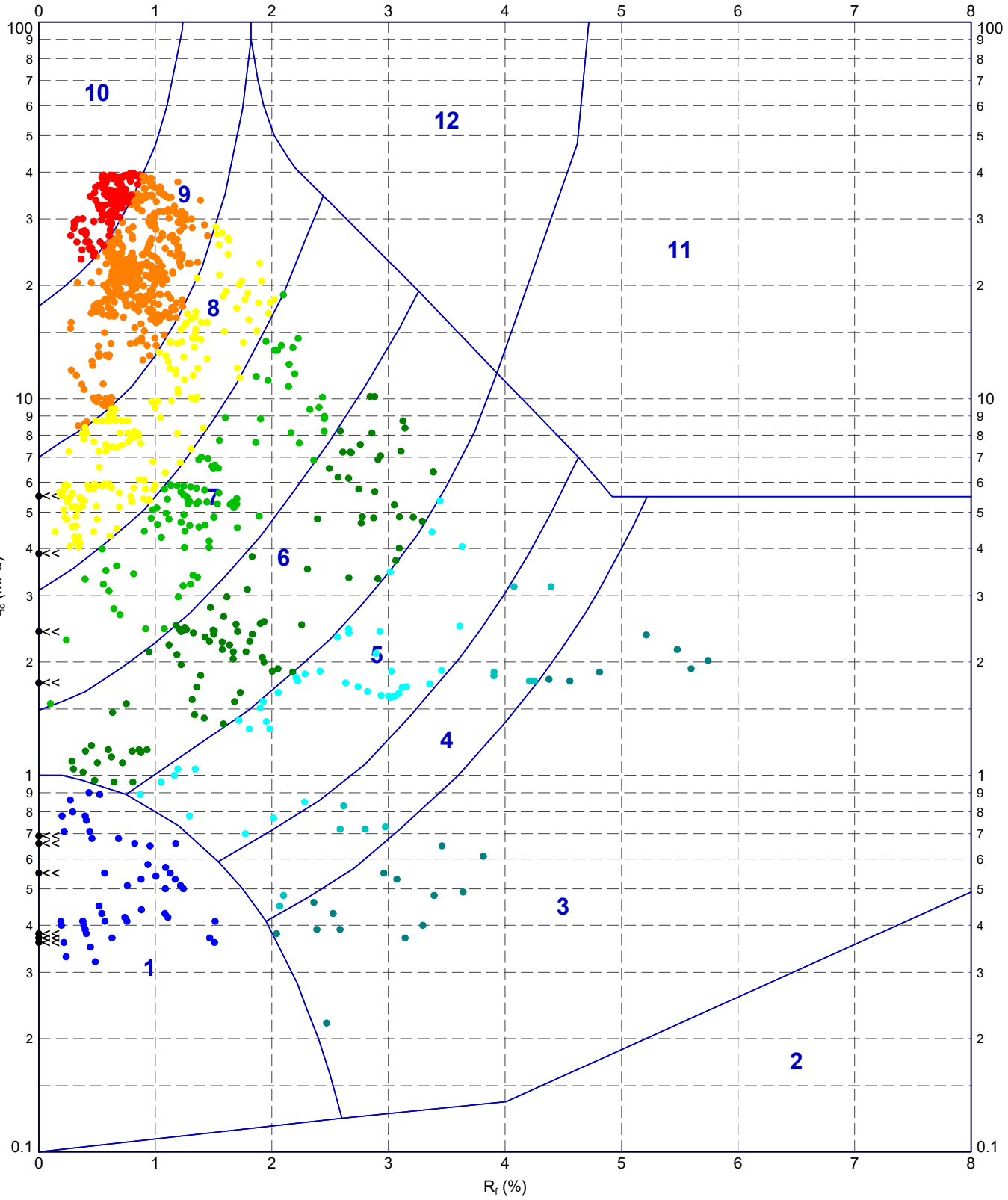
CLIENT : Geosphere Environmental	EASTING : 653951.1 m	Remark:	SHEET : 2 OF 2
PROJECT : Lowestoft	NORTHING : 292447.8 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 3.35 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Machine Limit		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-18

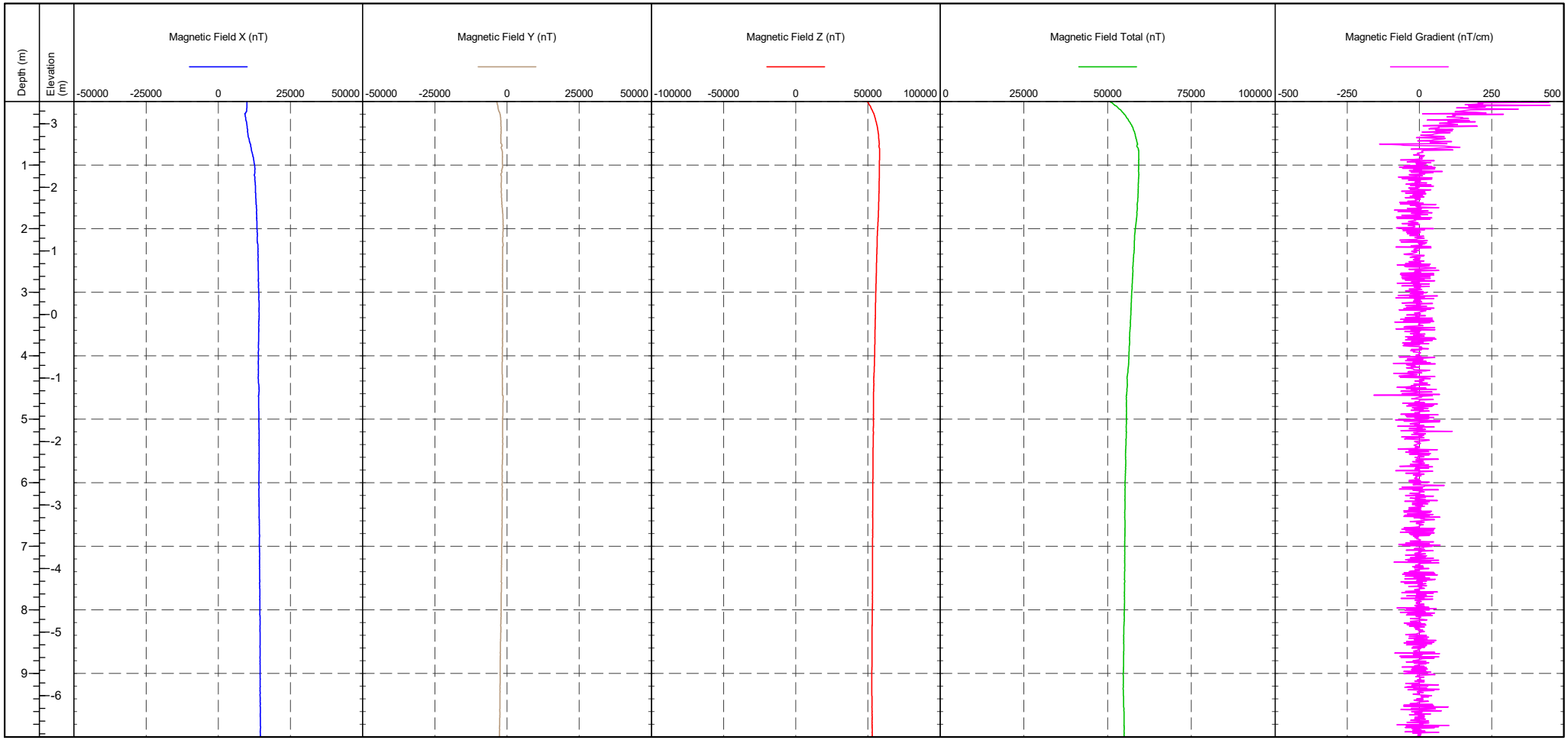
DRAWN	DATE 02/10/2018
CHECKED	DATE 02/10/2018
SCALE Not To Scale	A4
PROJECT No 1170456	FIGURE No

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:35 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID
CPTC-18

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653951.1 m NORTHING : 292447.8 m ELEVATION : 3.35 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

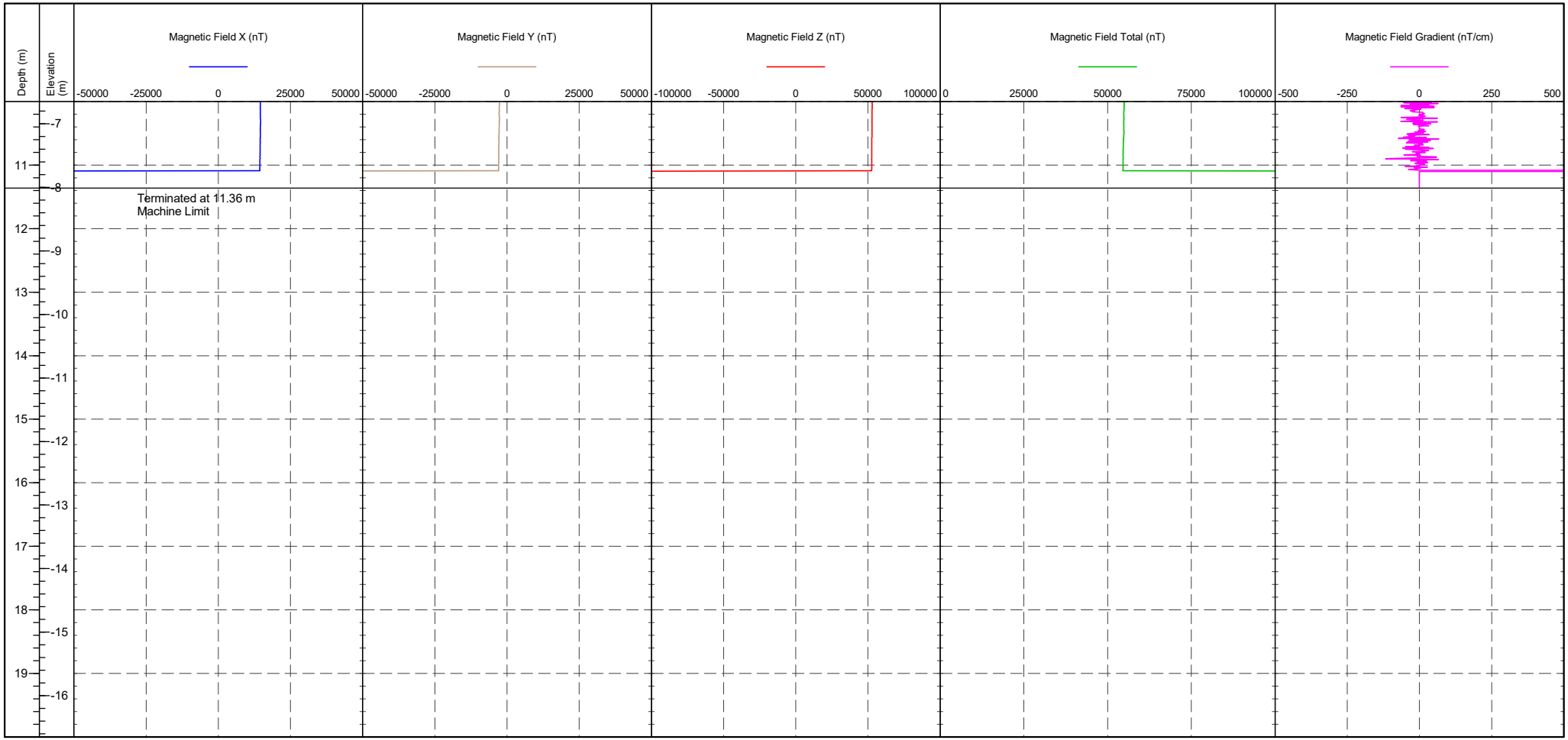


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-18**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653951.1 m NORTHING : 292447.8 m ELEVATION : 3.35 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



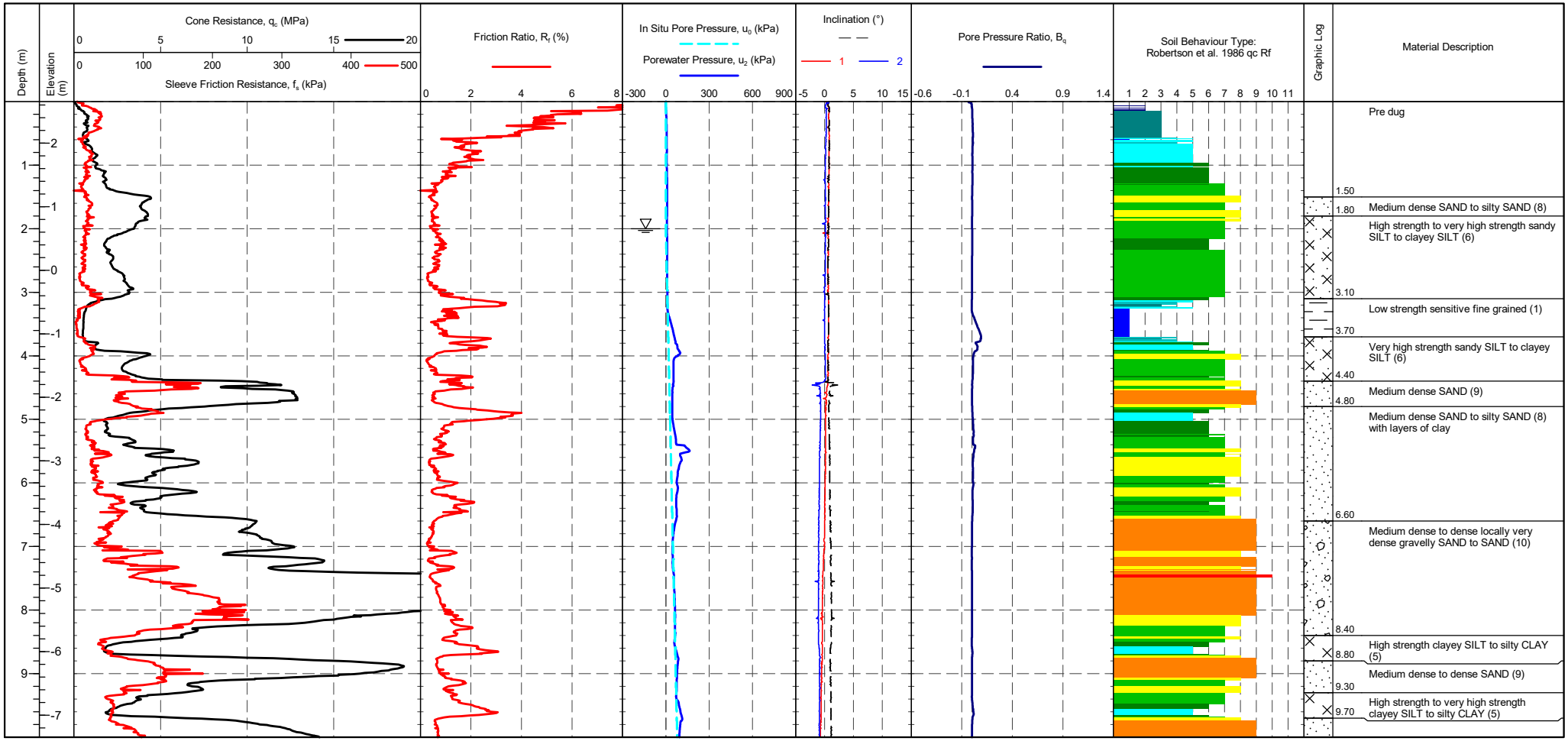
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	190 mV	-0.194 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	317 mV	304 mV	-0.01 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-18	Pore Pressure 2	327 mV	377 mV	0.016 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2465 mV	2416 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 1 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2		
CONE AREA RATIO	: 0.79	RIG	: CPT 010		
FILTER POSITION	: u2	OPERATOR	: DH		
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20		
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold		

CPTU ZERO VALUES

	Pre	Post	Difference
Transducer			
Tip	208 mV	161 mV	-0.508 MPa
Sleeve	293 mV	160 mV	-0.103 kPa
Pore Pressure 2	306 mV	162 mV	-0.045 kPa
X-Y Inclinometer	2460 mV	158 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

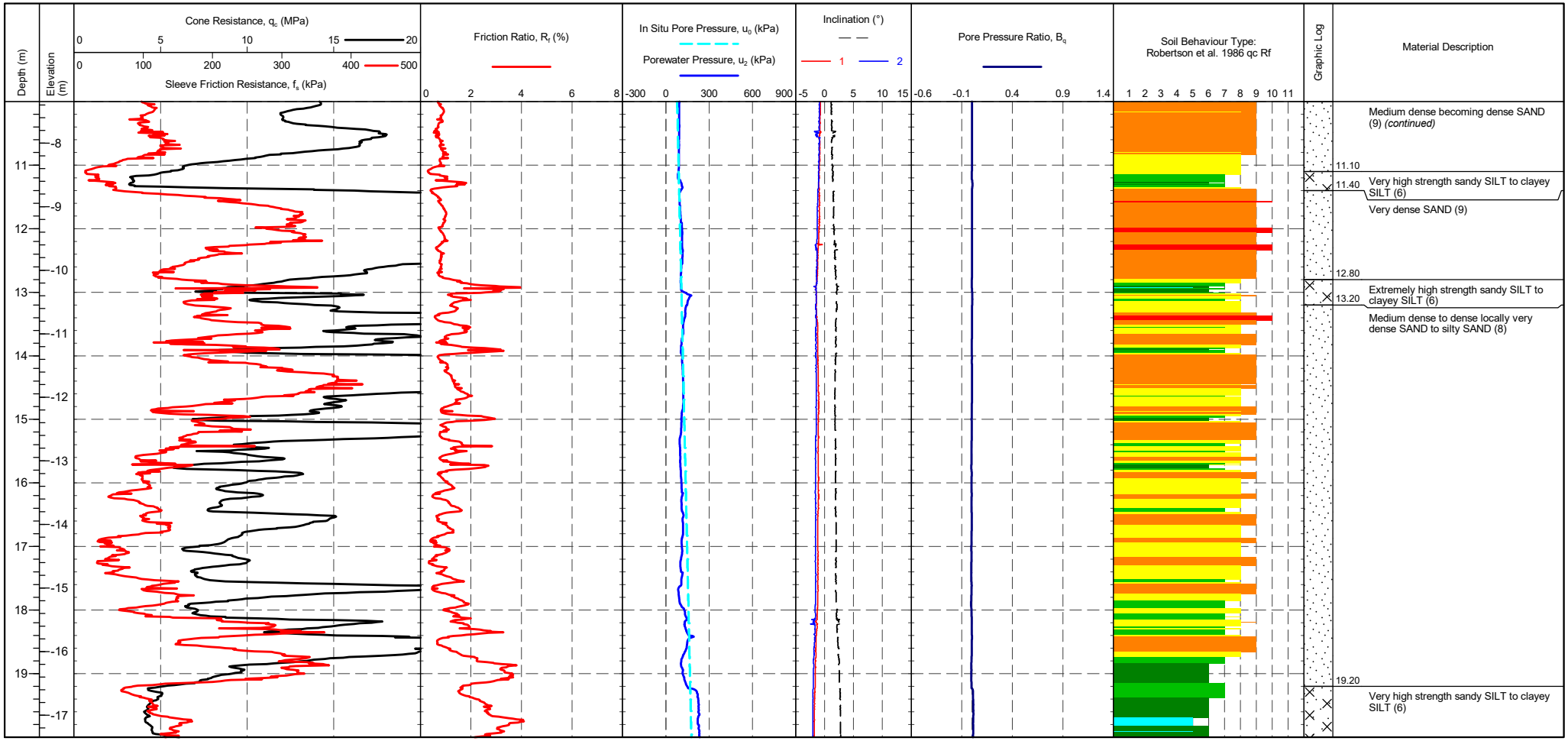
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 2 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

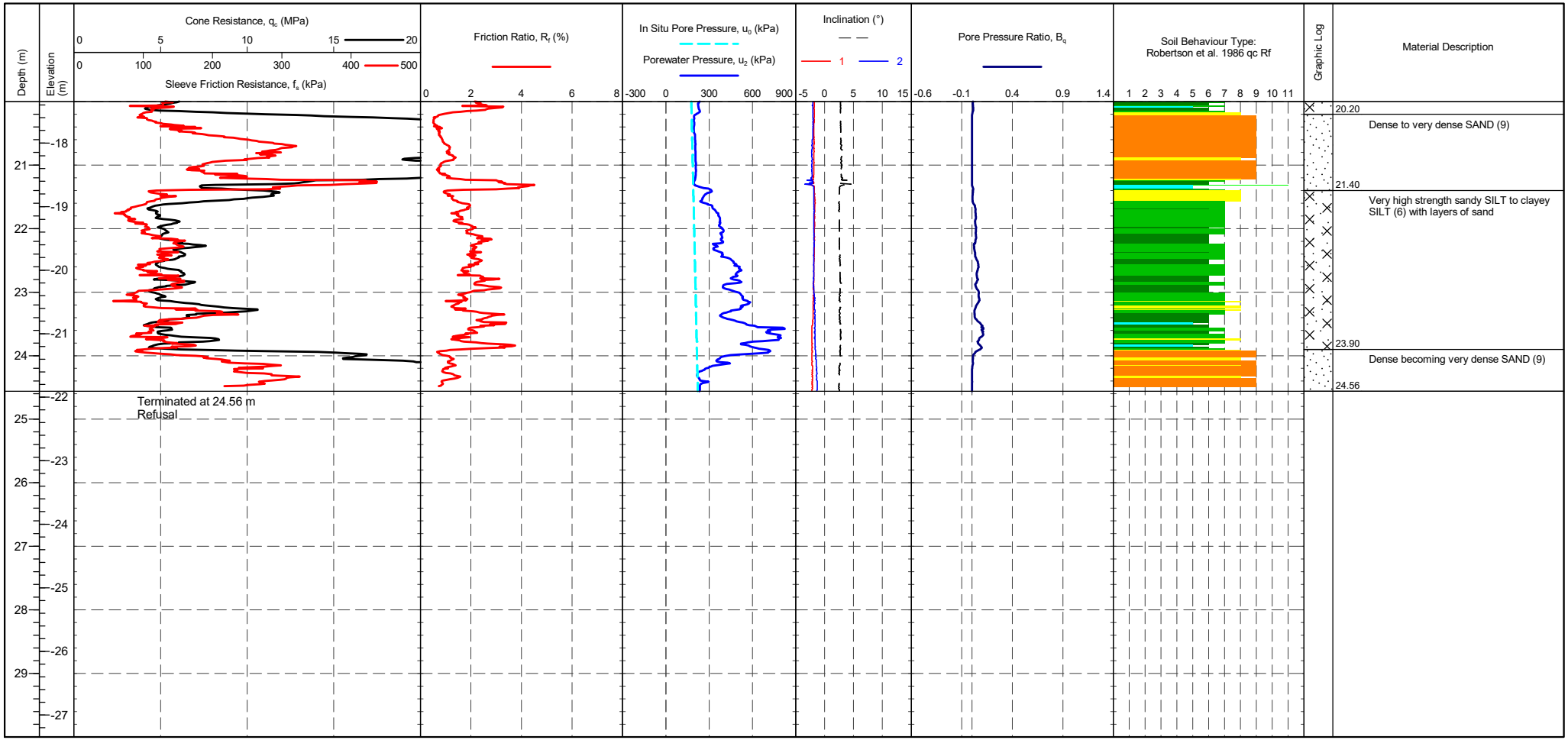
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 01

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 3 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

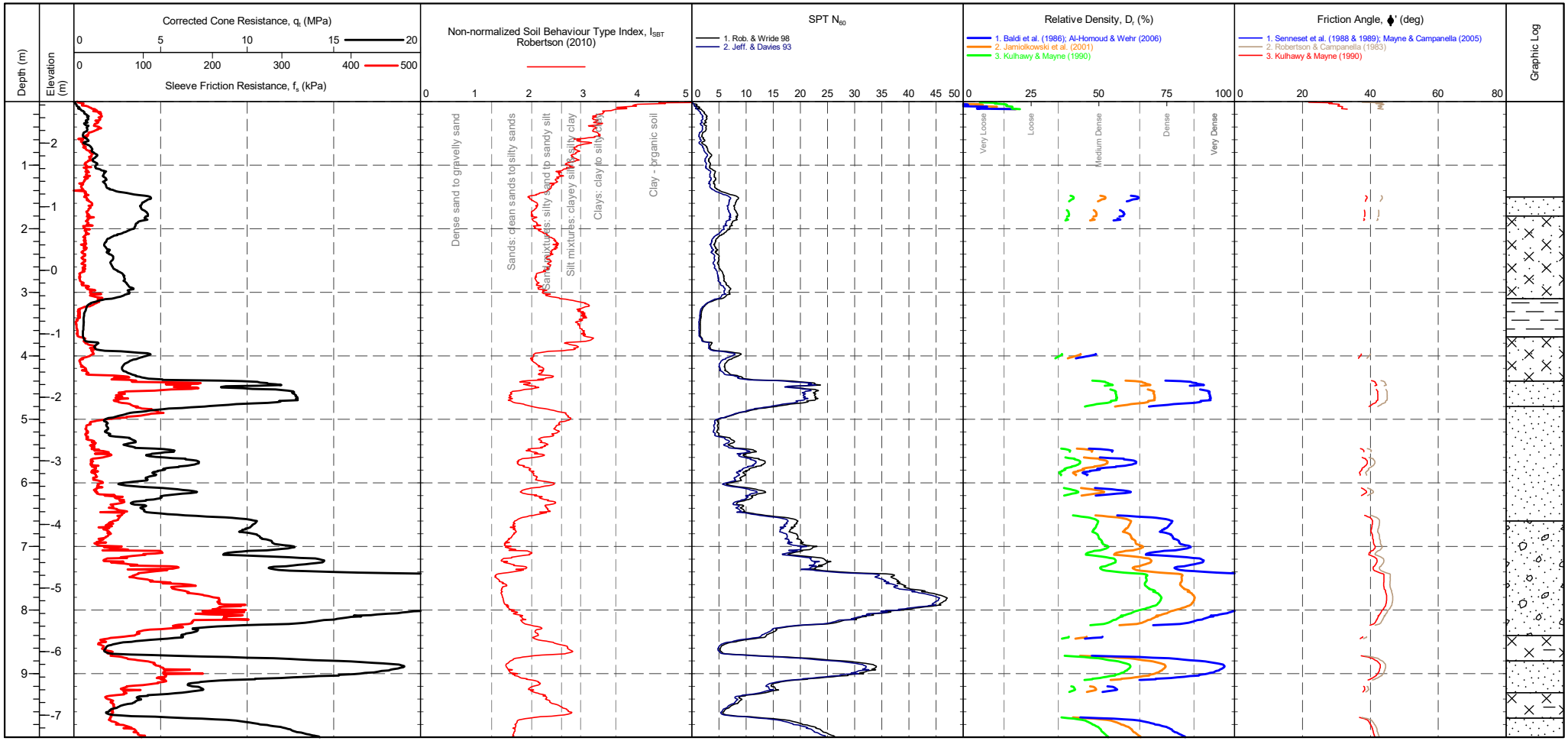
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 1 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

Dissipation Test

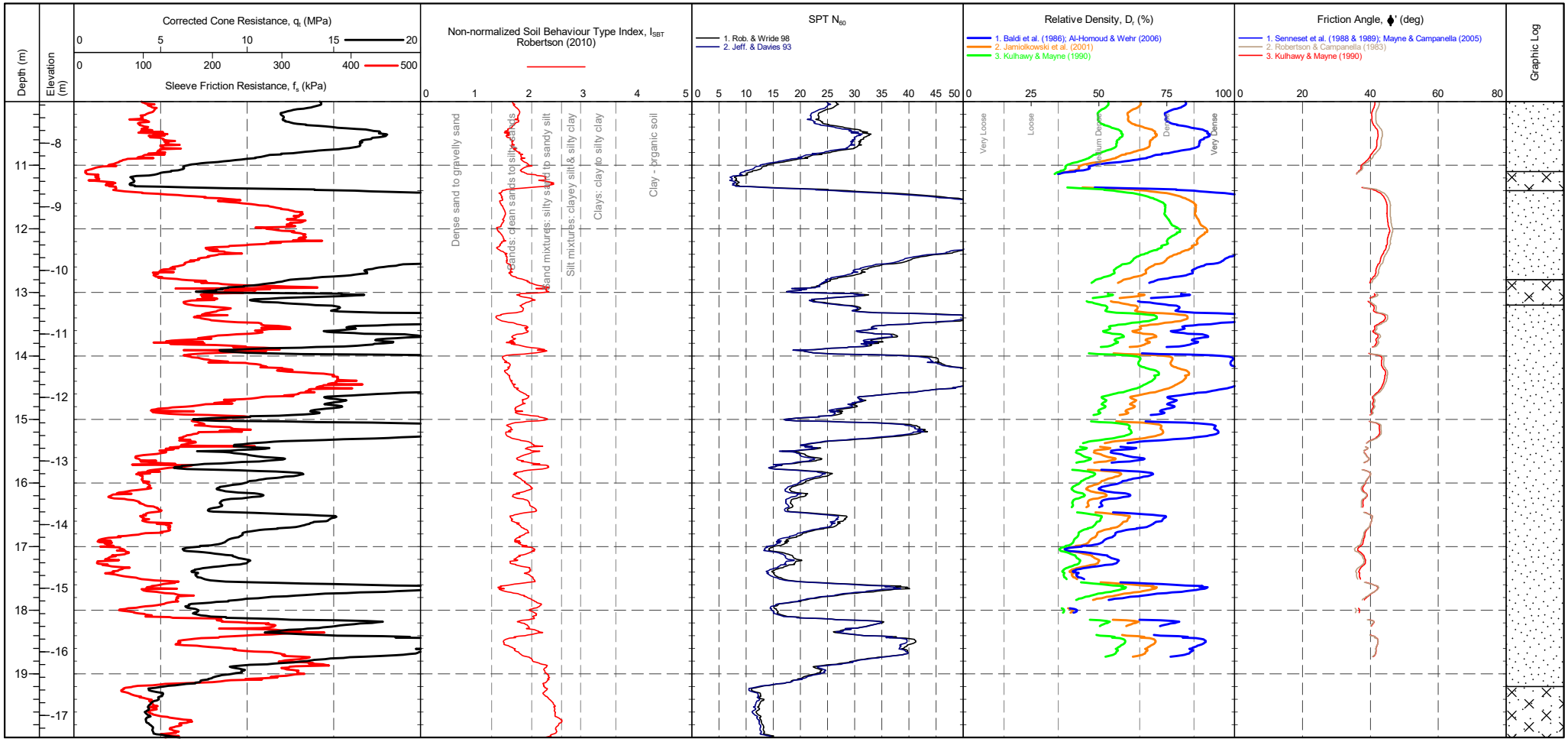
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-20

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 2 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm²	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV / -0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV / -0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV / -0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV

Groundwater Level

Dissipation Test

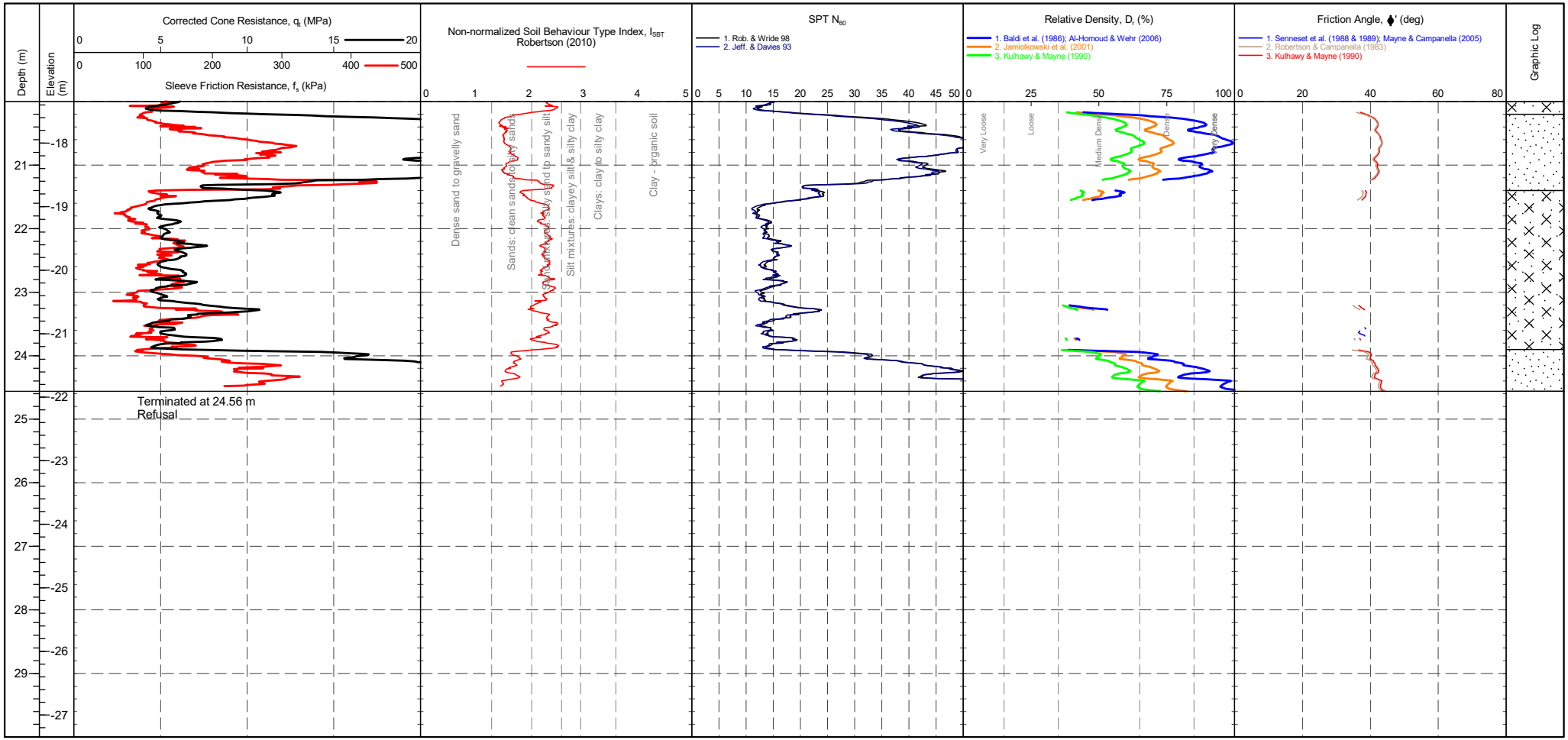
IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 02

PointID

CPTC-20

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 3 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



				CPTU ZERO VALUES			
CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	Transducer	Pre	Post	Difference
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Tip	208 mV	161 mV	-0.508 MPa
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER POSITION	: u2	OPERATOR	: DH	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	X-Y Inclinometer	2460 mV	158 mV	
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold				

Groundwater Level

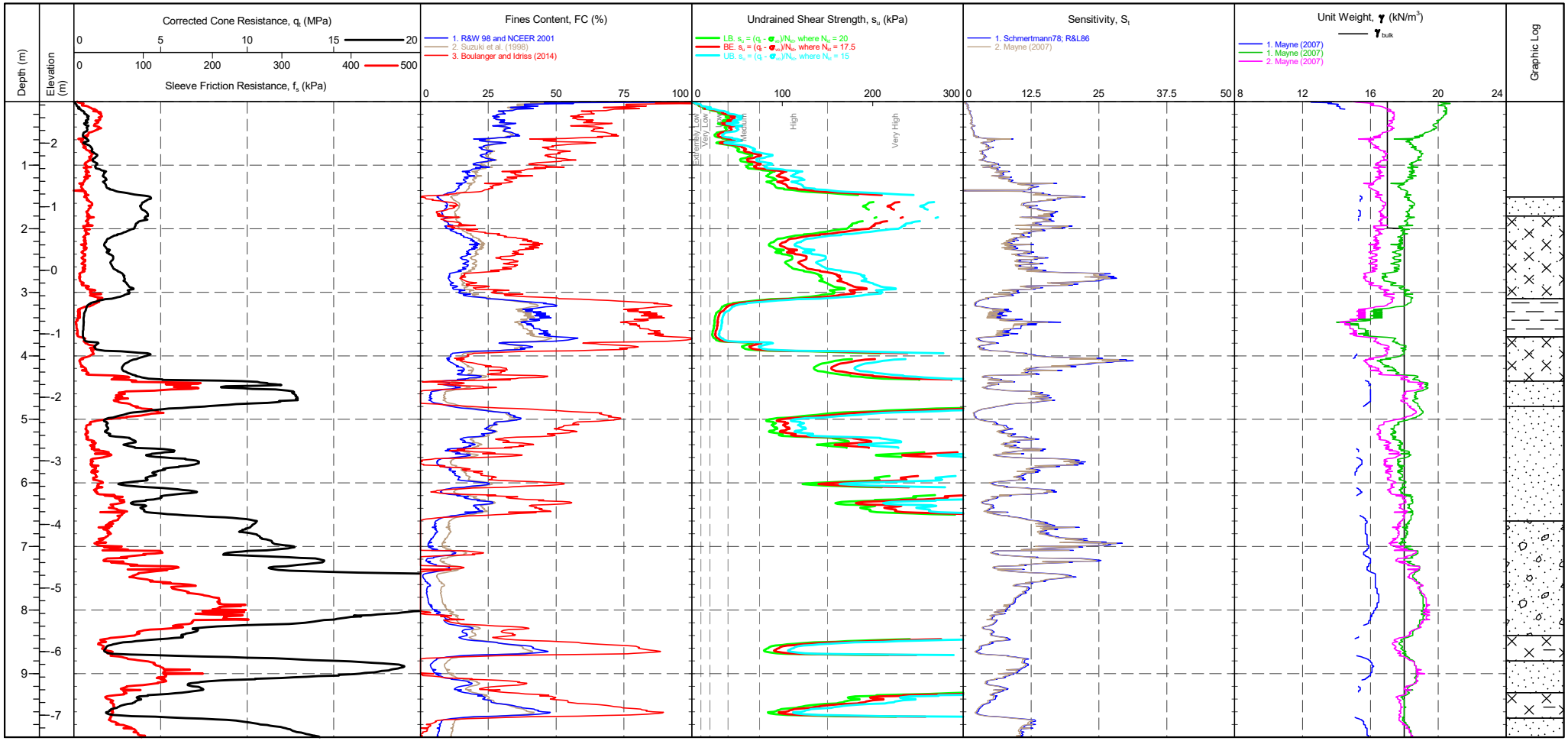
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-20**

CLIENT : Geosphere Environmental	EASTING : 653913.6 m	Remark:	SHEET : 1 OF 3
PROJECT : Lowestoft	NORTHING : 292890.1 m	Test refused on total pressure.	STATUS : Final
LOCATION : Lowestoft	ELEVATION : 2.65 m		TEST DATE : 07/12/2017
PROJECT No. : 1170456	CHECKED BY : LD		PLOT DATE : 02/10/2018
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

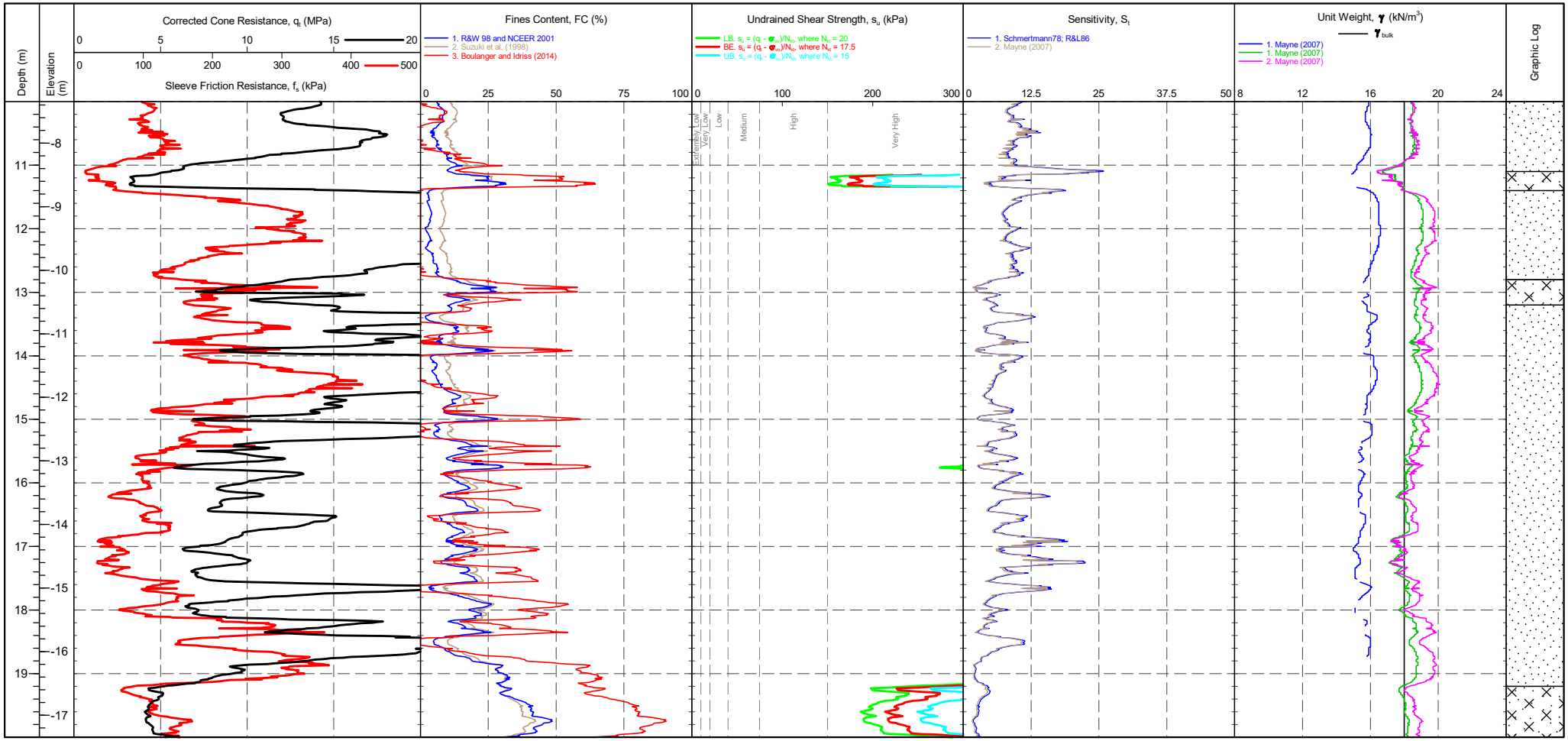
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1214 CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE FRICTION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 010 OPERATOR : DH FILE NAME : 1170456-CPTC-20 WEATHER : Sunny & Cold	CPTU ZERO VALUES		
		Transducer	Pre	Post	Difference
		Tip	208 mV	161 mV	-0.508 MPa
		Sleeve	293 mV	160 mV	-0.103 kPa
		Pore Pressure 2	306 mV	162 mV	-0.045 kPa
		X-Y Inclinometer	2460 mV	158 mV	

Groundwater Level

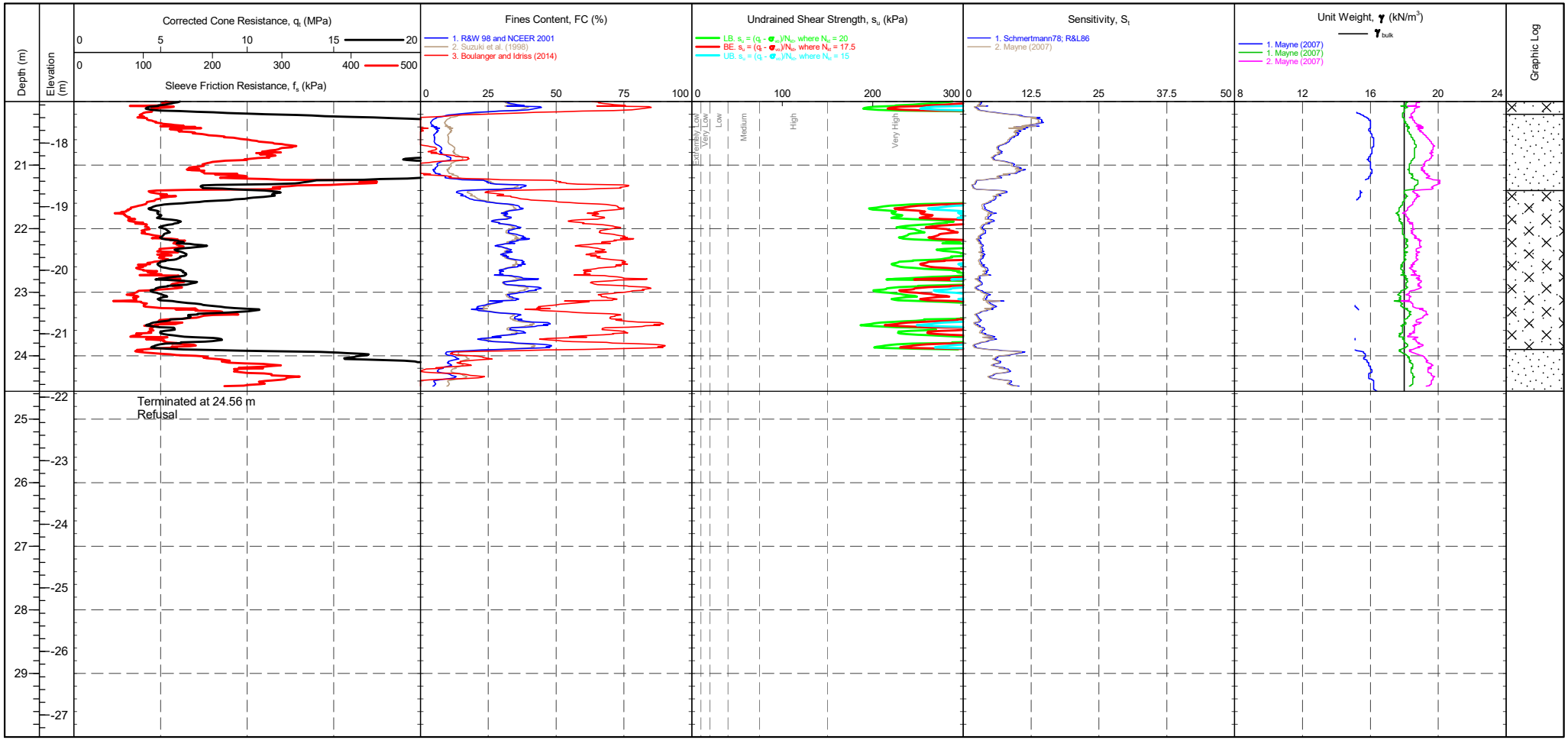
Dissipation Test

IN SITU SITE INVESTIGATION Working with: geosphere environmental

CPT LOG 03

PointID **CPTC-20**

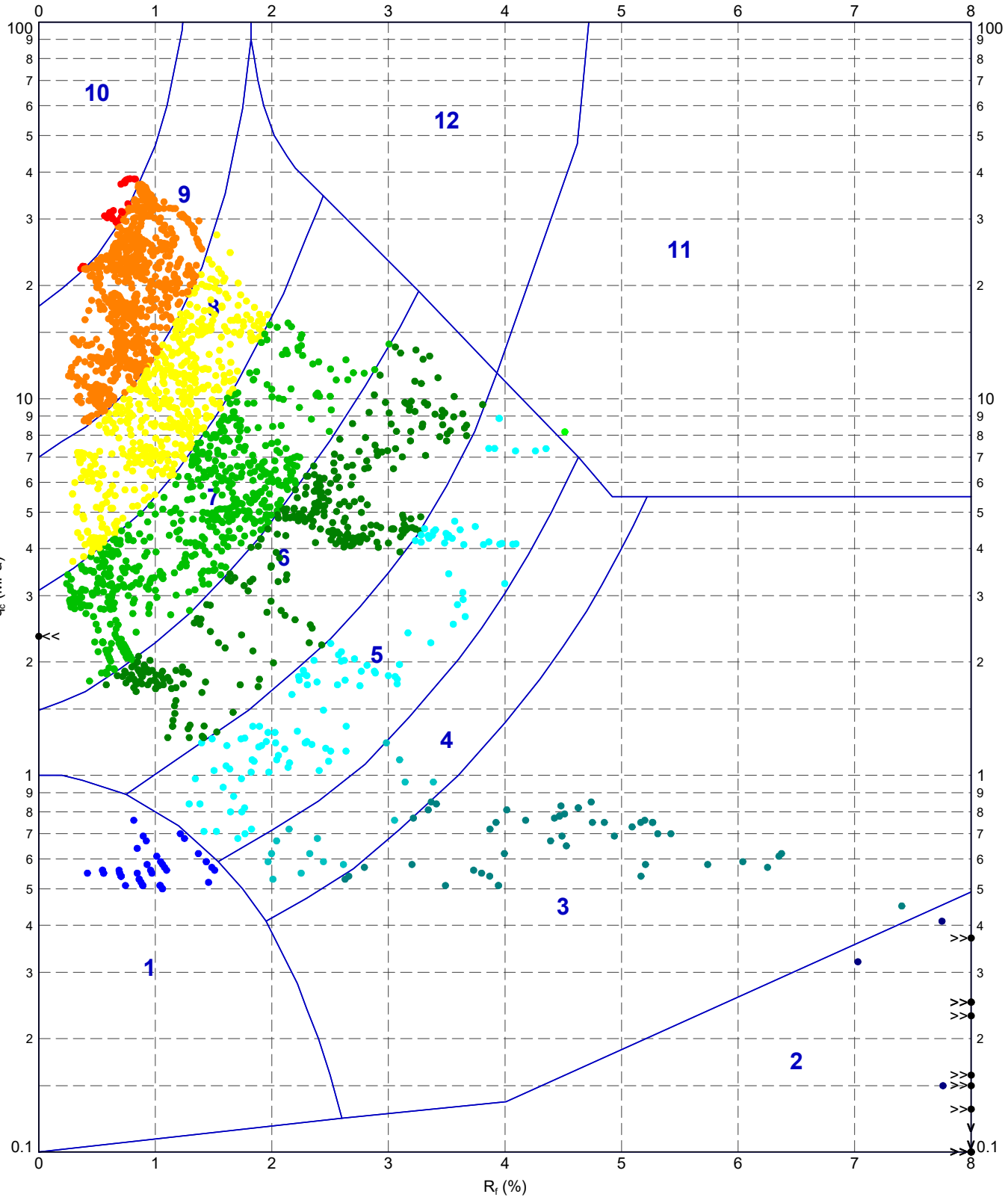
CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV / -0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV / -0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV / -0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	4 - Silty CLAY to CLAY	7 - Silty SAND to sandy SILT	10 - Gravelly SAND to SAND
2 - Organic material	5 - Clayey SILT to silty CLAY	8 - SAND to silty SAND	11 - Very stiff fine grained
3 - CLAY	6 - Sandy SILT to clayey SILT	9 - SAND	12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE

Geosphere Environmental
Lowestoft
Lowestoft
Robertson et al. 1986 q_c vs. R_f - CPTC-20

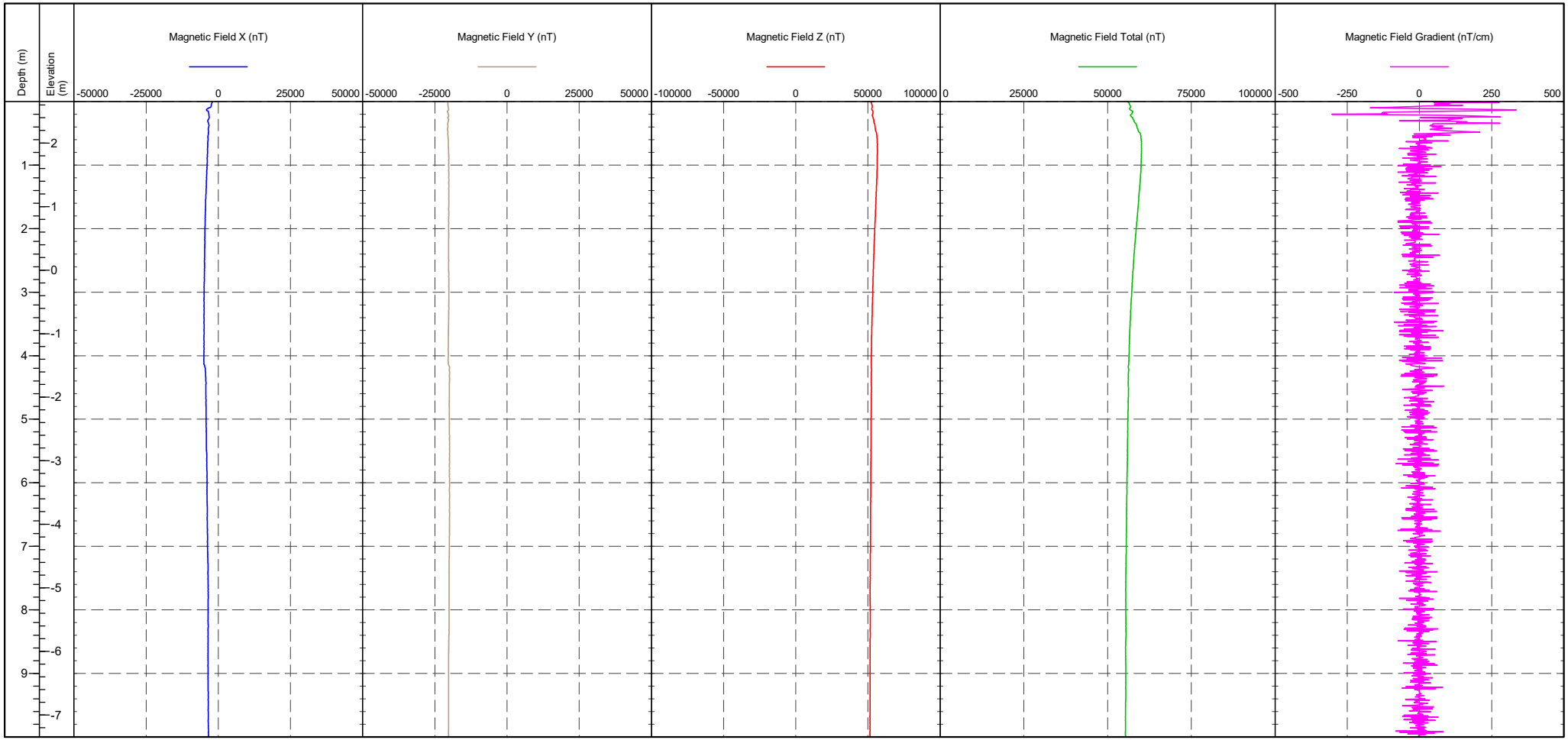
DRAWN		DATE	02/10/2018
CHECKED		DATE	02/10/2018
SCALE	Not To Scale		A4
PROJECT No	1170456	FIGURE No	

INSITUSI 2.02.1 LIB.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1170456-LOWESTOFT.GPJ <<DrawingFile>> 02/10/2018 21:38 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

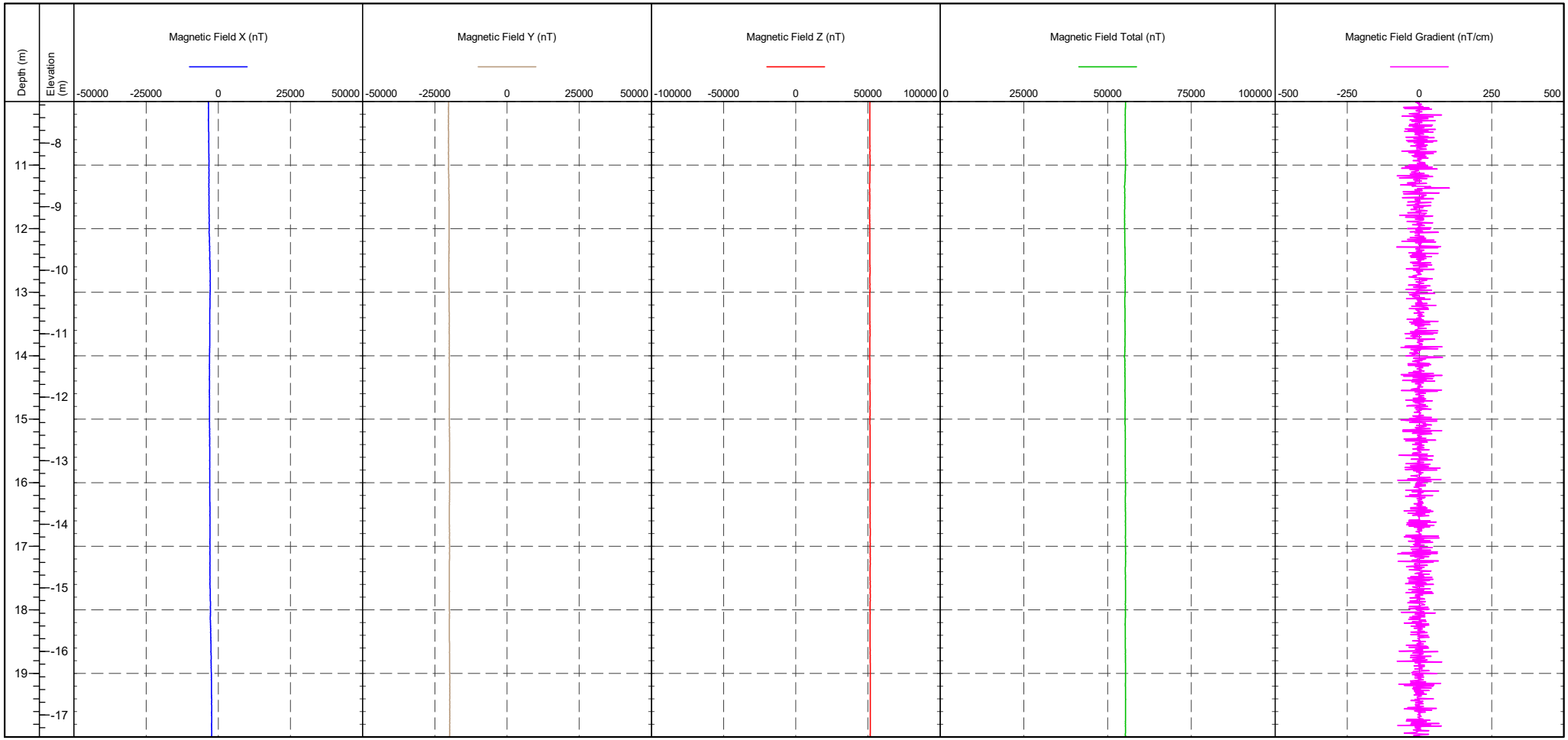


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012

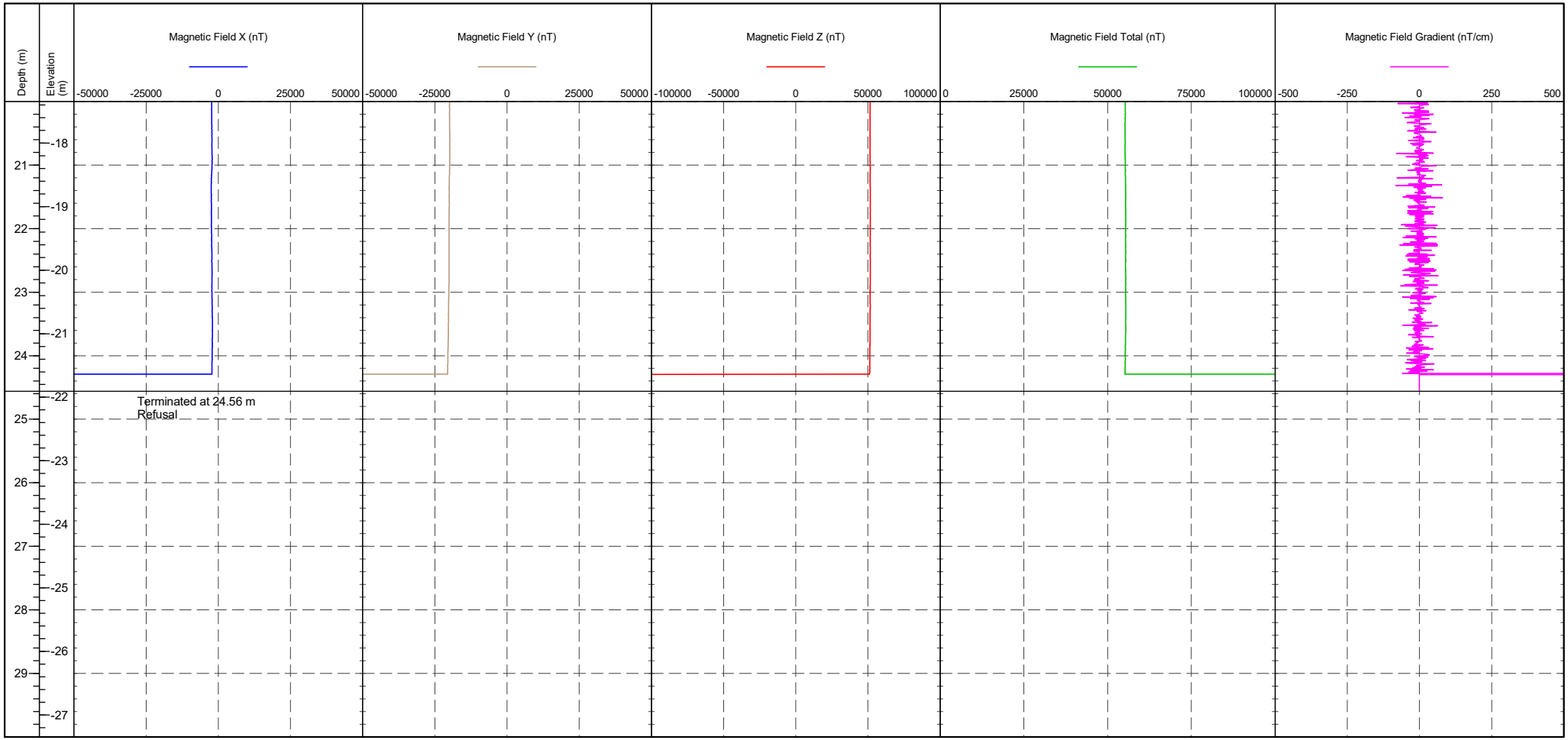


CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES			
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post	Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV	-0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV	-0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV	-0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV	

IN SITU SITE INVESTIGATION Working with: geosphere environmental

PointID **CPTC-20**

CLIENT : Geosphere Environmental PROJECT : Lowestoft LOCATION : Lowestoft PROJECT No. : 1170456	EASTING : 653913.6 m NORTHING : 292890.1 m ELEVATION : 2.65 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 07/12/2017 PLOT DATE : 02/10/2018 METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1214	TEST TYPE	: TE2	CPTU ZERO VALUES		
CONE AREA	: 15cm^2	APPLICATION CLASS	: 2	Transducer	Pre	Post / Difference
CONE AREA RATIO	: 0.79	RIG	: CPT 010	Tip	208 mV	161 mV / -0.508 MPa
FILTER POSITION	: u2	OPERATOR	: DH	Sleeve	293 mV	160 mV / -0.103 kPa
FILTER TYPE	: HDPE	FILE NAME	: 1170456-CPTC-20	Pore Pressure 2	306 mV	162 mV / -0.045 kPa
FRICTION REDUCER	: None	WEATHER	: Sunny & Cold	X-Y Inclinometer	2460 mV	158 mV



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

APPENDIX 10 – PLATE BEARING TEST RESULTS AND LOGS

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

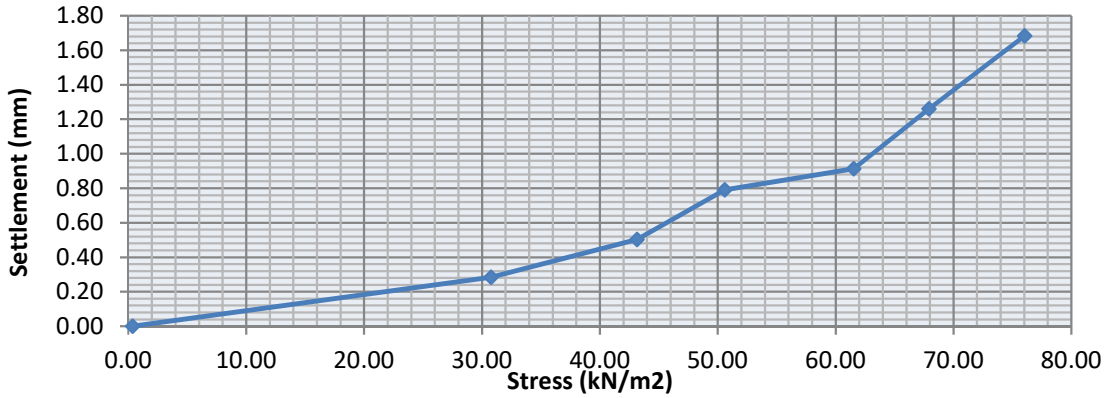
Report No: ES1608-2_TPC22
Date of Report: 22-Aug-17
Date of Test: 21-Aug-17

Test Details

Test Location:	TPC 22
Material Description:	Mixed Clay with Sand and 6F2
Reaction Load:	7.5T Excavator
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
8.7	22	32	31	28	0.28	31
12.2	40	63	48	50	0.50	43
14.3	56	96	85	79	0.79	51
17.4	28	146	100	91	0.91	62
19.2	81	162	135	126	1.26	68
21.5	125	200	180	168	1.68	76



Maximum Applied Pressure (Kpa)	76
Modulus of Subgrade Reaction	43649
Maximum Deformation (mm)	1.68

Stress at 1.25mm plate settlement (kN/m^2):	68
Equivalent CBR value (%)	7
Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

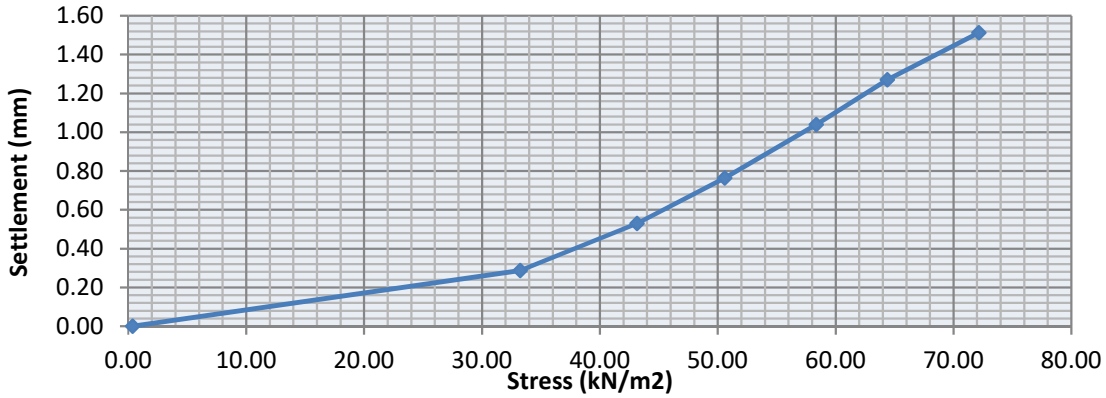
Report No: ES1608-3_TPC23
Date of Report: 22-Aug-17
Date of Test: 21-Aug-17

Test Details

Test Location:	TPC 23
Material Description:	Mixed Clay with Sand and 6F2
Reaction Load:	7.5T Excavator
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
9.4	9	59	18	29	0.29	33
12.2	22	100	37	53	0.53	43
14.3	44	133	52	76	0.76	51
16.5	70	175	67	104	1.04	58
18.2	94	200	87	127	1.27	64
20.4	110	230	114	151	1.51	72



Maximum Applied Pressure (Kpa)	72	Stress at 1.25mm plate settlement (kN/m^2):	63
Modulus of Subgrade Reaction	40850	Equivalent CBR value (%)	6
Maximum Deformation (mm)	1.51	Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

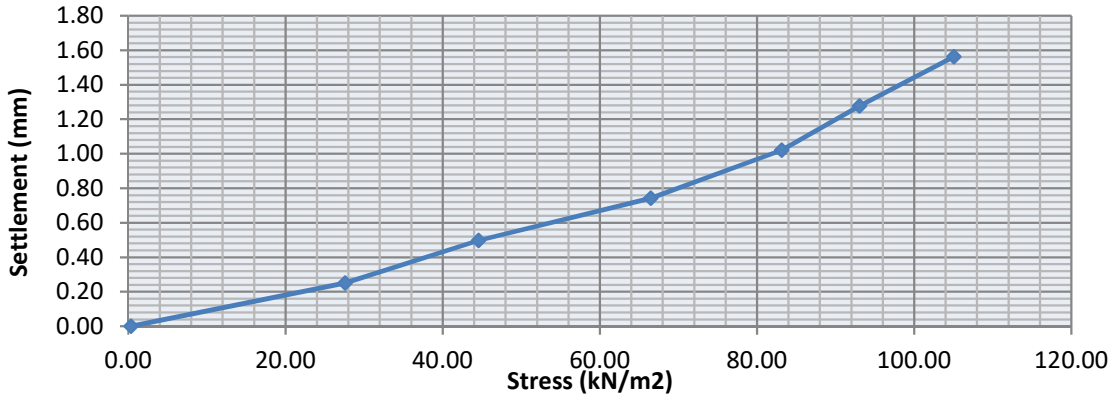
Report No: ES1608-4_TPC21
Date of Report: 22-Aug-17
Date of Test: 21-Aug-17

Test Details

Test Location:	TPC 21
Material Description:	Mixed Clay with Sand and 6F2
Reaction Load:	7.5T Excavator
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
7.8	15	31	29	25	0.25	28
12.6	48	50	51	50	0.50	45
18.8	65	82	76	74	0.74	66
23.5	92	113	101	102	1.02	83
26.3	124	132	127	128	1.28	93
29.7	142	160	167	156	1.56	105



Maximum Applied Pressure (Kpa)	105
Modulus of Subgrade Reaction	59105
Maximum Deformation (mm)	1.56

Stress at 1.25mm plate settlement (kN/m^2):	92
Equivalent CBR value (%)	11
Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

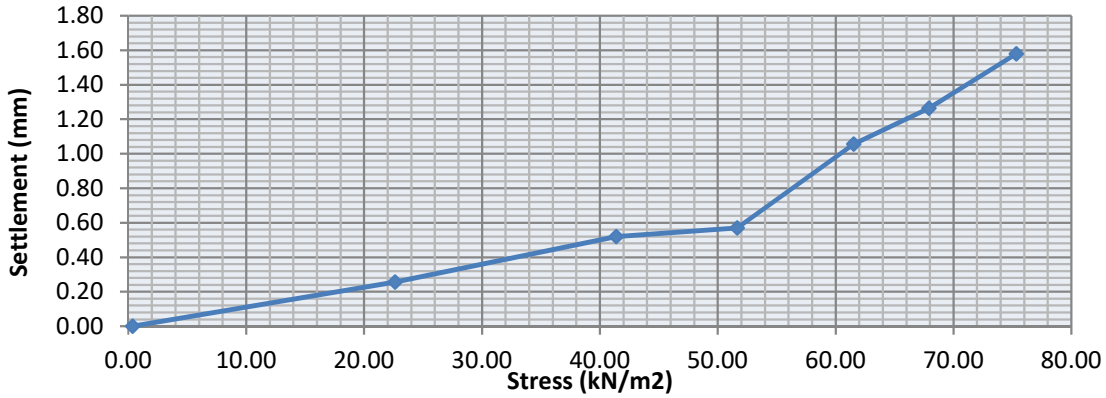
Report No: ES1611-1_TPC10
Date of Report: 23-Aug-17
Date of Test: 22-Aug-17

Test Details

Test Location:	TPC 10
Material Description:	Mixed Clay with Sand and 6F2
Reaction Load:	7.5T Excavator
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
6.4	28	23	26	26	0.26	23
11.7	56	45	55	52	0.52	41
14.6	27	69	75	57	0.57	52
17.4	119	83	115	106	1.06	62
19.2	143	98	138	126	1.26	68
21.3	183	132	159	158	1.58	75



Maximum Applied Pressure (Kpa)	75
Modulus of Subgrade Reaction	43566
Maximum Deformation (mm)	1.58

Stress at 1.25mm plate settlement (kN/m^2):	68
Equivalent CBR value (%)	7
Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

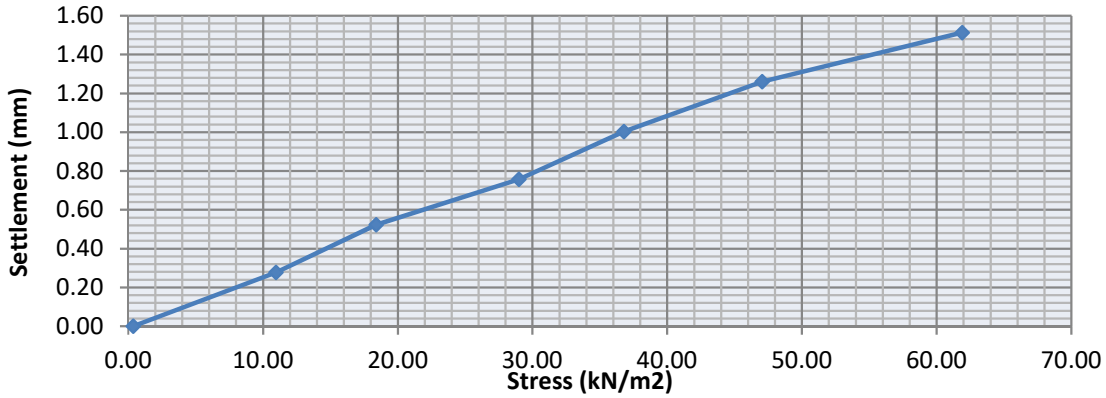
Report No: ES1783-2_CBR18
Date of Report: 15-Feb-18
Date of Test: 14-Feb-18

Test Details

Test Location:	CBR18
Material Description:	Black Granular
Reaction Load:	8T Excavat or
Weather:	Overcast

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
3.1	28	25	30	28	0.28	11
5.2	54	52	51	52	0.52	18
8.2	78	75	74	76	0.76	29
10.4	103	100	98	100	1.00	37
13.3	127	125	126	126	1.26	47
17.5	148	152	154	151	1.51	62



Maximum Applied Pressure (Kpa)	62
Modulus of Subgrade Reaction	29998
Maximum Deformation (mm)	1.51

Stress at 1.25mm plate settlement (kN/m^2):	47
Equivalent CBR value (%)	4
Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

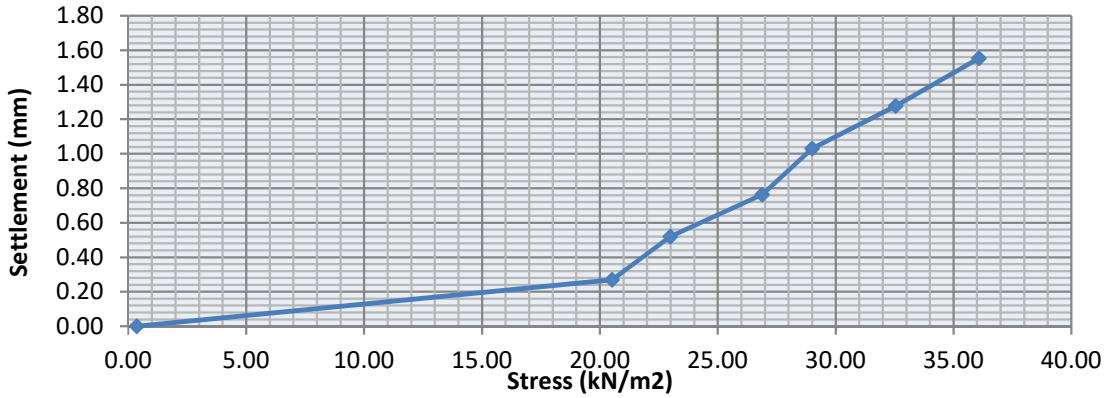
Report No: ES1783-3_BHC20
Date of Report: 15-Feb-18
Date of Test: 14-Feb-18

Test Details

Test Location:	BHC20
Material Description:	Black Sandy Clay
Reaction Load:	8T Excavat or
Weather:	Overcast

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
5.8	27	25	29	27	0.27	21
6.5	52	50	54	52	0.52	23
7.6	78	75	76	76	0.76	27
8.2	103	100	106	103	1.03	29
9.2	131	125	127	128	1.28	33
10.2	156	150	160	155	1.55	36



Maximum Applied Pressure (Kpa)	36	Stress at 1.25mm plate settlement (kN/m^2):	33
Modulus of Subgrade Reaction	20927	Equivalent CBR value (%)	2
Maximum Deformation (mm)	1.55	Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

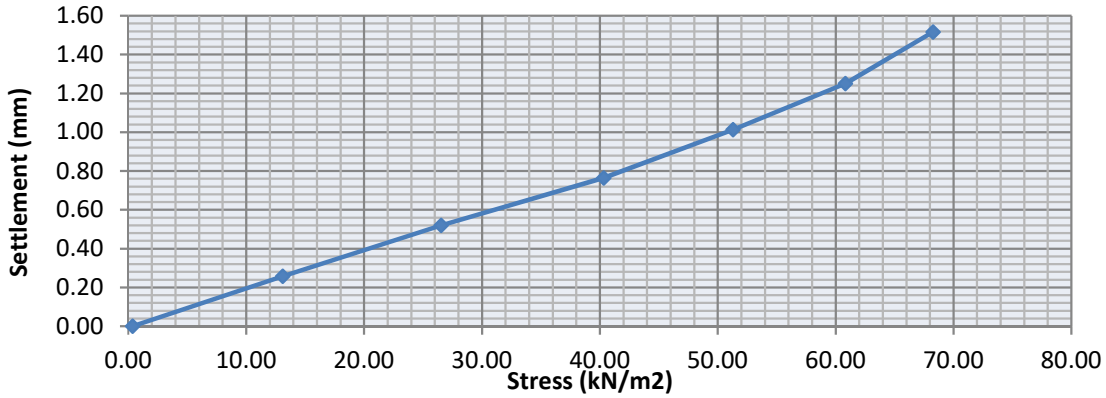
Report No: ES1783-4_BHC17
Date of Report: 15-Feb-18
Date of Test: 14-Feb-18

Test Details

Test Location:	BHC17
Material Description:	Black Clay
Reaction Load:	8T Excavat or
Weather:	Overcast

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
3.7	24	26	27	26	0.26	13
7.5	52	53	51	52	0.52	27
11.4	80	75	74	76	0.76	40
14.5	101	105	98	101	1.01	51
17.2	127	125	123	125	1.25	61
19.3	153	150	152	152	1.52	68



Maximum Applied Pressure (Kpa)	68
Modulus of Subgrade Reaction	39255
Maximum Deformation (mm)	1.52

Stress at 1.25mm plate settlement (kN/m^2):	61
Equivalent CBR value (%)	6
Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

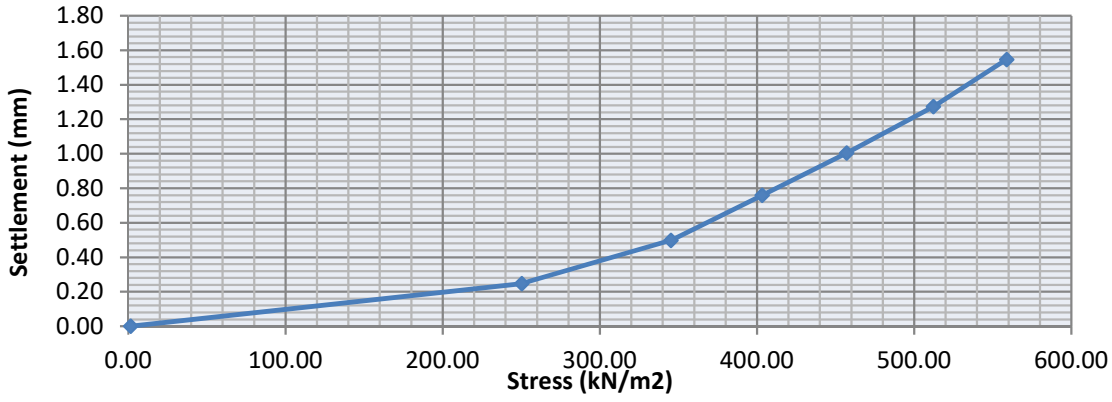
Report No: ES1783-5_BHC20_300mm
Date of Report: 15-Feb-18
Date of Test: 13-Feb-18

Test Details

Test Location:	BHC20_300mm
Material Description:	Compact ed Sand
Reaction Load:	8T Excavat or
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	1
17.7	27	22	25	25	0.25	250
24.4	49	46	54	50	0.50	345
28.5	74	76	78	76	0.76	403
32.3	98	97	106	100	1.00	457
36.2	123	124	135	127	1.27	512
39.5	151	154	159	155	1.55	559



Maximum Applied Pressure (Kpa)	559	Stress at 1.25mm plate settlement (kN/m^2):	508
Modulus of Subgrade Reaction	179481	Equivalent CBR value (%)	78
Maximum Deformation (mm)	1.55	Plate Diameter (mm)	300

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

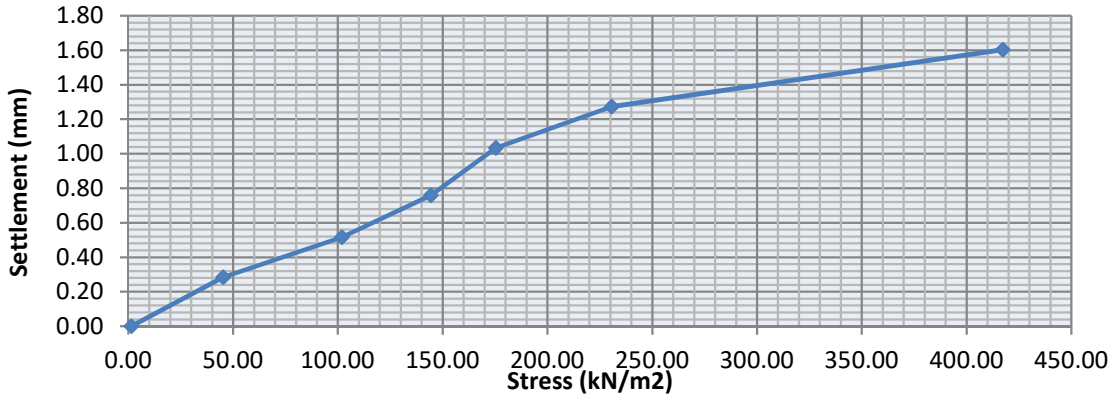
Report No: ES1783-6_BHC17_300mm
Date of Report: 15-Feb-18
Date of Test: 13-Feb-18

Test Details

Test Location:	BHC17_300mm
Material Description:	Black Granular
Reaction Load:	8T Excavat or
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	1
3.2	27	28	30	28	0.28	45
7.2	49	52	54	52	0.52	102
10.2	74	76	78	76	0.76	144
12.4	101	102	107	103	1.03	175
16.3	123	127	132	127	1.27	231
29.5	159	160	162	160	1.60	417



Maximum Applied Pressure (Kpa)	417	Stress at 1.25mm plate settlement (kN/m^2):	226
Modulus of Subgrade Reaction	79977	Equivalent CBR value (%)	19
Maximum Deformation (mm)	1.60	Plate Diameter (mm)	300

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

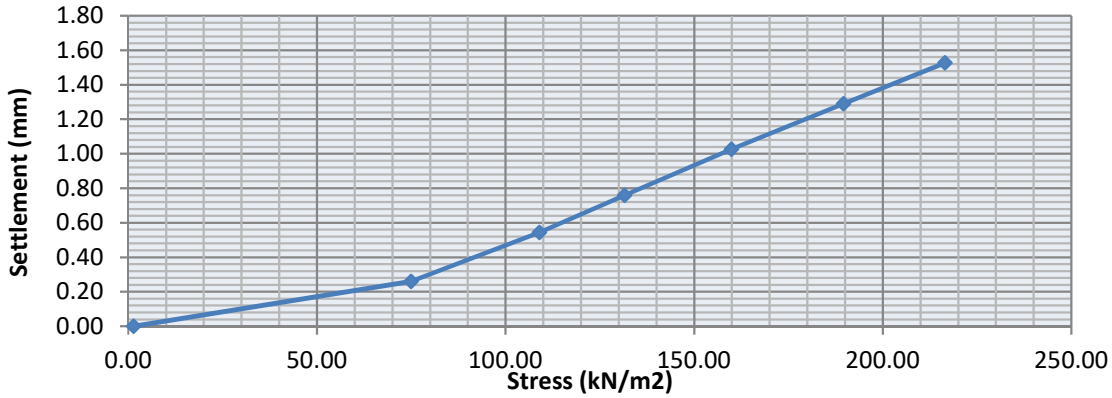
Report No:ES1783-7_TPC14_300mm
Date of Report: 15-Feb-18
Date of Test: 13-Feb-18

Test Details

Test Location:	TPC14_300mm
Material Description:	Sand
Reaction Load:	8T Excavat or
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	1
5.3	27	25	26	26	0.26	75
7.7	52	55	56	54	0.54	109
9.3	76	74	78	76	0.76	132
11.3	102	101	105	103	1.03	160
13.4	127	128	132	129	1.29	190
15.3	152	150	156	153	1.53	216



Maximum Applied Pressure (Kpa)	216
Modulus of Subgrade Reaction	65508
Maximum Deformation (mm)	1.53

Stress at 1.25mm plate settlement (kN/m^2):	185
Equivalent CBR value (%)	14
Plate Diameter (mm)	300

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

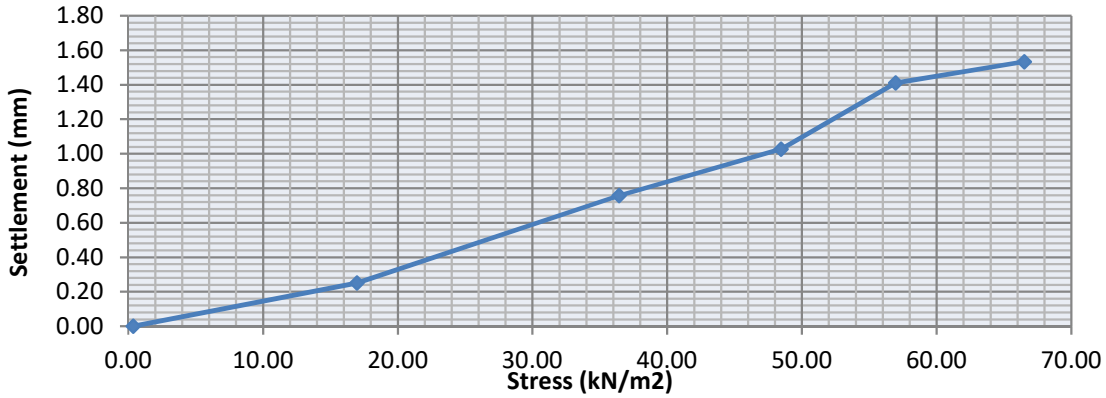
Report No: ES1587-1_TPC01
Date of Report: 04-Aug-17
Date of Test: 03-Aug-17

Test Details

Test Location:	TPC 01
Material Description:	Brown Clay with Sand
Reaction Load:	7.5T Digger
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
4.8	10	59	6	25	0.25	17
10.3	43	141	43	76	0.76	36
13.7	54	187	67	103	1.03	48
16.1	65	272	86	141	1.41	57
18.8	75	275	110	153	1.53	66



Maximum Applied Pressure (Kpa)	66	Stress at 1.25mm plate settlement (kN/m^2):	53
Modulus of Subgrade Reaction	34344	Equivalent CBR value (%)	4
Maximum Deformation (mm)	1.53	Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

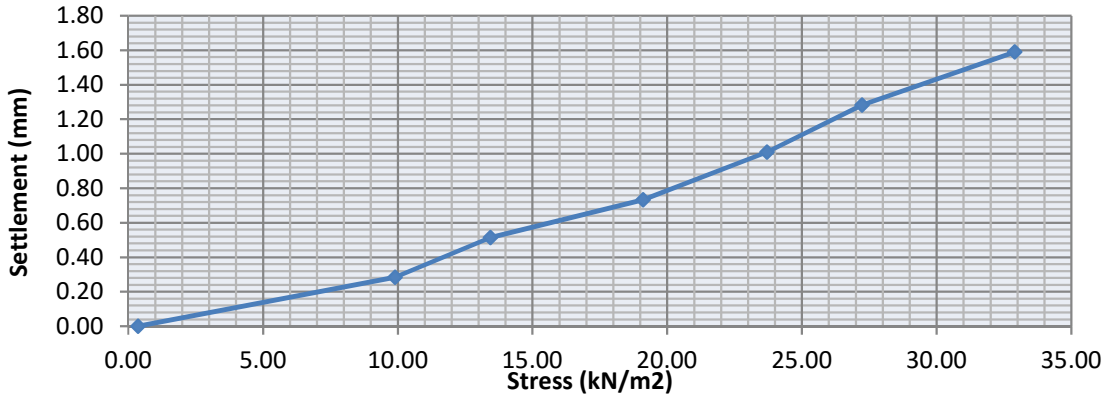
Report No: ES1587-2_TPC03
Date of Report: 04-Aug-17
Date of Test: 03-Aug-17

Test Details

Test Location:	TPC 03
Material Description:	Brown Clay with Sand
Reaction Load:	7.5T Digger
Weather:	Cloudy

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
2.8	29	30	26	28	0.28	10
3.8	50	55	49	51	0.51	13
5.4	65	82	73	73	0.73	19
6.7	98	107	98	101	1.01	24
7.7	129	133	123	128	1.28	27
9.3	158	160	159	159	1.59	33



Maximum Applied Pressure (Kpa)	33	Stress at 1.25mm plate settlement (kN/m^2):	27
Modulus of Subgrade Reaction	17271	Equivalent CBR value (%)	1
Maximum Deformation (mm)	1.59	Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

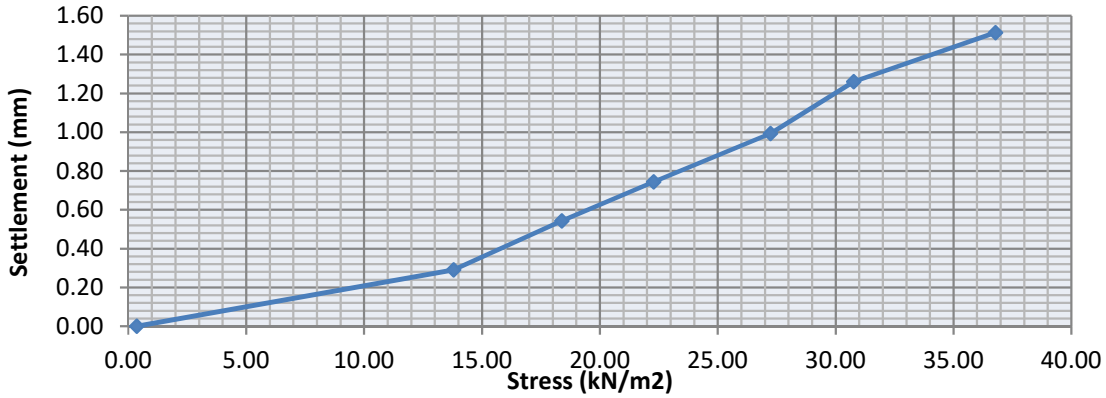
Report No: ES1587-3_TPC04
Date of Report: 04-Aug-17
Date of Test: 03-Aug-17

Test Details

Test Location:	TPC 04
Material Description:	Mixed Clay with Sand and 6F2
Reaction Load:	7.5T Digger
Weather:	Cloudy

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
3.9	30	32	25	29	0.29	14
5.2	55	60	48	54	0.54	18
6.3	72	80	71	74	0.74	22
7.7	98	108	92	99	0.99	27
8.7	120	128	130	126	1.26	31
10.4	160	155	139	151	1.51	37



Maximum Applied Pressure (Kpa)	37	Stress at 1.25mm plate settlement (kN/m^2):	31
Modulus of Subgrade Reaction	19717	Equivalent CBR value (%)	2
Maximum Deformation (mm)	1.51	Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

Issued subject to out terms and conditions available at www.eurotest.co.uk

Eurotest Ltd
Benefield Road
Brigstock
Northants
NN14 3ES

Tel: +44 (0) 1536 370140
enquiries@eurotest.co.uk
www.eurotest.co.uk

Report on the Determination of the Vertical Deformation and Strength Characteristics by the Plate Loading Test to BS 1377 Part 9: 1990

Client: Geosphere Environmental ltd
Address: Brightwell, Suffolk
Project Name: Lowestoft

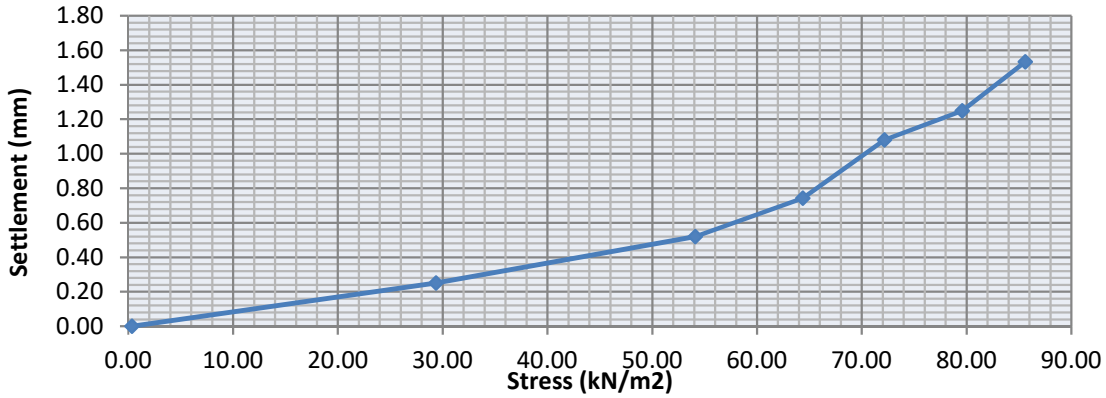
Report No: ES1608-1_TPC02
Date of Report: 22-Aug-17
Date of Test: 21-Aug-17

Test Details

Test Location:	TPC 02
Material Description:	Mixed Clay with Sand and 6F2
Reaction Load:	7.5T Excavator
Weather:	Sunny

Test Results

Force	Settlement Gauge Reading				Settlement	Stress
(kN)	1	2	3	Avg.	(mm)	(kN/m^2)
0.1	0	0	0	0	0.00	0
8.3	15	35	25	25	0.25	29
15.3	35	65	56	52	0.52	54
18.2	52	75	96	74	0.74	64
20.4	98	100	126	108	1.08	72
22.5	95	115	165	125	1.25	80
24.2	115	145	200	153	1.53	86



Maximum Applied Pressure (Kpa)	86
Modulus of Subgrade Reaction	51482
Maximum Deformation (mm)	1.53

Stress at 1.25mm plate settlement (kN/m^2):	80
Equivalent CBR value (%)	9
Plate Diameter (mm)	600

Name: Andrew Titcomb
Director
For and on behalf of Eurotest Ltd

[redacted]

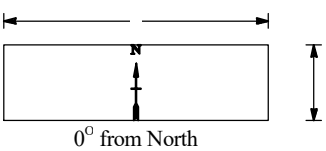
Issued subject to out terms and conditions available at www.eurotest.co.uk

Project	Client		
Lake Lothing Third Crossing	Suffolk County Council		
Job No: 2543,GI	Date: 14-02-18 14-02-18	Ground Level (m OD): 3.68	Coordinates (): E 653927.942, N 292508.799 NGR
Fieldwork By: GEL - JG	Logged By: LF		Sheet: 1 of 1

Geosphere Environmental Ltd
Unit 11, Brightwell Barns
Brightwell, Suffolk

CBR14

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.60	Dark brown silty fine to coarse sand with rootlets and occasional cobbles of concrete, brick and occasional fragments of white polystyrene (MADE GROUND)		0.50- 0.60	B1	Hand pit backfilled with arisings



0° from North

Shoring/Support:
Stability:

All dimensions in metres Scale 1:7.46268656716418	Method Inspection pit	Plant Used	Checked By SG

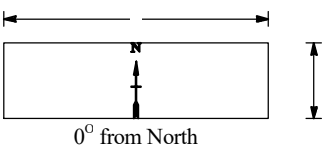
Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 14-08-2018_MASTER COPY.GPJ || Library: GEOSPHERE AGS4 REV6.GLB || Date: 15 August 2018

Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing Third Crossing	Suffolk County Council	**CBR17**

Job No	Date	Ground Level (m OD)	Coordinates ()
2543,GI	14-02-18 14-02-18	3.80	E 653870.124, N 292602.748 NGR

Fieldwork By	Logged By	Sheet
GEL - JG	LF	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.35	Dark brown silty fine to coarse sand with rootlets and occasional angular to subrounded fine to coarse flint gravel (TOPSOIL)				
0.35-0.60	Black and dark grey sandy gravel of angular to subangular fine and medium clinker and slag with weak sulphurous odour (MADE GROUND)		0.45- 0.60	B1	Hand pit backfilled with arisings



0° from North

Shoring/Support:
Stability:

All dimensions in metres Scale 1:7.46268656716418	Method Inspection pit	Plant Used	Checked By SG

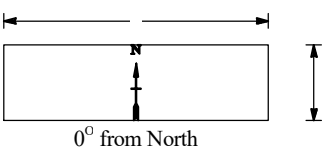
Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 14-08-2018_ MASTER COPY.GPJ || Library: GEOSPHERE AGS4 REV6.GLB || Date: 15 August 2018

Project	Client	Geosphere Environmental Ltd Unit 11, Brightwell Barns Brightwell, Suffolk
Lake Lothing Third Crossing	Suffolk County Council	**CBR18**

Job No	Date	Ground Level (m OD)	Coordinates ()
2543,GI	14-02-18 14-02-18	3.71	E 653893.525, N 292605.263 NGR

Fieldwork By	Logged By	Sheet
GEL - JG	LF	1 of 1

Depth (m)	DESCRIPTION	Legend	Depth (m)	No	Remarks/Tests
0.00-0.60	Dark brown silty slightly gravelly slightly cobbly fine to coarse sand with rootlets. Gravel of angular to subrounded fine to coarse brick, concrete, flint. Cobbles of brick, concrete and flint (MADE GROUND) 0.45 - 0.45 Pockets of compacted clayey chalk and flint gravel with depth		0.55	B1	Hand pit backfilled with arisings



Shoring/Support:
Stability:

All dimensions in metres Scale 1:7.46268656716418	Method Inspection pit	Plant Used	Checked By SG

Report ID: GEL AGS4 TP || Project: 2543, AGS4 GI - LAKE LOTHING, 14-08-2018_MASTER COPY.GPJ || Library: GEOSPHERE AGS4 REV6.GLB || Date: 15 August 2018

APPENDIX 11 – EXPLORATORY HOLE CO-ORDINATES

Geosphere Environmental Ltd, Head Office, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ
Web: www.geosphere-environemental.co.uk

geosphere environmental ltd

SURVEYING CO-ORDINATES

BOREHOLE LOCATIONS	EASTINGS	NORTHINGS	ELEVATION
BHC01	653752.890	293039.258	4.239
BHC02	653770.926	292995.180	2.532
BHC03	653815.346	292988.561	2.510
BHC04	653859.145	292985.560	2.448
BHC05	653858.712	292942.862	2.361
BHC06	653906.612	292940.279	2.416
BHC06A	653895.611	292943.410	2.382
BHC06B	653901.924	292941.632	2.365
BHC07	653884.174	292930.118	2.370
BHC08	653921.761	292892.215	2.727
BHC09	653921.863	292840.199	3.003
BHC10	653908.464	292840.896	3.038
BHC101	653871.223	292665.851	3.095
BHC102	653889.870	292662.329	3.050
BHC103	653890.012	292643.097	3.170
BHC12	653872.819	292674.140	3.049
BHC13	653889.183	292669.930	3.080
BHC14	653874.811	292644.393	2.948
BHC15	653871.483	292629.652	3.652
BHC17	653871.004	292601.236	3.784
BHC18	653892.672	292607.315	3.674
BHC19	653885.106	292578.744	3.616
BHC20	653908.954	292570.707	3.424
BHC22	653939.029	292467.009	3.030
BHC23	653917.759	292430.741	3.324
BHC24	653973.415	292410.445	2.994
BHC26	653733.760	292665.010	3.229
BHC27	653890.088	292697.395	3.005
BHC28	653880.382	292700.891	3.002
BHC32	653908.556	292891.376	2.534

PROJECT NAME:
LAKE LOTHING THIRD CROSSING, LOWESTOFT

PROJECT NUMBER:
2543,GI

Geosphere Environmental Ltd, Head Office, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ
Web: www.geosphere-environemental.co.uk

geosphere environmental ltd

SURVEYING CO-ORDINATES

CBR LOCATION	EASTINGS	NORTHINGS	ELEVATION
CBR14	653927.942	292508.799	3.682
CBR17	653870.124	292602.748	3.795
CBR18	653952.308	292446.986	3.286

CPT LOCATION	EASTINGS	NORTHINGS	ELEVATION
CPTC01A	653755.915	293036.422	4.410
CPTC02	653781.592	292986.553	2.593
CPTC03	653811.357	293010.981	2.605
CPTC04	653810.737	292976.569	2.470
CPTC05	653834.746	292996.466	2.332
CPTC06	653835.678	292965.382	2.444
CPTC07	653858.585	292968.258	2.462
CPTC08	653887.797	292957.709	2.386
CPTC09	653872.084	292948.130	2.311
CPTC10	653891.279	292939.976	2.307
CPTC11	653918.189	292934.593	2.329
CPTC12	653880.886	292683.899	3.054
CPTC13	653880.205	292664.551	3.062
CPTC14	653887.299	292609.773	3.511
CPTC15	653900.974	292568.746	3.539
CPTC18	653951.060	292447.802	3.351
CPTC20	653913.553	292890.062	2.654

PROJECT NAME:
LAKE LOTHING THIRD CROSSING, LOWESTOFT

PROJECT NUMBER:
2543,GI

Geosphere Environmental Ltd, Head Office, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ
Web: www.geosphere-environemental.co.uk

geosphere environmental ltd

SURVEYING CO-ORDINATES

TRIAL PIT LOCATION	EASTINGS	NORTHINGS	ELEVATION
TPC01	653744.491	293039.900	4.458
TPC02	653818.623	293019.738	2.928
TPC03	653798.418	292994.041	2.802
TPC04	653840.390	292977.296	2.448
TPC05	653878.612	292972.398	2.618
TPC06	653853.288	292948.070	2.412
TPC07	653870.002	292934.589	2.390
TPC08	653918.913	292926.108	2.665
TPC09	653912.995	292885.158	2.720
TPC10	653881.636	292631.546	3.301
TPC101	653743.035	292985.932	2.562
TPC102	653786.151	293031.773	4.177
TPC103	653810.502	292959.324	2.559
TPC21	653781.059	292652.798	3.310
TPC22	653825.530	292618.062	3.871
TPC23	653820.086	292581.622	3.956

WINDOW SAMPLER	EASTINGS	NORTHINGS	ELEVATION
WSC05	653858.723	292942.869	2.363
WSC101	653872.382	292670.028	3.064
WSC103	653888.727	292643.875	3.175
WSC14	653927.118	292508.687	3.692
WSC16	653915.614	292544.169	2.867
WSC16A	653915.955	292543.119	2.879
WSC17	653861.006	292599.090	3.433
WSC19.	653878.670	292575.454	3.958
WSC19A	653879.713	292577.238	3.794
WSC19A1	653882.916	292579.557	3.798
WSC21	653902.360	292532.138	3.725
WSC22	653938.133	292468.737	3.036
WSC23	653926.397	292431.481	3.291
WSC28	653876.770	292702.877	2.988

PROJECT NAME:
LAKE LOTHING THIRD CROSSING, LOWESTOFT

PROJECT NUMBER:
2543,GI

APPENDIX 12 – PHOTOGRAPHS



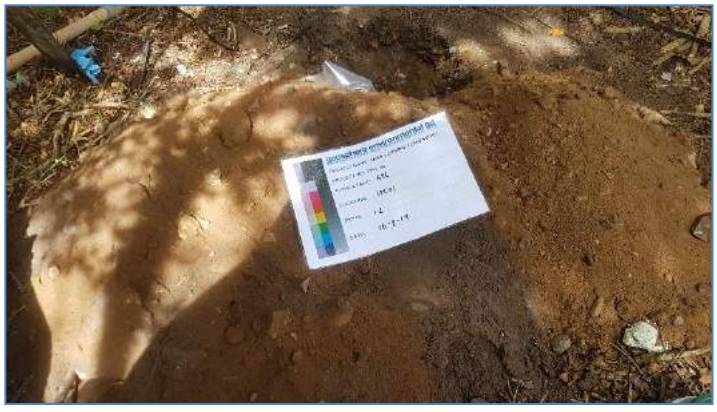
Photograph 1

IPC01 arisings



Photograph 2

IPC02 arisings



Photograph 3

IPC03 arisings



Photograph 4

IPC04 arisings



Photograph 5

IPC05 arisings



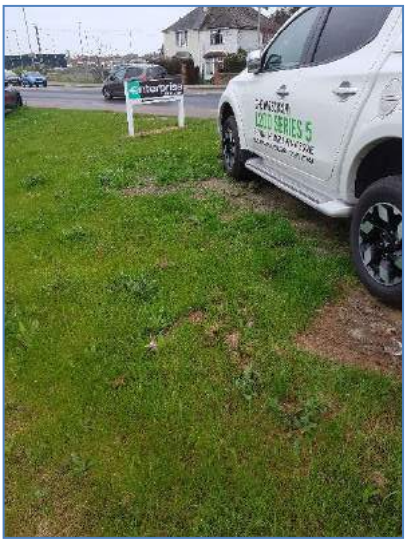
Photograph 6

CBR14 post works



Photograph 7

CBR17 post works



Photograph 8

CBR18 post works

Trial pit no.

TPC01



Photograph 1

Pre commencement



Photograph 2

Topsoil arisings 0.1mbgl to 0.4mbgl



Photograph 3

Arisings to 3.0mbgl.

Trial pit no.

TPC01



Photograph 4

North + east walls



Photograph 5

South + West walls



Photograph 6

Final depth 3.0mbgl



Trial pit no.

TPC01

Photograph 4

CBR test equipment



Photograph 5

Post-condition photograph



Trial pit no.

TPC02

Photograph 1

Pre-condition



Photograph 2

Made ground within the pit, including disused comm cable



Photograph 3

Comm strike and groundwater

Trial pit no.

TPC02



Photograph 4

Post-condition photo



Trial pit no.

TPC03

Photograph 1

Made Ground arisings



Photograph 2

Final depth 2.0m bgl.



Photograph 3

Post condition



Trial pit no.

TPC04

Photograph 1

Final depth inner walls including collapse.



Photograph 2

Final depth 2.7m bgl.



Photograph 3

Post condition.

Trial pit no.

TPC05



Photograph 1

Arisings 0.3mbgl to 1.0mbgl



Photograph 2

Made ground in-situ



Photograph 3

Arisings 1.1mbgl



Trial pit no.

TPC05

Photograph 4

North + east walls



Photograph 5

South + West walls



Photograph 6

Post condition



Trial pit no.

TPC06

Photograph 1

Pre-condition following break out



Photograph 2

Alluvial clay arisings



Photograph 3

Final depth 3.2mbgl north, east and west walls



Trial pit no.

TPC06

Photograph 4

Southern wall final depth 3.2mbgl



Photograph 5

Post condition



Trial pit no.

TPC07

Photograph 1

Post condition

Trial pit no.

TPC08



Photograph 1

Final depth 2.3mbgl collapse



Photograph 2

Final depth collapse



Photograph 3

Post condition



Trial pit no.

TPC10(HP)

Photograph 1

Hand dug for plate load to 0.5mbgl.



Trial pit no.

TPC21

Photograph 1

Pre-condition



Photograph 2

Made ground arisings



Photograph 3

Final depth arisings 3.1 mbgl



Trial pit no.

TPC21

Photograph 4

Final depth 3.1mbgl with groundwater



Photograph 5

Post condition



Trial pit no.

TPC22

Photograph 1

Made ground soils 0-0.35mbgl.



Photograph 2

Final depth 3.0mbgl arisings



Photograph 3

Final depth 3.0mbgl.



Trial pit no.

TPC22

Photograph 4

Post condition



Trial pit no.

TPC23

Photograph 1

Made ground 0 – 0.4mbgl



Photograph 2

Final depth 3.1mbgl



Photograph 3

Post condition



Trial pit no.

TPC101

Photograph 1

Pre-condition after breaking out



Photograph 2

Arisings 0.3-0.8mbgl



Photograph 3

Final depth arisings 2.0mbgl



Trial pit no.

TPC101

Photograph 4

Post-condition



Trial pit no.

TPC102

Photograph 1

Final depth 2.8mbgl arisings



Photograph 2

Final depth 2.8mbgl



Photograph 3

Post condition



Trial pit no.

TPC103

Photograph 1

Pre-condition



Photograph 2

Pre-condition following breaking out



Photograph 3

Arisings 0.3-1.2mbgl.

Trial pit no.

TPC103



Photograph 4

Depth 1.2mbgl



Photograph 5

Final depth 2.2mbgl



Photograph 6

Post condition

+



Photograph 1

WSC05 arisings



Photograph 2

WSC14 hand pit arisings



Photograph 3

WSC14 arisings



Photograph 4

WSC16 arisings



Photograph 5

WSC16 obstruction



Photograph 6

WSC16 & WSC16a post hot lay reinstatement



Photograph 7

WSC17 post



Photograph 8

WSC19 arisings



Photograph 9

WSC19 post commencement



Photograph 10

WSC19a pre commencement



Photograph 11

WSC19a – 1m to 5m arisings



Photograph 12

WSC19a post



Photograph 13

WSC23 0.0m to 0.5m



Photograph 14

WSC23 0.5m to 0.7m.



Photograph 15

WSC23 0.7m to 1.1m.



Photograph 16

WSC23 1.2m to 4.0m



Photograph 17

WSC23 post



Photograph 18

WSC28 arisings



Photograph 19

WSC28 post commencement



Photograph 20

WSC101 post commencement



Photograph 21

WSC103 post commencement



Photograph 1

BHC01 pre commencement



Photograph 2

BHC02 post commencement



Photograph 3

BHC03 post commencement



Photograph 4

BHC04 post commencement



Photograph 5

BHC05 post commencement



Photograph 6

BHC06 pre commencement



Photograph 7

BHC06 hand dug pit arisings



Photograph 8

BHC06a post commencement



Photograph 9

BHC06B post commencement



Photograph 10

BHC07 post commencement, including well installation



Photograph 11

BHC08 pre commencement



Photograph 12

BHC08 post commencement



Photograph 13

BHC09 hand pit



Photograph 14

Typical hand pit arisings from BHC09 & BHC10.



Photograph 15

BHC09 &BHC10 set up prior to drilling



Photograph 16

BHC09 following hot lay reinstatement



Photograph 17

BHC10 post commencement



Photograph 18

BHC13 post commencement



Photograph 19

BHC14 starter pit using mechanical excavator. CAT used prior and concrete obstructions necessitated the use of mechanical excavator.



Photograph 20

BHC14 trial pit arisings



Photograph 21

BHC14 post commencement



Photograph 22

BHC15 pre commencement



Photograph 23

BHC15 prior to commencement after final set up



Photograph 24

BHC15 post commencement



Photograph 25

BHC17 area pre commencement



Photograph 26

BHC17 area post commencement



Photograph 27

BHC18 pre commencement



Photograph 28

BHC18 hand pit arisings



Photograph 29

BHC18 hand pit final depth



Photograph 30

BHC18 post commencement



Photograph 31

BHC19 pre commencement



Photograph 32

BHC19 post commencement



Photograph 33

BHC20 prior to breaking out



Photograph 34

BHC20 post hot lay reinstatement



Photograph 36

BHC22 pre commencement



Photograph 35

BHC22 post cold lay reinstatement



Photograph 37

BHC22 & WSC22 post hot lay reinstatement



Photograph 38

BHC23 pre commencement



Photograph 39

BHC23 post commencement



Photograph 40

BHC24 pre commencement



Photograph 41

BHC24 post commencement



Photograph 42

BHC27 starter pit using excavator due to concrete obstruction



Photograph 43

BHC27 post commencement



Photograph 44

BHC28 pre commencement set up



Photograph 45

BHC28 hand pit final depth



Photograph 46

BHC28 post commencement



Photograph 47

BHC30 Hand pit arisings



Photograph 48

BHC31 hand pit arisings



Photograph 49

BHC32 pre commencement



Photograph 50

BHC32 hand pit



Photograph 51

BHC32 post commencement



Photograph 52

BHC101 starter pit by excavator due to concrete obstruction



Photograph 53

BHC101 post commencement



Photograph 54

BHC102 post commencement



Photograph 55

BHC103 post commencement



Photograph 1

CPTC01 hand pit



Photograph 2

CPTC01 hand pit arisings



Photograph 3

CPTC02 post works



Photograph 4

CPTC03 post works



Photograph 5

CPTC04 post works



Photograph 6

CPTC05 post works



Photograph 7

CPTC06 post works



Photograph 8

CPTC10 post works



Photograph 9

CPTC11 post works



Photograph 10

CPTC13 post works



Photograph 11

CPTC14 hand pit arisings



Photograph 12

CPTC15 post works

APPENDIX 13 – SUMMARY OF ENVIRONMENTAL REPORTS AND SCHEDULES & ENVIRONMENTAL LABORATORY TEST RESULTS

Chemical Schedule	Report ref.	Locations
1	17-20019	BHC06
	17-20021	BHC06 WAC
2	17-20200	TPC05
	17-20560	TPC06, TPC101
	17-20201	TPC103
	17-20561	TPC06 WAC
3	17-20562	BHC06
	17-20669	TPC01, TPC03, TPC04
	17-20902	TPC03 WAC
	17-20779	TPC102
4	17-21231	BHC02
	17-21370	BHC02
	17-22316	BHC02 WAC
	17-21942	BHC03
	17-21712	IPC01, IPC02
	17-22275	IPC02 WAC
	17-21913	IPC03, IPC04, IPC05
5	17-21969	TPC02, TPC21
	17-22419	TPC21
	17-22420	TPC22, TPC23
	18-00959	TPC23 WAC
6	17-22844	BHC04
	17-23648	BHC04 WAC
7	17-25501	BHC13, TPC07, TPC08, TPC02
	17-26235	BHC13 WAC
8	17-26029	BHC30HP, BHC31HP, BHC32HP
9	17-26355	BHC05
10	17-27357	BHC28, BHC101
11	17-30076	WSC23
	17-29990	WSC14 WAC
	17-29274	WSC17, WSC19
	17-29383	WSC19A, WSC22, WSC14
	18-00159	WSC19A WAC
12	17-31448	BHC103
13	17-31794	BHC102, BHC27
	17-31797	BHC102 WAC
14	17-32753	BHC102
15	17-33041	BHC101
	17-33044	BHC101 WAC
16	17-33607	BHC101
17	18-00159	WSC19A, WSC21, WSC19A WAC

18	18-00228	BHC14
19	18-01626	BHC15, BHC22
20	18-02499 18-02978	BHC17 BHC17 WAC
21	18-02644 18-02840	BHC18 BHC19 WAC
22	18-03574	BHC19
23	18-05699	BHC20, BHC24
24	18-06475 18-09173 18-09165 18-06487	BHC26 BHC26 WAC BHC23 WAC BHC23
25	18-06961 18-08472 18-07089 18-07130	BHC32 BHC32 WAC BHC08 BHC08 WAC
26	18-07811	BHC05
27	Missing	BHC07
28	18-09432 18-09752	BHC06B BHC10
29	18-10291	BHC09
30	18-11312	BHC01, TPC09, TPC02
GW Visit 1	18-13535 18-00356 18-00330 18-13032 18-13183 18-13180	BHC01, BHC08, BHC24, BHC27 BHC02 BHC102 BHC07 BHC09 BHC24
GW Visit 2	18-15148 18-14854	BHC02, BHC07 BHC27, BHC08, BHC102, BHC24(D), BHC24(S), BHC01, BHC09
GW Visit 3	18-16645 18-16841	BHC102, BHC02, BHC07 BHC27, BHC24(D), BHC24(S), BHC01, BHC09, BHC08
GW Visit 4	18-18455	BHC27, BHC102, BHC07, BHC02, BHC01, BHC08, BHC09, BHC24(D)
GW Visit 5	18-20442	BHC07,BHC24(D),BHC02,BHC102,BHC08,BHC27,BHC01,BHC09
GW Visit 6	18-21920	BHC02,BHC102,BHC07,BHC01,BHC24(D),BHC27,BHC09,BHC08

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20019-1
Initial Date of Issue:	07-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing L20, Lowestoft

Quotation No.:		**Date Received:**	01-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	01-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	07-Aug-2017
Date Approved:	07-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.0
Ammonia (Free)	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.5
Boron (Dissolved)	U	1450	µg/l	20	37
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	15
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.5
Lead (Dissolved)	U	1450	µg/l	1.0	6.3
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.4
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	11
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
pH	M	2010		N/A	6.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.43
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.011
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Ammonium (Water Soluble)	M	2120	g/l	0.01	< 0.01
Sulphate (Total)	M	2430	mg/kg	100	490
Arsenic	M	2450	mg/kg	1.0	10
Cadmium	M	2450	mg/kg	0.10	0.10
Chromium	M	2450	mg/kg	1.0	9.0
Copper	M	2450	mg/kg	0.50	57
Mercury	M	2450	mg/kg	0.10	0.36
Nickel	M	2450	mg/kg	0.50	17
Lead	M	2450	mg/kg	0.50	85
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	83
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	3.2
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	12
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	26
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	28
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	69
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	2.5
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	44
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	21
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	68
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	140
Naphthalene	M	2700	mg/kg	0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	3.9
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	16
m & p-Xylene	M	2760	µg/kg	1.0	58
o-Xylene	M	2760	µg/kg	1.0	570
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	19
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	1100
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	70
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	2.0
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	1.3
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543, GI Lake Lothing L20, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20019
Quotation No.:			**Chemtest Sample ID.:**		491165
Order No.: 2543, GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Date Sampled:		28-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.

Test Methods

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20021-1
Initial Date of Issue:	09-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing

Quotation No.:		**Date Received:**	01-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	01-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	09-Aug-2017
Date Approved:	09-Aug-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543, GI Lake Lothing

Chemtest Job No:	17-20021						**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	491172								
Sample Ref:	BHC06								
Sample ID:	J3						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	0.5								
Bottom Depth(m):									
Sampling Date:	28-Jul-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			1.0	3	5	6
Loss On Ignition	2610	U	%			2.7	--	--	10
Total BTEX	2760	U	mg/kg			0.023	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			270	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.018	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.0068	0.0066	< 0.050	0.066	0.5	2	25
Barium	1450	U	0.048	0.033	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0093	0.013	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0092	0.0043	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.0014	0.0037	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.0015	0.017	< 0.010	0.15	0.5	10	50
Antimony	1450	U	0.0042	0.0040	< 0.010	0.040	0.06	0.7	5
Selenium	1450	U	< 0.0010	0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0037	0.011	< 0.50	< 0.50	4	50	200
Chloride	1220	U	5.6	2.0	11	24	800	15000	25000
Fluoride	1220	U	0.31	0.21	< 1.0	2.2	10	150	500
Sulphate	1220	U	16	7.7	32	87	1000	20000	50000
Total Dissolved Solids	1020	N	150	74	300	830	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	28	16	56	170	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.328
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.214

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20200-1
Initial Date of Issue:	09-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	02-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	03-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	09-Aug-2017
Date Approved:	09-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20200
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492029
Order No.: 2543, GI			Client Sample Ref.:		TPC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		31-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	14
pH	U	2010		N/A	6.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.60
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.097
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	25
Sulphate (Total)	U	2430	%	0.010	0.16
Arsenic	U	2450	mg/kg	1.0	9.2
Cadmium	U	2450	mg/kg	0.10	0.19
Chromium	U	2450	mg/kg	1.0	13
Copper	U	2450	mg/kg	0.50	55
Mercury	U	2450	mg/kg	0.10	0.23
Nickel	U	2450	mg/kg	0.50	16
Lead	U	2450	mg/kg	0.50	98
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	4.9
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	12
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	90
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	110
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	2.7
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	170
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20200
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492029
Order No.: 2543, GI			Client Sample Ref.:		TPC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		31-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	180
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	280
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.73
Pyrene	U	2700	mg/kg	0.10	0.87
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.61
Chrysene	U	2700	mg/kg	0.10	0.30
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	2.5
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20200
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492029
Order No.: 2543, GI			Client Sample Ref.:		TPC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		31-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20200
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492029
Order No.: 2543, GI			Client Sample Ref.:		TPC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		31-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20200
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492029
Order No.: 2543, GI			Client Sample Ref.:		TPC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		31-Jul-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	1.1
Pyrene	U	2790	mg/kg	0.50	1.0
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.93
Chrysene	U	2790	mg/kg	0.50	0.68
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.4
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	0.57
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.68
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	0.54
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.63
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20201-1
Initial Date of Issue:	09-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	02-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	03-Aug-2017
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	09-Aug-2017
Date Approved:	09-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20201	17-20201
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492035	492037
Order No.: 2543, GI			Client Sample Ref.:		TPC103	TPC103
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.50
			Date Sampled:		31-Jul-2017	31-Jul-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	10
pH	M	2010		N/A	7.4	7.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.2	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	28	2.9
Sulphate (Total)	M	2430	%	0.010	0.11	0.022
Arsenic	M	2450	mg/kg	1.0	8.2	< 1.0
Cadmium	M	2450	mg/kg	0.10	0.19	< 0.10
Chromium	M	2450	mg/kg	1.0	8.1	4.1
Copper	M	2450	mg/kg	0.50	100	3.7
Mercury	M	2450	mg/kg	0.10	0.34	< 0.10
Nickel	M	2450	mg/kg	0.50	10	3.0
Lead	M	2450	mg/kg	0.50	540	15
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	140	6.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	1.4	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	12	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	2.2	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	16	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	4.2	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	110	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20201	17-20201
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492035	492037
Order No.: 2543, GI			Client Sample Ref.:		TPC103	TPC103
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.50
			Date Sampled:		31-Jul-2017	31-Jul-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	120	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	130	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	1.0	< 0.10
Anthracene	M	2700	mg/kg	0.10	0.21	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	2.3	< 0.10
Pyrene	M	2700	mg/kg	0.10	2.0	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	2.7	< 0.10
Chrysene	M	2700	mg/kg	0.10	1.3	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	1.8	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.80	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	1.0	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	0.72	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.17	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	0.53	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	15	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20201	17-20201
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492035	492037
Order No.: 2543, GI			Client Sample Ref.:		TPC103	TPC103
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.50
			Date Sampled:		31-Jul-2017	31-Jul-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20201	17-20201
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492035	492037
Order No.: 2543, GI			Client Sample Ref.:		TPC103	TPC103
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.50
			Date Sampled:		31-Jul-2017	31-Jul-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20201	17-20201
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492035	492037
Order No.: 2543, GI			Client Sample Ref.:		TPC103	TPC103
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.50
			Date Sampled:		31-Jul-2017	31-Jul-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	1.8	< 0.50
Anthracene	M	2790	mg/kg	0.50	0.59	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	2.9	< 0.50
Pyrene	M	2790	mg/kg	0.50	2.1	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	1.4	< 0.50
Chrysene	M	2790	mg/kg	0.50	1.1	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	1.6	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	0.55	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	0.77	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010	
PCB 81	N	2815	mg/kg	0.010		< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010		< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010		< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010		< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010		< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20201	17-20201
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		492035	492037
Order No.: 2543, GI			Client Sample Ref.:		TPC103	TPC103
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.50
			Date Sampled:		31-Jul-2017	31-Jul-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
PCB 156	N	2815	mg/kg	0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20560-1
Initial Date of Issue:	14-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	04-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	04-Aug-2017
No. of Samples:	3		
Turnaround (Wkdays):	6	**Results Due:**	11-Aug-2017
Date Approved:	14-Aug-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-20560	17-20560
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			493823	493826
Order No.: 2543, GI		Client Sample Ref.:			TPC101	TPC06
		Client Sample ID.:			J3	J3
		Sample Type:			SOIL	SOIL
		Top Depth (m):			1.80	1.10
		Date Sampled:			01-Aug-2017	01-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	U	1010		N/A	10.0	8.9
Ammonia (Free) as N	U	1220	mg/l	0.010	0.099	0.061
Sulphate	U	1220	mg/l	1.0	8.7	8.2
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.3	4.1
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	2.6	2.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	1.4
Selenium (Dissolved)	U	1450	µg/l	1.0	1.3	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.1
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06
			Client Sample ID.:		J3	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.80	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06
			Client Sample ID.:		J3	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.80	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06
			Client Sample ID.:		J3	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.80	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	0.45	0.050

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493825	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06	TPC06
			Client Sample ID.:		J3	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.80	0.70	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	17	13	17
pH	M	2010		N/A	9.9	8.2	8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.66	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.027	0.11	0.13
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	< 0.50	6.9	3.6
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.079	0.042
Arsenic	M	2450	mg/kg	1.0	< 1.0	14	8.6
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.16	0.11
Chromium	M	2450	mg/kg	1.0	3.0	10	11
Copper	M	2450	mg/kg	0.50	1.6	480	8.3
Mercury	M	2450	mg/kg	0.10	< 0.10	0.34	< 0.10
Nickel	M	2450	mg/kg	0.50	1.7	17	13
Lead	M	2450	mg/kg	0.50	11	110	12
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	7.8	230	23
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40			0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	2.9	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-20560	17-20560	17-20560
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	493823	493825	493826
Order No.: 2543, GI					Client Sample Ref.:	TPC101	TPC06	TPC06
					Client Sample ID.:	J3	J2	J3
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.80	0.70	1.10
					Date Sampled:	01-Aug-2017	01-Aug-2017	01-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY	IN-TRANSIT
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10		< 0.10	0.91	< 0.10
Pyrene	M	2700	mg/kg	0.10		< 0.10	0.98	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10		< 0.10	1.0	< 0.10
Chrysene	M	2700	mg/kg	0.10		< 0.10	0.49	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10		< 0.10	0.78	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10		< 0.10	0.39	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10		< 0.10	0.91	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0		< 2.0	5.5	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20		< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493825	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06	TPC06
			Client Sample ID.:		J3	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.80	0.70	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	17-20560	17-20560	17-20560
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	493823	493825	493826
Order No.: 2543, GI				Client Sample Ref.:	TPC101	TPC06	TPC06
				Client Sample ID.:	J3	J2	J3
				Sample Type:	SOIL	SOIL	SOIL
				Top Depth (m):	1.80	0.70	1.10
				Date Sampled:	01-Aug-2017	01-Aug-2017	01-Aug-2017
				Asbestos Lab:	COVENTRY	COVENTRY	IN-TRANSIT
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493825	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06	TPC06
			Client Sample ID.:		J3	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.80	0.70	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 81	N	2815	mg/kg	0.010			< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010			< 0.010
PCB 105	N	2815	mg/kg	0.010			< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010			< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010			< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010			< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010			< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20560	17-20560	17-20560
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493823	493825	493826
Order No.: 2543, GI			Client Sample Ref.:		TPC101	TPC06	TPC06
			Client Sample ID.:		J3	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.80	0.70	1.10
			Date Sampled:		01-Aug-2017	01-Aug-2017	01-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	IN-TRANSIT
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PCB 180	M	2815	mg/kg	0.010	< 0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010			< 0.010
PCB 157	N	2815	mg/kg	0.010			< 0.010
PCB 167	N	2815	mg/kg	0.010			< 0.010
PCB 169	N	2815	mg/kg	0.010			< 0.010
PCB 189	N	2815	mg/kg	0.010			< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12			< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20561-1
Initial Date of Issue:	15-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	04-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	04-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	14-Aug-2017
Date Approved:	15-Aug-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543, GI Lake Lothing, Lowestoft

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-20561						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	493830								
Sample Ref:	TPC06								
Sample ID:	J3								
Top Depth(m):	1.10								
Bottom Depth(m):									
Sampling Date:	01-Aug-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.27	3	5	6
Loss On Ignition	2610	U	%			1.3	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.047	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.0030	0.0076	< 0.050	0.070	0.5	2	25
Barium	1450	U	0.0095	0.013	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	0.0016	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0071	0.0044	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	0.0029	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	0.0045	< 0.010	0.039	0.5	10	50
Antimony	1450	U	0.0025	0.0028	< 0.010	0.028	0.06	0.7	5
Selenium	1450	U	0.0015	0.0023	< 0.010	0.022	0.1	0.5	7
Zinc	1450	U	0.0015	0.0051	< 0.50	< 0.50	4	50	200
Chloride	1220	U	3.3	1.4	< 10	16	800	15000	25000
Fluoride	1220	U	0.31	0.24	< 1.0	2.5	10	150	500
Sulphate	1220	U	18	12	35	130	1000	20000	50000
Total Dissolved Solids	1020	N	88	71	170	730	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	11	14	< 50	140	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	19

Leachate Test Information	
Leachant volume 1st extract/l	0.309
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.218

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-20562-1		
Initial Date of Issue:	15-Aug-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	07-Aug-2017
Order No.:	2543 GI	**Date Instructed:**	09-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	15-Aug-2017
Date Approved:	15-Aug-2017		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20562
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493835
Order No.: 2543 GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J5
			Sample Type:		SOIL
			Top Depth (m):		2.00
			Date Sampled:		01-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	18
pH	U	2010		N/A	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.43
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.15
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.4
Sulphate (Total)	U	2430	%	0.010	0.22
Arsenic	U	2450	mg/kg	1.0	8.9
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	6.2
Copper	U	2450	mg/kg	0.50	5.2
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	6.4
Lead	U	2450	mg/kg	0.50	54
Selenium	U	2450	mg/kg	0.20	0.51
Zinc	U	2450	mg/kg	0.50	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	0.81
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20562
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493835
Order No.: 2543 GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J5
			Sample Type:		SOIL
			Top Depth (m):		2.00
			Date Sampled:		01-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20562
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493835
Order No.: 2543 GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J5
			Sample Type:		SOIL
			Top Depth (m):		2.00
			Date Sampled:		01-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	1.9
m & p-Xylene	U	2760	µg/kg	1.0	3.4
o-Xylene	U	2760	µg/kg	1.0	2.2
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	2.7
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	8.8
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	8.1
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20562
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493835
Order No.: 2543 GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J5
			Sample Type:		SOIL
			Top Depth (m):		2.00
			Date Sampled:		01-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-20562
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		493835
Order No.: 2543 GI			Client Sample Ref.:		BHC06
			Client Sample ID.:		J5
			Sample Type:		SOIL
			Top Depth (m):		2.00
			Date Sampled:		01-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-21231-1		
Initial Date of Issue:	01-Sep-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing		
Quotation No.:	Q17-10179	**Date Received:**	14-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	23-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	30-Aug-2017
Date Approved:	01-Sep-2017		
Approved By:			
[redacted]			
Details:	Robert Monk, Technical Development Chemist		

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	11.0
Ammonia (Free) as N	U	1220	mg/l	0.010	0.089
Sulphate	U	1220	mg/l	1.0	45
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.4
Boron (Dissolved)	U	1450	µg/l	20	210
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	7.4
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	9.0
pH	U	2010		N/A	11.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	4.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.41
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.89
Sulphate (Total)	U	2430	%	0.010	0.20
Arsenic	U	2450	mg/kg	1.0	8.1
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	15
Copper	U	2450	mg/kg	0.50	27
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	14
Lead	U	2450	mg/kg	0.50	27
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	40
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.82
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.66
Pyrene	U	2700	mg/kg	0.10	0.79
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	2.3
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21231
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		496746
Order No.: 2543, GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.25
			Date Sampled:		10-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
496746	BHC02	J1	10-Aug-2017	B	Amber Glass 250ml
496746	BHC02	J1	10-Aug-2017	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-21370-1
Initial Date of Issue:	30-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2546, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	15-Aug-2017
Order No.:	2546. GI	**Date Instructed:**	23-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	30-Aug-2017
Date Approved:	30-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2546, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21370
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		497442
Order No.: 2546. GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		3
			Date Sampled:		11-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	13
pH	M	2010		N/A	8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.014
Cyanide (Free)	M	2300	mg/kg	0.50	0.70
Cyanide (Total)	M	2300	mg/kg	0.50	8.4
Ammonium (Extractable)	M	2425	mg/kg	0.50	< 0.50
Sulphate (Total)	M	2430	%	0.010	0.049
Arsenic	M	2450	mg/kg	1.0	< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	4.3
Copper	M	2450	mg/kg	0.50	3.5
Mercury	M	2450	mg/kg	0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	2.7
Lead	M	2450	mg/kg	0.50	4.8
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	8.8
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	M	2625	%	0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2546, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21370
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		497442
Order No.: 2546. GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		3
			Date Sampled:		11-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2546, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21370
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		497442
Order No.: 2546. GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		3
			Date Sampled:		11-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2546, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21370
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		497442
Order No.: 2546. GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		3
			Date Sampled:		11-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2546, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21370
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		497442
Order No.: 2546. GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		3
			Date Sampled:		11-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-21712-1
Initial Date of Issue:	31-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543.GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	17-Aug-2017
Order No.:	2543, G1	**Date Instructed:**	23-Aug-2017
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	30-Aug-2017
Date Approved:	31-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Results - Leachate

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158
Order No.: 2543, G1			Client Sample Ref.:		IPC01
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		15-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.3
Ammonia (Free) as N	U	1220	mg/l	0.010	0.023
Sulphate	U	1220	mg/l	1.0	23
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	8.5
Boron (Dissolved)	U	1450	µg/l	20	22
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.11
Chromium (Dissolved)	U	1450	µg/l	1.0	1.5
Copper (Dissolved)	U	1450	µg/l	1.0	10
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	4.4
Lead (Dissolved)	U	1450	µg/l	1.0	25
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	20
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158
Order No.: 2543, G1			Client Sample Ref.:		IPC01
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		15-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158
Order No.: 2543, G1			Client Sample Ref.:		IPC01
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		15-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158
Order No.: 2543, G1			Client Sample Ref.:		IPC01
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		15-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Results - Soil

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712	17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158	499163
Order No.: 2543, G1			Client Sample Ref.:		IPC01	IPC02
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Date Sampled:		15-Aug-2017	15-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.1	1.8
pH	M	2010		N/A	7.8	7.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.5	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.014	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	3.1	0.75
Sulphate (Total)	M	2430	%	0.010	0.13	< 0.010
Arsenic	M	2450	mg/kg	1.0	12	2.1
Cadmium	M	2450	mg/kg	0.10	0.78	0.12
Chromium	M	2450	mg/kg	1.0	62	4.7
Copper	M	2450	mg/kg	0.50	35	6.6
Mercury	M	2450	mg/kg	0.10	0.11	< 0.10
Nickel	M	2450	mg/kg	0.50	18	4.3
Lead	M	2450	mg/kg	0.50	170	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	130	42
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	47	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	47	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	2.4	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	13	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	36	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	200	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712	17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158	499163
Order No.: 2543, G1			Client Sample Ref.:		IPC01	IPC02
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Date Sampled:		15-Aug-2017	15-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	250	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	300	< 10
Naphthalene	M	2700	mg/kg	0.10	3.1	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	1.9	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	5.7	< 0.10
Fluorene	M	2700	mg/kg	0.10	5.8	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	30	0.15
Anthracene	M	2700	mg/kg	0.10	8.8	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	30	0.38
Pyrene	M	2700	mg/kg	0.10	29	0.33
Benzo[a]anthracene	M	2700	mg/kg	0.10	12	< 0.10
Chrysene	M	2700	mg/kg	0.10	16	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	14	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	6.4	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	12	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	7.8	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	5.1	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	9.3	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	200	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21712	17-21712
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499158	499163
Order No.: 2543, G1			Client Sample Ref.:		IPC01	IPC02
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.60
			Date Sampled:		15-Aug-2017	15-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50

Results - Soil

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-21712	17-21712
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	499158	499163
Order No.: 2543, G1					Client Sample Ref.:	IPC01	IPC02
					Client Sample ID.:	J1	J2
					Sample Type:	SOIL	SOIL
					Top Depth (m):	0.30	0.60
					Date Sampled:	15-Aug-2017	15-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Phenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50		< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50		< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50		< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50		< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50		0.75	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50		< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50		< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50		1.1	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50		1.6	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50		< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50		1.5	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50		< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50		1.6	< 0.50

Results - Soil

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-21712	17-21712
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	499158	499163
Order No.: 2543, G1					Client Sample Ref.:	IPC01	IPC02
					Client Sample ID.:	J1	J2
					Sample Type:	SOIL	SOIL
					Top Depth (m):	0.30	0.60
					Date Sampled:	15-Aug-2017	15-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Diethyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50		9.3	< 0.50
Anthracene	M	2790	mg/kg	0.50		2.9	< 0.50
Carbazole	M	2790	mg/kg	0.50		1.3	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50		5.0	< 0.50
Fluoranthene	M	2790	mg/kg	0.50		9.9	< 0.50
Pyrene	M	2790	mg/kg	0.50		8.0	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50		4.4	< 0.50
Chrysene	M	2790	mg/kg	0.50		4.0	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50		4.9	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50		1.7	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50		4.0	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50		< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50		< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010			< 0.010
PCB 52	M	2815	mg/kg	0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010			< 0.010
PCB 105	N	2815	mg/kg	0.010			< 0.010
PCB 90+101	M	2815	mg/kg	0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010			< 0.010
PCB 118	M	2815	mg/kg	0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010			< 0.010
PCB 153	M	2815	mg/kg	0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010			< 0.010
PCB 138	M	2815	mg/kg	0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010			< 0.010
PCB 180	M	2815	mg/kg	0.010		< 0.010	

Results - Soil

Project: 2543.GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-21712	17-21712
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	499158	499163
Order No.: 2543, G1					Client Sample Ref.:	IPC01	IPC02
					Client Sample ID.:	J1	J2
					Sample Type:	SOIL	SOIL
					Top Depth (m):	0.30	0.60
					Date Sampled:	15-Aug-2017	15-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PCB 156	N	2815	mg/kg	0.010			< 0.010
PCB 157	N	2815	mg/kg	0.010			< 0.010
PCB 167	N	2815	mg/kg	0.010			< 0.010
PCB 169	N	2815	mg/kg	0.010			< 0.010
PCB 189	N	2815	mg/kg	0.010			< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12			< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	
Total Phenols	M	2920	mg/kg	0.30		< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
499158	IPC01	J1	15-Aug-2017	B	Amber Glass 250ml
499158	IPC01	J1	15-Aug-2017	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-21913-1
Initial Date of Issue:	31-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2547 GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	18-Aug-2017
Order No.:	2543 GI	**Date Instructed:**	23-Aug-2017
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	30-Aug-2017
Date Approved:	31-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21913
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500003
Order No.: 2543 GI			Client Sample Ref.:		IPC05
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.20
			Date Sampled:		16-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.019
Sulphate	U	1220	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.7
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	3.2
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	2.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21913
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500003
Order No.: 2543 GI			Client Sample Ref.:		IPC05
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.20
			Date Sampled:		16-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21913
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500003
Order No.: 2543 GI			Client Sample Ref.:		IPC05
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.20
			Date Sampled:		16-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21913
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500003
Order No.: 2543 GI			Client Sample Ref.:		IPC05
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.20
			Date Sampled:		16-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-21913	17-21913	17-21913
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			499994	499998	500003
Order No.: 2543 GI		Client Sample Ref.:			IPC03	IPC04	IPC05
		Client Sample ID.:			J3	J3	J4
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.90	0.90	1.20
		Date Sampled:			16-Aug-2017	16-Aug-2017	16-Aug-2017
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	4.3	4.4	1.9
pH	M	2010		N/A	7.6	7.7	7.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.44	0.84	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	4.7	5.9	3.1
Sulphate (Total)	M	2430	%	0.010	0.017	0.040	< 0.010
Arsenic	M	2450	mg/kg	1.0	4.8	7.0	< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	6.6	6.9	3.5
Copper	M	2450	mg/kg	0.50	3.3	11	4.8
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	4.8	6.9	2.8
Lead	M	2450	mg/kg	0.50	9.8	44	7.8
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	14	36	17
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	7.3	13	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	2.3	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	17-21913	17-21913	17-21913
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	499994	499998	500003
Order No.: 2543 GI				Client Sample Ref.:	IPC03	IPC04	IPC05
				Client Sample ID.:	J3	J3	J4
				Sample Type:	SOIL	SOIL	SOIL
				Top Depth (m):	0.90	0.90	1.20
				Date Sampled:	16-Aug-2017	16-Aug-2017	16-Aug-2017
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	7.3	15	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	15	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	0.62	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.20	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	0.96	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	0.55	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.55	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.15	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	0.31	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	5.7	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-21913	17-21913	17-21913
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			499994	499998	500003
Order No.: 2543 GI		Client Sample Ref.:			IPC03	IPC04	IPC05
		Client Sample ID.:			J3	J3	J4
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.90	0.90	1.20
		Date Sampled:			16-Aug-2017	16-Aug-2017	16-Aug-2017
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21913	17-21913	17-21913
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499994	499998	500003
Order No.: 2543 GI			Client Sample Ref.:		IPC03	IPC04	IPC05
			Client Sample ID.:		J3	J3	J4
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.90	0.90	1.20
			Date Sampled:		16-Aug-2017	16-Aug-2017	16-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-21913	17-21913	17-21913
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			499994	499998	500003
Order No.: 2543 GI		Client Sample Ref.:			IPC03	IPC04	IPC05
		Client Sample ID.:			J3	J3	J4
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.90	0.90	1.20
		Date Sampled:			16-Aug-2017	16-Aug-2017	16-Aug-2017
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010		< 0.010	
PCB 52	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010		< 0.010	
PCB 105	N	2815	mg/kg	0.010		< 0.010	
PCB 90+101	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010		< 0.010	
PCB 118	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010		< 0.010	
PCB 153	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010		< 0.010	
PCB 138	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010		< 0.010	
PCB 180	M	2815	mg/kg	0.010	< 0.010		< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2547 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21913	17-21913	17-21913
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		499994	499998	500003
Order No.: 2543 GI			Client Sample Ref.:		IPC03	IPC04	IPC05
			Client Sample ID.:		J3	J3	J4
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.90	0.90	1.20
			Date Sampled:		16-Aug-2017	16-Aug-2017	16-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PCB 156	N	2815	mg/kg	0.010		< 0.010	
PCB 157	N	2815	mg/kg	0.010		< 0.010	
PCB 167	N	2815	mg/kg	0.010		< 0.010	
PCB 169	N	2815	mg/kg	0.010		< 0.010	
PCB 189	N	2815	mg/kg	0.010		< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-21942-1
Initial Date of Issue:	30-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	21-Aug-2017
Order No.:	2543,GI	**Date Instructed:**	23-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	30-Aug-2017
Date Approved:	30-Aug-2017		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21942
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500182
Order No.: 2543,GI			Client Sample Ref.:		BHC03
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Date Sampled:		15-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	9.4
pH	U	2010		N/A	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.059
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	5.5
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.62
Sulphate (Total)	U	2430	%	0.010	0.047
Arsenic	U	2450	mg/kg	1.0	< 1.0
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	2.4
Copper	U	2450	mg/kg	0.50	0.99
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	2.5
Lead	U	2450	mg/kg	0.50	3.7
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	7.5
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21942
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500182
Order No.: 2543,GI			Client Sample Ref.:		BHC03
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Date Sampled:		15-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21942
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500182
Order No.: 2543,GI			Client Sample Ref.:		BHC03
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Date Sampled:		15-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21942
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500182
Order No.: 2543,GI			Client Sample Ref.:		BHC03
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Date Sampled:		15-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21942
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500182
Order No.: 2543,GI			Client Sample Ref.:		BHC03
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Date Sampled:		15-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-21969-1
Initial Date of Issue:	31-Aug-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	21-Aug-2017
Order No.:	2543,GI	**Date Instructed:**	24-Aug-2017
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	31-Aug-2017
Date Approved:	31-Aug-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21969	17-21969
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500309	500311
Order No.: 2543,GI			Client Sample Ref.:		TPC02	TPC21
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.25
			Date Sampled:		17-Aug-2017	17-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	Cement	-
Asbestos Identification	U	2192	%	0.001	Chrysotile	No Asbestos Detected
Moisture	N	2030	%	0.020	3.4	9.2
pH	M	2010		N/A	11.8	9.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.44	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.17	0.013
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	< 0.50	0.78
Sulphate (Total)	M	2430	%	0.010	0.67	0.11
Arsenic	M	2450	mg/kg	1.0	15	11
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.13
Chromium	M	2450	mg/kg	1.0	25	13
Copper	M	2450	mg/kg	0.50	14	11
Mercury	M	2450	mg/kg	0.10	0.11	0.17
Nickel	M	2450	mg/kg	0.50	14	11
Lead	M	2450	mg/kg	0.50	45	53
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	47	58
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	52
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	52
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	7.8	4.2
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	260
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21969	17-21969
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500309	500311
Order No.: 2543,GI			Client Sample Ref.:		TPC02	TPC21
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.25
			Date Sampled:		17-Aug-2017	17-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	7.8	270
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	320
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.16
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.37
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.23
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.40
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	1.8
Anthracene	M	2700	mg/kg	0.10	< 0.10	0.80
Fluoranthene	M	2700	mg/kg	0.10	0.34	4.7
Pyrene	M	2700	mg/kg	0.10	0.18	4.4
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	2.8
Chrysene	M	2700	mg/kg	0.10	< 0.10	2.8
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.8
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.5
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	3.4
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	2.2
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.70
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	2.5
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	33
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21969	17-21969
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500309	500311
Order No.: 2543,GI			Client Sample Ref.:		TPC02	TPC21
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.25
			Date Sampled:		17-Aug-2017	17-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21969	17-21969
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500309	500311
Order No.: 2543,GI			Client Sample Ref.:		TPC02	TPC21
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.25
			Date Sampled:		17-Aug-2017	17-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21969	17-21969
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500309	500311
Order No.: 2543,GI			Client Sample Ref.:		TPC02	TPC21
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.25
			Date Sampled:		17-Aug-2017	17-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	0.88
Pyrene	M	2790	mg/kg	0.50	< 0.50	0.75
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	0.56
Chrysene	M	2790	mg/kg	0.50	< 0.50	0.64
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	1.0
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	0.77
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010	
PCB 52	M	2815	mg/kg	0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010	
PCB 105	N	2815	mg/kg	0.010	< 0.010	
PCB 90+101	M	2815	mg/kg	0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010	
PCB 118	M	2815	mg/kg	0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010	
PCB 153	M	2815	mg/kg	0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010	
PCB 138	M	2815	mg/kg	0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010	
PCB 180	M	2815	mg/kg	0.010		< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-21969	17-21969
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		500309	500311
Order No.: 2543,GI			Client Sample Ref.:		TPC02	TPC21
			Client Sample ID.:		J1	J2
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.30	0.25
			Date Sampled:		17-Aug-2017	17-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
PCB 156	N	2815	mg/kg	0.010	< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-22275-1		
Initial Date of Issue:	01-Sep-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing		
Quotation No.:	Q17-10179	**Date Received:**	23-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	23-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	01-Sep-2017
Date Approved:	01-Sep-2017		
Approved By:			
[redacted]			
Details:	Robert Monk, Technical Development Chemist		

Results - 2 Stage WAC

Project: 2543, GI Lake Lothing

Chemtest Job No:	17-22275						**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	501892								
Sample Ref:	IPC02								
Sample ID:									
Top Depth(m):	0.60						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Bottom Depth(m):									
Sampling Date:	15-Aug-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.76	3	5	6
Loss On Ignition	2610	U	%			1.0	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.025	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.0019	0.0032	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.011	0.026	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	0.00022	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0039	0.0064	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0023	0.0013	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	0.0011	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.0045	0.031	< 0.010	0.28	0.5	10	50
Antimony	1450	U	0.0067	0.0057	0.013	0.058	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0070	0.029	< 0.50	< 0.50	4	50	200
Chloride	1220	U	2.5	2.2	< 10	22	800	15000	25000
Fluoride	1220	U	0.22	0.26	< 1.0	2.6	10	150	500
Sulphate	1220	U	< 1.0	1.8	< 10	16	1000	20000	50000
Total Dissolved Solids	1020	N	39	30	78	310	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	15	17	< 50	170	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	2.2

Leachate Test Information	
Leachant volume 1st extract/l	0.346
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.184

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-22316-1
Initial Date of Issue:	01-Sep-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2456 GI, Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	23-Aug-2017
Order No.:	2456 GI	**Date Instructed:**	23-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	01-Sep-2017
Date Approved:	01-Sep-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Development Chemist

Results - 2 Stage WAC

Project: 2456 GI, Lake Lothing, Lowestoft

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-22316								
Chemtest Sample ID:	502056								
Sample Ref:	BHC02								
Sample ID:									
Top Depth(m):	3.00								
Bottom Depth(m):									
Sampling Date:	11-Aug-2017								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			0.51	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0090	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.016	0.0068	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0014	0.0013	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.0018	0.0029	< 0.010	0.028	0.5	10	50
Antimony	1450	U	0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0035	0.0031	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1.7	11	< 10	100	800	15000	25000
Fluoride	1220	U	0.097	0.097	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	32	6.0	63	85	1000	20000	50000
Total Dissolved Solids	1020	N	70	40	140	430	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	12	12	< 50	120	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	14

Leachate Test Information	
Leachant volume 1st extract/l	0.321
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.173

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-22419-1		
Initial Date of Issue:	31-Aug-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	24-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	24-Aug-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	31-Aug-2017
Date Approved:	31-Aug-2017		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22419
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502623
Order No.: 2543, GI			Client Sample Ref.:		TPC21
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.45
			Date Sampled:		22-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	19
pH	U	2010		N/A	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.53
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	6.9
Sulphate (Total)	U	2430	%	0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	16
Cadmium	U	2450	mg/kg	0.10	0.63
Chromium	U	2450	mg/kg	1.0	28
Copper	U	2450	mg/kg	0.50	64
Mercury	U	2450	mg/kg	0.10	0.15
Nickel	U	2450	mg/kg	0.50	47
Lead	U	2450	mg/kg	0.50	88
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22419
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502623
Order No.: 2543, GI			Client Sample Ref.:		TPC21
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.45
			Date Sampled:		22-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22419
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502623
Order No.: 2543, GI			Client Sample Ref.:		TPC21
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.45
			Date Sampled:		22-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22419
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502623
Order No.: 2543, GI			Client Sample Ref.:		TPC21
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.45
			Date Sampled:		22-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22419
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502623
Order No.: 2543, GI			Client Sample Ref.:		TPC21
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.45
			Date Sampled:		22-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-22420-1		
Initial Date of Issue:	01-Sep-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	24-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	24-Aug-2017
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	31-Aug-2017
Date Approved:	01-Sep-2017		
Approved By:			
[redacted]			
Details:	Keith Jones, Technical Manager		

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502630
Order No.: 2543, GI			Client Sample Ref.:		TPC23
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		21-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	9.1
Ammonia (Free) as N	U	1220	mg/l	0.010	0.057
Sulphate	U	1220	mg/l	1.0	24
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.0
Boron (Dissolved)	U	1450	µg/l	20	25
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.9
Copper (Dissolved)	U	1450	µg/l	1.0	7.4
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	2.3
Selenium (Dissolved)	U	1450	µg/l	1.0	1.6
Zinc (Dissolved)	U	1450	µg/l	1.0	3.1
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502630
Order No.: 2543, GI			Client Sample Ref.:		TPC23
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		21-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502630
Order No.: 2543, GI			Client Sample Ref.:		TPC23
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		21-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502630
Order No.: 2543, GI			Client Sample Ref.:		TPC23
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.00
			Date Sampled:		21-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420	17-22420	17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502625	502630	502632
Order No.: 2543, GI			Client Sample Ref.:		TPC22	TPC23	TPC23
			Client Sample ID.:		J2	J3	J5
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.60	1.00	2.60
			Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.8	15	8.4
pH	M	2010		N/A	7.0	8.3	8.0
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.81	0.68
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.050	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	3.4	6.1	3.5
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.12	< 0.010
Arsenic	M	2450	mg/kg	1.0	2.2	20	6.5
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.43	< 0.10
Chromium	M	2450	mg/kg	1.0	4.5	21	9.2
Copper	M	2450	mg/kg	0.50	3.2	140	6.0
Mercury	M	2450	mg/kg	0.10	< 0.10	0.16	< 0.10
Nickel	M	2450	mg/kg	0.50	3.6	44	12
Lead	M	2450	mg/kg	0.50	10	270	8.4
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	55	310	31
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40			0.47
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	29	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	150	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-22420	17-22420	17-22420
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	502625	502630	502632
Order No.: 2543, GI					Client Sample Ref.:	TPC22	TPC23	TPC23
					Client Sample ID.:	J2	J3	J5
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.60	1.00	2.60
					Date Sampled:	21-Aug-2017	21-Aug-2017	21-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	7.8	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	190	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10	190	< 10
Naphthalene	M	2700	mg/kg	0.10		< 0.10	0.44	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10		< 0.10	0.79	< 0.10
Acenaphthene	M	2700	mg/kg	0.10		< 0.10	0.19	< 0.10
Fluorene	M	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10		< 0.10	0.75	< 0.10
Anthracene	M	2700	mg/kg	0.10		< 0.10	0.21	< 0.10
Fluoranthene	M	2700	mg/kg	0.10		< 0.10	1.6	< 0.10
Pyrene	M	2700	mg/kg	0.10		< 0.10	1.6	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10		< 0.10	1.1	< 0.10
Chrysene	M	2700	mg/kg	0.10		< 0.10	0.72	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10		< 0.10	1.5	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10		< 0.10	1.2	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10		< 0.10	1.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10		< 0.10	0.90	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10		< 0.10	0.19	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10		< 0.10	1.1	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0		< 2.0	13	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20		< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-22420	17-22420	17-22420
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	502625	502630	502632
Order No.: 2543, GI					Client Sample Ref.:	TPC22	TPC23	TPC23
					Client Sample ID.:	J2	J3	J5
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.60	1.00	2.60
					Date Sampled:	21-Aug-2017	21-Aug-2017	21-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,2-Dichloropropane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10		< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420	17-22420	17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502625	502630	502632
Order No.: 2543, GI			Client Sample Ref.:		TPC22	TPC23	TPC23
			Client Sample ID.:		J2	J3	J5
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.60	1.00	2.60
			Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-22420	17-22420	17-22420
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	502625	502630	502632
Order No.: 2543, GI					Client Sample Ref.:	TPC22	TPC23	TPC23
					Client Sample ID.:	J2	J3	J5
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.60	1.00	2.60
					Date Sampled:	21-Aug-2017	21-Aug-2017	21-Aug-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Fluorene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50		< 0.50	0.60	< 0.50
Anthracene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50		< 0.50	1.0	< 0.50
Pyrene	M	2790	mg/kg	0.50		< 0.50	0.80	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50		< 0.50	0.66	< 0.50
Chrysene	M	2790	mg/kg	0.50		< 0.50	0.75	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50		< 0.50	1.2	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50		< 0.50	0.63	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010			< 0.010	
PCB 52	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010			< 0.010	
PCB 105	N	2815	mg/kg	0.010			< 0.010	
PCB 90+101	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010			< 0.010	
PCB 118	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010			< 0.010	
PCB 153	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010			< 0.010	
PCB 138	M	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010			< 0.010	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22420	17-22420	17-22420
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		502625	502630	502632
Order No.: 2543, GI			Client Sample Ref.:		TPC22	TPC23	TPC23
			Client Sample ID.:		J2	J3	J5
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.60	1.00	2.60
			Date Sampled:		21-Aug-2017	21-Aug-2017	21-Aug-2017
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PCB 180	M	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 156	N	2815	mg/kg	0.010		< 0.010	
PCB 157	N	2815	mg/kg	0.010		< 0.010	
PCB 167	N	2815	mg/kg	0.010		< 0.010	
PCB 169	N	2815	mg/kg	0.010		< 0.010	
PCB 189	N	2815	mg/kg	0.010		< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-22844-1		
Initial Date of Issue:	13-Sep-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	30-Aug-2017
Order No.:	2543, GI	**Date Instructed:**	07-Sep-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	13-Sep-2017
Date Approved:	13-Sep-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.017
Sulphate	U	1220	mg/l	1.0	100
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3
Boron (Dissolved)	U	1450	µg/l	20	68
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	5.1
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.0
Lead (Dissolved)	U	1450	µg/l	1.0	2.3
Selenium (Dissolved)	U	1450	µg/l	1.0	1.7
Zinc (Dissolved)	U	1450	µg/l	1.0	7.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	1.7
Acenaphthylene	U	1700	µg/l	0.10	1.0
Acenaphthene	U	1700	µg/l	0.10	1.2
Fluorene	U	1700	µg/l	0.10	2.1
Phenanthrene	U	1700	µg/l	0.10	2.3

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	0.15
Fluoranthene	U	1700	µg/l	0.10	2.2
Pyrene	U	1700	µg/l	0.10	2.1
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	13
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	2.1
Ethylbenzene	U	1760	µg/l	1.0	1.6
m & p-Xylene	U	1760	µg/l	1.0	9.4
o-Xylene	U	1760	µg/l	1.0	4.1
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	2.1
pH	U	2010		N/A	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.3
Sulphate (Total)	U	2430	%	0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	3.3
Cadmium	U	2450	mg/kg	0.10	0.10
Chromium	U	2450	mg/kg	1.0	8.5
Copper	U	2450	mg/kg	0.50	7.3
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	7.0
Lead	U	2450	mg/kg	0.50	40
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	86
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	280
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	440
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	720
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	20000
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	510
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	22000
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	42
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	120
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	490
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	7100
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	2900

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	11000
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	33000
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.12
Pyrene	U	2700	mg/kg	0.10	0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	9.4
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	16
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	7.6
m & p-Xylene	U	2760	µg/kg	1.0	27
o-Xylene	U	2760	µg/kg	1.0	15
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	8.9
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	12
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-22844
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		504746
Order No.: 2543, GI			Client Sample Ref.:		BHC04
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		25-Aug-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	8.0
Anthracene	U	2790	mg/kg	0.50	2.7
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	30
Pyrene	U	2790	mg/kg	0.50	28
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	22
Chrysene	U	2790	mg/kg	0.50	21
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	31
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	14
Benzo[a]pyrene	U	2790	mg/kg	0.50	21
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	11
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	3.8
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	12
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
504746	BHC04	J3	25-Aug-2017	B	Amber Glass 250ml
504746	BHC04	J3	25-Aug-2017	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-23648-1
Initial Date of Issue:	15-Sep-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	07-Sep-2017
Order No.:		**Date Instructed:**	07-Sep-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	15-Sep-2017
Date Approved:	15-Sep-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543, GI Lake Lothing, Lowestoft

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-23648						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	508390								
Sample Ref:									
Sample ID:	BHC04								
Top Depth(m):	0.90								
Bottom Depth(m):									
Sampling Date:	30-Aug-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.42	3	5	6
Loss On Ignition	2610	U	%			0.96	--	--	10
Total BTEX	2760	U	mg/kg			0.085	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			21000	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0020	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.0044	0.0043	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.087	0.051	< 0.50	0.57	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.0011	0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.011	0.0057	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.032	0.0092	0.064	0.13	0.5	10	30
Nickel	1450	U	0.0039	0.0014	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.0035	0.0035	< 0.010	0.035	0.5	10	50
Antimony	1450	U	0.030	0.019	0.060	0.21	0.06	0.7	5
Selenium	1450	U	0.0038	0.0030	< 0.010	0.031	0.1	0.5	7
Zinc	1450	U	0.031	0.0070	< 0.50	< 0.50	4	50	200
Chloride	1220	U	10	1.1	20	26	800	15000	25000
Fluoride	1220	U	0.87	0.64	1.7	6.8	10	150	500
Sulphate	1220	U	550	76	1100	1600	1000	20000	50000
Total Dissolved Solids	1020	N	720	130	1400	2300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	30	20	60	220	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	2.6

Leachate Test Information	
Leachant volume 1st extract/l	0.345
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.295

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-25501-1
Initial Date of Issue:	06-Oct-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	28-Sep-2017
Order No.:		**Date Instructed:**	29-Sep-2017
No. of Samples:	5		
Turnaround (Wkdays):	5	**Results Due:**	05-Oct-2017
Date Approved:	06-Oct-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-25501	17-25501
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			517037	517043
Order No.:		Client Sample Ref.:			TPC08	BH13CP
		Client Sample ID.:			J6	J6
		Sample Type:			SOIL	SOIL
		Top Depth (m):			2.00	2.00
		Date Sampled:			22-Sep-2017	21-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	U	1010		N/A	7.5	8.0
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	4.9	3.7
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3	1.4
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	0.52
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	1.1	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.9	< 1.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	18
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	76
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	94
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	8.0
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	110
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	110
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	210
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-25501	17-25501
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		517037	517043
Order No.:			Client Sample Ref.:		TPC08	BH13CP
			Client Sample ID.:		J6	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.00	2.00
			Date Sampled:		22-Sep-2017	21-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-25501	17-25501
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		517037	517043
Order No.:			Client Sample Ref.:		TPC08	BH13CP
			Client Sample ID.:		J6	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.00	2.00
			Date Sampled:		22-Sep-2017	21-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-25501	17-25501
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		517037	517043
Order No.:			Client Sample Ref.:		TPC08	BH13CP
			Client Sample ID.:		J6	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.00	2.00
			Date Sampled:		22-Sep-2017	21-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			517025	517031	517037	517043	517044
Order No.:		Client Sample Ref.:			TPC02	TPC07	TPC08	BH13CP	BH13CP
		Client Sample ID.:			J3	J4	J6	J6	J7
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.00	1.50	2.00	2.00	3.00
		Date Sampled:			22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.0	9.6	15	9.6	7.9
pH	M	2010		N/A	8.4	8.7	8.1	9.1	8.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.50	1.1	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	0.040	0.084	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	1.0	2.3	7.5	< 0.50	0.69
Sulphate (Total)	M	2430	%	0.010	0.021	0.012	0.26	0.23	< 0.010
Arsenic	M	2450	mg/kg	1.0	7.6	9.0	5.8	7.7	26
Cadmium	M	2450	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	10	9.9	6.0	8.2	18
Copper	M	2450	mg/kg	0.50	13	11	4.9	3.2	7.6
Mercury	M	2450	mg/kg	0.10	0.18	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	6.8	9.9	6.5	5.7	14
Lead	M	2450	mg/kg	0.50	74	22	15	5.6	9.8
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	240	74	53	15	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	1.7	1.1	0.88		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.1
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	6.9	71
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	73	270
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	71	240
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	150	680
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	22
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	26	150
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	8.8	< 1.0	< 1.0	< 1.0	57
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	17	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	517025	517031	517037	517043	517044
Order No.:					Client Sample Ref.:	TPC02	TPC07	TPC08	BH13CP	BH13CP
					Client Sample ID.:	J3	J4	J6	J6	J7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.50	2.00	2.00	3.00
					Date Sampled:	22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	28	< 5.0	< 5.0	26	230	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	28	< 10	< 10	180	910	
Naphthalene	M	2700	mg/kg	0.10	0.69	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	M	2700	mg/kg	0.10	2.7	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	M	2700	mg/kg	0.10	0.79	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	M	2700	mg/kg	0.10	5.1	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	M	2700	mg/kg	0.10	25	1.1	0.33	< 0.10	< 0.10	
Anthracene	M	2700	mg/kg	0.10	7.8	0.33	0.11	< 0.10	< 0.10	
Fluoranthene	M	2700	mg/kg	0.10	21	1.0	0.61	< 0.10	< 0.10	
Pyrene	M	2700	mg/kg	0.10	19	1.1	0.88	< 0.10	< 0.10	
Benzo[a]anthracene	M	2700	mg/kg	0.10	12	0.90	0.18	< 0.10	< 0.10	
Chrysene	M	2700	mg/kg	0.10	12	0.66	0.23	< 0.10	< 0.10	
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	11	0.67	0.49	< 0.10	< 0.10	
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	4.3	0.15	0.11	< 0.10	< 0.10	
Benzo[a]pyrene	M	2700	mg/kg	0.10	7.8	0.33	0.40	< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	5.7	0.54	0.38	< 0.10	< 0.10	
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	1.4	0.34	< 0.10	< 0.10	< 0.10	
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	4.2	0.33	0.18	< 0.10	< 0.10	
Total Of 16 PAH's	M	2700	mg/kg	2.0	140	7.5	3.9	< 2.0	< 2.0	
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20	< 20	< 20	
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	517025	517031	517037	517043	517044
Order No.:					Client Sample Ref.:	TPC02	TPC07	TPC08	BH13CP	BH13CP
					Client Sample ID.:	J3	J4	J6	J6	J7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.50	2.00	2.00	3.00
					Date Sampled:	22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
1,2-Dichloropropane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10	< 10	< 10	53	160
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10		< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	11	< 1.0
Bromobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	26	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	120
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	34	120
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	16	32
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			517025	517031	517037	517043	517044
Order No.:		Client Sample Ref.:			TPC02	TPC07	TPC08	BH13CP	BH13CP
		Client Sample ID.:			J3	J4	J6	J6	J7
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.00	1.50	2.00	2.00	3.00
		Date Sampled:			22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.5
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	517025	517031	517037	517043	517044
Order No.:					Client Sample Ref.:	TPC02	TPC07	TPC08	BH13CP	BH13CP
					Client Sample ID.:	J3	J4	J6	J6	J7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.50	2.00	2.00	3.00
					Date Sampled:	22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Fluorene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	0.88
Anthracene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50		0.63	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 52	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 90+101	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 118	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 153	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 138	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010				< 0.010		< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-25501	17-25501	17-25501	17-25501	17-25501
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	517025	517031	517037	517043	517044
Order No.:					Client Sample Ref.:	TPC02	TPC07	TPC08	BH13CP	BH13CP
					Client Sample ID.:	J3	J4	J6	J6	J7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.50	2.00	2.00	3.00
					Date Sampled:	22-Sep-2017	21-Sep-2017	22-Sep-2017	21-Sep-2017	21-Sep-2017
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
PCB 180	M	2815	mg/kg	0.010		< 0.010	< 0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010				< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010				< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12				< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	< 0.10		< 0.10	
Total Phenols	M	2920	mg/kg	0.30		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
517043	BH13CP	J6	21-Sep-2017	B	Amber Glass 250ml
517043	BH13CP	J6	21-Sep-2017	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-26029-1
Initial Date of Issue:	12-Oct-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	03-Oct-2017
Order No.:	2543, GI	**Date Instructed:**	05-Oct-2017
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	11-Oct-2017
Date Approved:	12-Oct-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841
Order No.: 2543, GI			Client Sample Ref.:		BHC30
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.15
			Date Sampled:		27-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	9.0
Ammonia (Free) as N	U	1220	mg/l	0.010	0.030
Sulphate	U	1220	mg/l	1.0	40
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.3
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.5
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841
Order No.: 2543, GI			Client Sample Ref.:		BHC30
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.15
			Date Sampled:		27-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841
Order No.: 2543, GI			Client Sample Ref.:		BHC30
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.15
			Date Sampled:		27-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841
Order No.: 2543, GI			Client Sample Ref.:		BHC30
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		1.15
			Date Sampled:		27-Sep-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-26029	17-26029	17-26029
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			519841	519843	519847
Order No.: 2543, GI		Client Sample Ref.:			BHC30	BHC31	BHC32
		Client Sample ID.:			J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			1.15	0.40	0.75
		Date Sampled:			27-Sep-2017	27-Sep-2017	27-Sep-2017
		Asbestos Lab:			COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	14	13	11
pH	M	2010		N/A	8.9	8.4	8.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	1.5	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.048	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	
Ammonium (Extractable)	M	2425	mg/kg	0.50	0.84	3.5	< 0.50
Sulphate (Total)	M	2430	%	0.010	< 0.010	0.29	< 0.010
Arsenic	M	2450	mg/kg	1.0	8.5	41	10
Cadmium	M	2450	mg/kg	0.10	0.14	0.84	0.15
Chromium	M	2450	mg/kg	1.0	11	33	10
Copper	M	2450	mg/kg	0.50	7.4	250	16
Mercury	M	2450	mg/kg	0.10	0.10	0.63	< 0.10
Nickel	M	2450	mg/kg	0.50	12	64	12
Lead	M	2450	mg/kg	0.50	14	1500	21
Selenium	M	2450	mg/kg	0.20	< 0.20	0.73	< 0.20
Zinc	M	2450	mg/kg	0.50	29	330	30
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40			0.78
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	1.9	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	3.3	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	14	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	56	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	120	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	33	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	220	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	7.5	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	8.6	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	64	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	330	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	1800	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029	17-26029	17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841	519843	519847
Order No.: 2543, GI			Client Sample Ref.:		BHC30	BHC31	BHC32
			Client Sample ID.:		J4	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.15	0.40	0.75
			Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	170	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	2400	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	2600	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	3.0	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	1.0	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.93	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	8.3	0.14
Anthracene	M	2700	mg/kg	0.10	< 0.10	3.1	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	13	0.20
Pyrene	M	2700	mg/kg	0.10	< 0.10	17	0.30
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	8.1	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	12	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	4.0	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	12	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	7.9	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	2.4	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	14	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	120	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029	17-26029	17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841	519843	519847
Order No.: 2543, GI			Client Sample Ref.:		BHC30	BHC31	BHC32
			Client Sample ID.:		J4	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.15	0.40	0.75
			Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-26029	17-26029	17-26029
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	519841	519843	519847
Order No.: 2543, GI					Client Sample Ref.:	BHC30	BHC31	BHC32
					Client Sample ID.:	J4	J2	J3
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.15	0.40	0.75
					Date Sampled:	27-Sep-2017	27-Sep-2017	27-Sep-2017
					Asbestos Lab:	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
N-Nitrosodimethylamine	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50		< 0.50	0.65	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50		< 0.50	0.59	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26029	17-26029	17-26029
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		519841	519843	519847
Order No.: 2543, GI			Client Sample Ref.:		BHC30	BHC31	BHC32
			Client Sample ID.:		J4	J2	J3
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.15	0.40	0.75
			Date Sampled:		27-Sep-2017	27-Sep-2017	27-Sep-2017
			Asbestos Lab:		COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	2.9	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	1.3	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	5.5	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	7.0	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	3.9	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	3.9	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	6.4	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	2.3	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	4.8	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	3.5	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	1.2	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	4.9	< 0.50
PCB 28	M	2815	mg/kg	0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010		
PCB 52	M	2815	mg/kg	0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010		
PCB 105	N	2815	mg/kg	0.010	< 0.010		
PCB 90+101	M	2815	mg/kg	0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010		
PCB 118	M	2815	mg/kg	0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010		
PCB 153	M	2815	mg/kg	0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010		
PCB 138	M	2815	mg/kg	0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-26029	17-26029	17-26029
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			519841	519843	519847
Order No.: 2543, GI		Client Sample Ref.:			BHC30	BHC31	BHC32
		Client Sample ID.:			J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			1.15	0.40	0.75
		Date Sampled:			27-Sep-2017	27-Sep-2017	27-Sep-2017
		Asbestos Lab:			COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PCB 180	M	2815	mg/kg	0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010		
PCB 157	N	2815	mg/kg	0.010	< 0.010		
PCB 167	N	2815	mg/kg	0.010	< 0.010		
PCB 169	N	2815	mg/kg	0.010	< 0.010		
PCB 189	N	2815	mg/kg	0.010	< 0.010		
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12		
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
519841	BHC30	J4	27-Sep-2017	B	Amber Glass 250ml
519841	BHC30	J4	27-Sep-2017	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-26235-1
Initial Date of Issue:	16-Oct-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	06-Oct-2017
Order No.:	2543, GI	**Date Instructed:**	06-Oct-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	16-Oct-2017
Date Approved:	16-Oct-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543, GI Lake Lothing, Lowestoft

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-26235								
Chemtest Sample ID:	520920								
Sample Ref:	BHC13						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:									
Top Depth(m):	2.00								
Bottom Depth(m):									
Sampling Date:	03-Oct-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			1.1	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			87	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				9.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0050	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.0076	0.0093	< 0.050	0.091	0.5	2	25
Barium	1450	U	0.021	0.0095	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.0016	0.0016	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0022	0.0024	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.013	0.0029	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.0013	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	0.0020	< 0.010	0.017	0.5	10	50
Antimony	1450	U	0.0028	0.0012	< 0.010	0.014	0.06	0.7	5
Selenium	1450	U	0.0011	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0044	0.0013	< 0.50	< 0.50	4	50	200
Chloride	1220	U	9.3	3.2	19	41	800	15000	25000
Fluoride	1220	U	0.37	0.17	< 1.0	2.0	10	150	500
Sulphate	1220	U	130	21	260	360	1000	20000	50000
Total Dissolved Solids	1020	N	260	69	520	960	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	17	14	< 50	140	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.6

Leachate Test Information	
Leachant volume 1st extract/l	0.341
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.251

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-26355-1
Initial Date of Issue:	18-Oct-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	06-Oct-2017
Order No.:	Q17-10179	**Date Instructed:**	10-Oct-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	16-Oct-2017
Date Approved:	18-Oct-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26355
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		521396
Order No.: Q17-10179			Client Sample Ref.:		BHC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.6
			Date Sampled:		03-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	9.5
Ammonia (Free) as N	U	1220	mg/l	0.010	0.63
Sulphate	U	1220	mg/l	1.0	24
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	25
Boron (Dissolved)	U	1450	µg/l	20	39
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.4
Copper (Dissolved)	U	1450	µg/l	1.0	19
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.3
Lead (Dissolved)	U	1450	µg/l	1.0	2.9
Selenium (Dissolved)	U	1450	µg/l	1.0	3.7
Zinc (Dissolved)	U	1450	µg/l	1.0	2.2
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	5.8
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	29
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	97
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	6.9
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	140
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	140
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26355
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		521396
Order No.: Q17-10179			Client Sample Ref.:		BHC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.6
			Date Sampled:		03-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26355
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		521396
Order No.: Q17-10179			Client Sample Ref.:		BHC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.6
			Date Sampled:		03-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26355
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		521396
Order No.: Q17-10179			Client Sample Ref.:		BHC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.6
			Date Sampled:		03-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26355
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		521396
Order No.: Q17-10179			Client Sample Ref.:		BHC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.6
			Date Sampled:		03-Oct-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	7.6
pH	U	2010		N/A	9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.62
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	3.4
Ammonium (Extractable)	U	2425	mg/kg	0.50	27
Sulphate (Total)	U	2430	%	0.010	0.063
Arsenic	U	2450	mg/kg	1.0	9.1
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	7.8
Copper	U	2450	mg/kg	0.50	48
Mercury	U	2450	mg/kg	0.10	0.21
Nickel	U	2450	mg/kg	0.50	12
Lead	U	2450	mg/kg	0.50	110
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	52
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	2.3
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	100
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	100
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	1.1
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	51
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

Results - Soil

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	17-26355
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	521396
Order No.: Q17-10179				Client Sample Ref.:	BHC05
				Client Sample ID.:	J3
				Sample Type:	SOIL
				Top Depth (m):	0.6
				Date Sampled:	03-Oct-2017
				Asbestos Lab:	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	52
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	160
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	1.1
Anthracene	U	2700	mg/kg	0.10	0.26
Fluoranthene	U	2700	mg/kg	0.10	1.4
Pyrene	U	2700	mg/kg	0.10	1.5
Benzo[a]anthracene	U	2700	mg/kg	0.10	1.3
Chrysene	U	2700	mg/kg	0.10	0.66
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	0.79
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	0.29
Benzo[a]pyrene	U	2700	mg/kg	0.10	0.37
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	0.25
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	0.29
Total Of 16 PAH's	U	2700	mg/kg	2.0	8.2
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-26355
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		521396
Order No.: Q17-10179			Client Sample Ref.:		BHC05
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		0.6
			Date Sampled:		03-Oct-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	17-26355
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	521396
Order No.: Q17-10179				Client Sample Ref.:	BHC05
				Client Sample ID.:	J3
				Sample Type:	SOIL
				Top Depth (m):	0.6
				Date Sampled:	03-Oct-2017
				Asbestos Lab:	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	17-26355
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	521396
Order No.: Q17-10179				Client Sample Ref.:	BHC05
				Client Sample ID.:	J3
				Sample Type:	SOIL
				Top Depth (m):	0.6
				Date Sampled:	03-Oct-2017
				Asbestos Lab:	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	0.64
Pyrene	U	2790	mg/kg	0.50	0.52
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-27357-1
Initial Date of Issue:	25-Oct-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, G1 - Lake Lothing
Quotation No.:	Q17-10179
Order No.:	2543,G1
No. of Samples:	4
Turnaround (Wkdays):	5
Date Approved:	25-Oct-2017

Date Received:	17-Oct-2017
Date Instructed:	18-Oct-2017
Results Due:	24-Oct-2017

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-27357
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		526215
Order No.: 2543,G1			Client Sample Ref.:		BHC28
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.60
			Bottom Depth (m):		2.80
			Date Sampled:		13-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.029
Sulphate	U	1220	mg/l	1.0	9.3
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.2
Boron (Dissolved)	U	1450	µg/l	20	27
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	10
Copper (Dissolved)	U	1450	µg/l	1.0	3.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.0
Lead (Dissolved)	U	1450	µg/l	1.0	3.6
Selenium (Dissolved)	U	1450	µg/l	1.0	2.6
Zinc (Dissolved)	U	1450	µg/l	1.0	3.2
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-27357
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		526215
Order No.: 2543,G1			Client Sample Ref.:		BHC28
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.60
			Bottom Depth (m):		2.80
			Date Sampled:		13-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-27357
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		526215
Order No.: 2543,G1			Client Sample Ref.:		BHC28
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.60
			Bottom Depth (m):		2.80
			Date Sampled:		13-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-27357
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		526215
Order No.: 2543,G1			Client Sample Ref.:		BHC28
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.60
			Bottom Depth (m):		2.80
			Date Sampled:		13-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-27357	17-27357	17-27357	17-27357
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			526213	526215	526216	526218
Order No.: 2543,G1		Client Sample Ref.:			BHC28	BHC28	BHC28	BHC101
		Client Sample ID.:			J4	J6	J7	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.60	3.60	0.60
		Bottom Depth (m):			1.80	2.80	3.90	
		Date Sampled:			13-Oct-2017	13-Oct-2017	13-Oct-2017	13-Oct-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	27	18	10	16
pH	M	2010		N/A	8.3	8.0	8.2	8.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.2	0.85	0.74	0.76
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.020	0.074	0.014	0.041
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	M	2425	mg/kg	0.50	6.3	2.3	2.1	1.4
Sulphate (Total)	M	2430	%	0.010	< 0.010			
Arsenic	M	2450	mg/kg	1.0	24	1.9	3.9	7.1
Cadmium	M	2450	mg/kg	0.10	0.15	0.38	< 0.10	0.10
Chromium	M	2450	mg/kg	1.0	32	4.8	14	15
Copper	M	2450	mg/kg	0.50	18	1.0	5.3	9.9
Mercury	M	2450	mg/kg	0.10	0.52	0.31	0.25	0.34
Nickel	M	2450	mg/kg	0.50	30	2.7	11	11
Lead	M	2450	mg/kg	0.50	48	6.4	5.7	28
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	220	20	21	91
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40			< 0.40	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-27357	17-27357	17-27357	17-27357
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			526213	526215	526216	526218
Order No.: 2543,G1		Client Sample Ref.:			BHC28	BHC28	BHC28	BHC101
		Client Sample ID.:			J4	J6	J7	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.60	3.60	0.60
		Bottom Depth (m):			1.80	2.80	3.90	
		Date Sampled:			13-Oct-2017	13-Oct-2017	13-Oct-2017	13-Oct-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.43
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.44
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	M	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-27357	17-27357	17-27357	17-27357
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			526213	526215	526216	526218
Order No.: 2543,G1		Client Sample Ref.:			BHC28	BHC28	BHC28	BHC101
		Client Sample ID.:			J4	J6	J7	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.60	3.60	0.60
		Bottom Depth (m):			1.80	2.80	3.90	
		Date Sampled:			13-Oct-2017	13-Oct-2017	13-Oct-2017	13-Oct-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-27357	17-27357	17-27357	17-27357
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			526213	526215	526216	526218
Order No.: 2543,G1		Client Sample Ref.:			BHC28	BHC28	BHC28	BHC101
		Client Sample ID.:			J4	J6	J7	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.60	3.60	0.60
		Bottom Depth (m):			1.80	2.80	3.90	
		Date Sampled:			13-Oct-2017	13-Oct-2017	13-Oct-2017	13-Oct-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-27357	17-27357	17-27357	17-27357
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			526213	526215	526216	526218
Order No.: 2543,G1		Client Sample Ref.:			BHC28	BHC28	BHC28	BHC101
		Client Sample ID.:			J4	J6	J7	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.60	3.60	0.60
		Bottom Depth (m):			1.80	2.80	3.90	
		Date Sampled:			13-Oct-2017	13-Oct-2017	13-Oct-2017	13-Oct-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	M	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 52	M	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 90+101	M	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 118	M	2815	mg/kg	0.010	< 0.010		< 0.010	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, G1 - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-27357	17-27357	17-27357	17-27357
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			526213	526215	526216	526218
Order No.: 2543,G1		Client Sample Ref.:			BHC28	BHC28	BHC28	BHC101
		Client Sample ID.:			J4	J6	J7	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.60	3.60	0.60
		Bottom Depth (m):			1.80	2.80	3.90	
		Date Sampled:			13-Oct-2017	13-Oct-2017	13-Oct-2017	13-Oct-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
PCB 118	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 153	M	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 138	M	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 180	M	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-29274-1		
Initial Date of Issue:	17-Nov-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543, GI Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	03-Nov-2017
Order No.:	2543, GI	**Date Instructed:**	13-Nov-2017
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	17-Nov-2017
Date Approved:	17-Nov-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29274	17-29274
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		534724	534740
Order No.: 2543, GI			Client Sample Ref.:		WSC17	WSC19
			Client Sample ID.:		J5	J1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.60	0.30
			Date Sampled:		30-Oct-2017	01-Nov-2017
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A		-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected
Moisture	N	2030	%	0.020	8.8	9.7
pH	U	2010		N/A	7.2	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.46
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.0	4.1
Sulphate (Total)	U	2430	%	0.010	< 0.010	0.048
Arsenic	U	2450	mg/kg	1.0	12	9.9
Cadmium	U	2450	mg/kg	0.10	< 0.10	0.21
Chromium	U	2450	mg/kg	1.0	15	12
Copper	U	2450	mg/kg	0.50	10	47
Mercury	U	2450	mg/kg	0.10	< 0.10	0.13
Nickel	U	2450	mg/kg	0.50	16	24
Lead	U	2450	mg/kg	0.50	12	160
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	40	170
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	0.43	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	21
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	21
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	84

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29274	17-29274
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		534724	534740
Order No.: 2543, GI			Client Sample Ref.:		WSC17	WSC19
			Client Sample ID.:		J5	J1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.60	0.30
			Date Sampled:		30-Oct-2017	01-Nov-2017
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	85
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	110
Naphthalene	U	2700	mg/kg	0.10	< 0.10	0.18
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	0.81
Anthracene	U	2700	mg/kg	0.10	< 0.10	0.23
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	2.1
Pyrene	U	2700	mg/kg	0.10	< 0.10	1.9
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	1.3
Chrysene	U	2700	mg/kg	0.10	< 0.10	1.1
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	1.5
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	0.53
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	1.1
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	0.70
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	0.70
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	12
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29274	17-29274
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		534724	534740
Order No.: 2543, GI			Client Sample Ref.:		WSC17	WSC19
			Client Sample ID.:		J5	J1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.60	0.30
			Date Sampled:		30-Oct-2017	01-Nov-2017
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29274	17-29274
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		534724	534740
Order No.: 2543, GI			Client Sample Ref.:		WSC17	WSC19
			Client Sample ID.:		J5	J1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.60	0.30
			Date Sampled:		30-Oct-2017	01-Nov-2017
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29274	17-29274
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		534724	534740
Order No.: 2543, GI			Client Sample Ref.:		WSC17	WSC19
			Client Sample ID.:		J5	J1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.60	0.30
			Date Sampled:		30-Oct-2017	01-Nov-2017
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	0.51
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	1.8
Pyrene	U	2790	mg/kg	0.50	< 0.50	1.5
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	0.92
Chrysene	U	2790	mg/kg	0.50	< 0.50	0.74
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	1.4
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	0.52
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	0.90
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	0.66
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	0.86
PCB 81	N	2815	mg/kg	0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010		< 0.010
PCB 156	N	2815	mg/kg	0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29274	17-29274
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		534724	534740
Order No.: 2543, GI			Client Sample Ref.:		WSC17	WSC19
			Client Sample ID.:		J5	J1
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.60	0.30
			Date Sampled:		30-Oct-2017	01-Nov-2017
			Asbestos Lab:			COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-29383-1
Initial Date of Issue:	21-Nov-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	06-Nov-2017
Order No.:	2543, GI	**Date Instructed:**	13-Nov-2017
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	17-Nov-2017
Date Approved:	21-Nov-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29383
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		535385
Order No.: 2543, GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.50
			Date Sampled:		02-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	3.2
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.1
Boron (Dissolved)	U	1450	µg/l	20	23
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.3
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	6.3
Lead (Dissolved)	U	1450	µg/l	1.0	1.1
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	5.1
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29383
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		535385
Order No.: 2543, GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.50
			Date Sampled:		02-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29383
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		535385
Order No.: 2543, GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.50
			Date Sampled:		02-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29383
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		535385
Order No.: 2543, GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J3
			Sample Type:		SOIL
			Top Depth (m):		1.50
			Date Sampled:		02-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			535381	535385	535386	535390
Order No.: 2543, GI		Client Sample Ref.:			WSC14	WSC19A	WSC19A	WSC22
		Client Sample ID.:			J3	J3	J4	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.70	1.50	2.10	0.50
		Date Sampled:			02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	7.7	3.7	5.9	5.0
pH	U	2010		N/A	8.6	8.3	8.0	9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	1.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	0.34
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	< 0.50	0.68	0.67	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.051	< 0.010	< 0.010	0.096
Arsenic	U	2450	mg/kg	1.0	12	29	1.6	8.0
Cadmium	U	2450	mg/kg	0.10	0.23	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	16	27	8.2	8.6
Copper	U	2450	mg/kg	0.50	20	30	2.2	5.1
Mercury	U	2450	mg/kg	0.10	< 0.10	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	17	37	6.2	7.2
Lead	U	2450	mg/kg	0.50	150	110	8.4	18
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	59	130	12	21
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40			< 0.40	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	3.4	< 1.0	< 1.0	16
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	13	< 1.0	< 1.0	1.4

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	535381	535385	535386	535390
Order No.: 2543, GI					Client Sample Ref.:	WSC14	WSC19A	WSC19A	WSC22
					Client Sample ID.:	J3	J3	J4	J2
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.70	1.50	2.10	0.50
					Date Sampled:	02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
					Asbestos Lab:	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		16	< 5.0	< 5.0	18
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		16	< 10	< 10	18
Naphthalene	U	2700	mg/kg	0.10		0.19	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10		0.16	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10		0.52	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10		0.20	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10		1.1	0.21	< 0.10	0.36
Pyrene	U	2700	mg/kg	0.10		0.93	0.23	< 0.10	0.30
Benzo[a]anthracene	U	2700	mg/kg	0.10		0.49	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10		0.18	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10		0.39	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10		0.27	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0		4.4	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20		< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0		< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		535381	535385	535386	535390
Order No.: 2543, GI			Client Sample Ref.:		WSC14	WSC19A	WSC19A	WSC22
			Client Sample ID.:		J3	J3	J4	J2
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.70	1.50	2.10	0.50
			Date Sampled:		02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			535381	535385	535386	535390
Order No.: 2543, GI		Client Sample Ref.:			WSC14	WSC19A	WSC19A	WSC22
		Client Sample ID.:			J3	J3	J4	J2
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.70	1.50	2.10	0.50
		Date Sampled:			02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	535381	535385	535386	535390
Order No.: 2543, GI					Client Sample Ref.:	WSC14	WSC19A	WSC19A	WSC22
					Client Sample ID.:	J3	J3	J4	J2
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.70	1.50	2.10	0.50
					Date Sampled:	02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
					Asbestos Lab:	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Fluorene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50		1.7	< 0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50		0.54	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50		3.0	< 0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50		2.4	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50		1.2	< 0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50		1.0	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50		1.2	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50		0.75	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010			< 0.010		
PCB 81	N	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 52	U	2815	mg/kg	0.010			< 0.010		
PCB 77	N	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 90+101	U	2815	mg/kg	0.010			< 0.010		
PCB 114	N	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 118	U	2815	mg/kg	0.010			< 0.010		
PCB 118	N	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 153	U	2815	mg/kg	0.010			< 0.010		
PCB 123	N	2815	mg/kg	0.010		< 0.010			< 0.010
PCB 138	U	2815	mg/kg	0.010			< 0.010		
PCB 126	N	2815	mg/kg	0.010		< 0.010			< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-29383	17-29383	17-29383	17-29383
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		535381	535385	535386	535390
Order No.: 2543, GI			Client Sample Ref.:		WSC14	WSC19A	WSC19A	WSC22
			Client Sample ID.:		J3	J3	J4	J2
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.70	1.50	2.10	0.50
			Date Sampled:		02-Nov-2017	02-Nov-2017	02-Nov-2017	01-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
PCB 180	U	2815	mg/kg	0.010		< 0.010		
PCB 156	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010			< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12			< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10		
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
535385	WSC19A	J3	02-Nov-2017	B	Amber Glass 250ml
535385	WSC19A	J3	02-Nov-2017	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-29990-1
Initial Date of Issue:	22-Nov-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543,GI Lake Lothing
Quotation No.:	Q17-10179
Order No.:	2543,GI
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	22-Nov-2017

Date Received:	13-Nov-2017
Date Instructed:	13-Nov-2017
Results Due:	21-Nov-2017

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543,GI Lake Lothing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-29990						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	538111								
Sample Ref:									
Sample ID:	WSC14								
Top Depth(m):	1.70								
Bottom Depth(m):									
Sampling Date:	02-Nov-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.23	3	5	6
Loss On Ignition	2610	U	%			0.92	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			100	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			110	100	--	--
pH	2010	U				9.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.016	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0013	0.0033	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0068	0.0050	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0013	0.0019	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0030	0.0021	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.0019	0.0011	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.0010	0.0042	< 0.010	0.037	0.5	10	50
Antimony	1450	U	0.0042	0.0066	< 0.010	0.063	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	0.0067	< 0.50	< 0.50	4	50	200
Chloride	1220	U	2.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.76	0.67	1.5	6.8	10	150	500
Sulphate	1220	U	17	7.7	34	90	1000	20000	50000
Total Dissolved Solids	1020	N	69	54	140	560	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	17	46	< 50	420	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.4

Leachate Test Information	
Leachant volume 1st extract/l	0.342
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.246

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Amended Report

Report No.:	17-30076-2		
Initial Date of Issue:	17-Nov-2017	**Date of Re-Issue:**	14-Dec-2017
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543 G-I - Lake Lothing		
Quotation No.:	Q17-10179	**Date Received:**	13-Nov-2017
Order No.:	2543, G-I	**Date Instructed:**	13-Nov-2017
No. of Samples:	2		
Turnaround (Wkdays):	22	**Results Due:**	12-Dec-2017
Date Approved:	13-Dec-2017		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager
Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508
Order No.: 2543, G-I			Client Sample Ref.:		WSC23
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Date Sampled:		09-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	9.7
Ammonia (Free) as N	U	1220	mg/l	0.010	0.053
Sulphate	U	1220	mg/l	1.0	16
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	10
Boron (Dissolved)	U	1450	µg/l	20	37
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.8
Copper (Dissolved)	U	1450	µg/l	1.0	2.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.1
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	1.1
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	84
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	74
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	60
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	220
Total Petroleum Hydrocarbons	N	1675	µg/l	10	220
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	8.4

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508
Order No.: 2543, G-I			Client Sample Ref.:		WSC23
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Date Sampled:		09-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	2.8
Fluoranthene	U	1700	µg/l	0.10	7.6
Pyrene	U	1700	µg/l	0.10	6.7
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	26
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508
Order No.: 2543, G-I			Client Sample Ref.:		WSC23
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Date Sampled:		09-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	0.92
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	5.6
Anthracene	N	1790	µg/l	0.50	1.9
Carbazole	N	1790	µg/l	0.50	1.8
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	9.5
Pyrene	N	1790	µg/l	0.50	7.5
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	1.3
Chrysene	N	1790	µg/l	0.50	0.94
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508
Order No.: 2543, G-I			Client Sample Ref.:		WSC23
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Date Sampled:		09-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076	17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508	538510
Order No.: 2543, G-I			Client Sample Ref.:		WSC23	WSC23
			Client Sample ID.:		J1	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.10
			Date Sampled:		09-Nov-2017	09-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	
Moisture	N	2030	%	0.020	7.8	12
pH	U	2010		N/A	8.7	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.58	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.032	0.042
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.51	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.21	0.037
Arsenic	U	2450	mg/kg	1.0	12	6.0
Cadmium	U	2450	mg/kg	0.10	0.17	< 0.10
Chromium	U	2450	mg/kg	1.0	24	7.0
Copper	U	2450	mg/kg	0.50	36	7.2
Mercury	U	2450	mg/kg	0.10	0.19	< 0.10
Nickel	U	2450	mg/kg	0.50	27	6.0
Lead	U	2450	mg/kg	0.50	120	47
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	71	17
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		1.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	22	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	38	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	39	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	100	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	12	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	74	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	360	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	2700	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076	17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508	538510
Order No.: 2543, G-I			Client Sample Ref.:		WSC23	WSC23
			Client Sample ID.:		J1	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.10
			Date Sampled:		09-Nov-2017	09-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	490	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	3700	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	3800	< 10
Naphthalene	U	2700	mg/kg	0.10	0.73	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	2.4	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	1.1	< 0.10
Fluorene	U	2700	mg/kg	0.10	1.3	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	11	0.97
Anthracene	U	2700	mg/kg	0.10	4.9	0.20
Fluoranthene	U	2700	mg/kg	0.10	42	1.6
Pyrene	U	2700	mg/kg	0.10	45	2.0
Benzo[a]anthracene	U	2700	mg/kg	0.10	20	1.6
Chrysene	U	2700	mg/kg	0.10	22	1.0
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	32	1.3
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	12	0.53
Benzo[a]pyrene	U	2700	mg/kg	0.10	26	1.1
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	18	0.61
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	5.1	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	16	0.73
Total Of 16 PAH's	U	2700	mg/kg	2.0	260	12
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076	17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508	538510
Order No.: 2543, G-I			Client Sample Ref.:		WSC23	WSC23
			Client Sample ID.:		J1	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.10
			Date Sampled:		09-Nov-2017	09-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076	17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508	538510
Order No.: 2543, G-I			Client Sample Ref.:		WSC23	WSC23
			Client Sample ID.:		J1	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.10
			Date Sampled:		09-Nov-2017	09-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	0.88	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	0.75	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Results - Soil

Project: 2543 G-I - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-30076	17-30076
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		538508	538510
Order No.: 2543, G-I			Client Sample Ref.:		WSC23	WSC23
			Client Sample ID.:		J1	J3
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	1.10
			Date Sampled:		09-Nov-2017	09-Nov-2017
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	2790	mg/kg	0.50	0.94	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	8.3	< 0.50
Anthracene	U	2790	mg/kg	0.50	4.0	< 0.50
Carbazole	U	2790	mg/kg	0.50	1.3	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	25	< 0.50
Pyrene	U	2790	mg/kg	0.50	24	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	12	< 0.50
Chrysene	U	2790	mg/kg	0.50	12	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	19	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	7.6	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	16	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	12	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010	
PCB 52	U	2815	mg/kg	0.010	< 0.010	
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	
PCB 118	U	2815	mg/kg	0.010	< 0.010	
PCB 153	U	2815	mg/kg	0.010	< 0.010	
PCB 138	U	2815	mg/kg	0.010	< 0.010	
PCB 180	U	2815	mg/kg	0.010	< 0.010	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-31448-1
Initial Date of Issue:	04-Dec-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI Lake Lothing, L14

Quotation No.:	Q17-10179	**Date Received:**	24-Nov-2017
Order No.:	2543 GI	**Date Instructed:**	24-Nov-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	30-Nov-2017
Date Approved:	04-Dec-2017		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Results - Leachate

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	7.9
pH	U	2010		N/A	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.0
Sulphate (Total)	U	2430	%	0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	8.5
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	6.4
Copper	U	2450	mg/kg	0.50	5.0
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	5.2
Lead	U	2450	mg/kg	0.50	3.5
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	1.0 µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543 GI Lake Lothing, L14

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31448
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		545141
Order No.: 2543 GI			Client Sample Ref.:		BHC103
			Client Sample ID.:		8
			Sample Type:		SOIL
			Top Depth (m):		4.5
			Date Sampled:		22-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by ‘Aquakem 600’ Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by ‘Aquakem 600’ Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-31794-1
Initial Date of Issue:	06-Dec-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	254391 L14 Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	29-Nov-2017
Order No.:	254391	**Date Instructed:**	29-Nov-2017
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	05-Dec-2017
Date Approved:	06-Dec-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616
Order No.: 254391			Client Sample Ref.:		BH102
			Client Sample ID.:		V1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		24-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	10.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.057
Sulphate	U	1220	mg/l	1.0	17
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	6.7
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	32
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	14
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Results - Leachate

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616
Order No.: 254391			Client Sample Ref.:		BH102
			Client Sample ID.:		V1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		24-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616
Order No.: 254391			Client Sample Ref.:		BH102
			Client Sample ID.:		V1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		24-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616
Order No.: 254391			Client Sample Ref.:		BH102
			Client Sample ID.:		V1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		24-Nov-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616	546618	546620	546621
Order No.: 254391			Client Sample Ref.:		BH102	BH102	BHC27	BHC27
			Client Sample ID.:		V1	V3	V2	V3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	0.60	1.60
			Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	Fibres/Clumps		-	
Asbestos Identification	U	2192	%	0.001	Chrysotile		No Asbestos Detected	
Moisture	N	2030	%	0.020	11	6.0	15	24
pH	U	2010		N/A	11.2	8.6	9.5	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	1.1	0.81	1.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.23	0.055	0.15	0.043
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	0.90	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	< 0.50	1.8	0.94	3.3
Sulphate (Total)	U	2430	%	0.010	0.26	0.029	0.22	0.098
Arsenic	U	2450	mg/kg	1.0	32	10	25	25
Cadmium	U	2450	mg/kg	0.10	0.88	< 0.10	0.85	0.16
Chromium	U	2450	mg/kg	1.0	18	12	21	24
Copper	U	2450	mg/kg	0.50	77	6.0	57	14
Mercury	U	2450	mg/kg	0.10	0.34	0.14	0.40	0.16
Nickel	U	2450	mg/kg	0.50	32	11	22	24
Lead	U	2450	mg/kg	0.50	330	47	250	44
Selenium	U	2450	mg/kg	0.20	0.54	< 0.20	< 0.20	0.31
Zinc	U	2450	mg/kg	0.50	670	59	1600	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40		1.1
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	2.7	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	2.9	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	33	46	78	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	34	49	81	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	1.0	29	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	24	88	23	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	200	170	130	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616	546618	546620	546621
Order No.: 254391			Client Sample Ref.:		BH102	BH102	BHC27	BHC27
			Client Sample ID.:		V1	V3	V2	V3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	0.60	1.60
			Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	230	280	150	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	260	330	230	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	3.6	< 0.10	1.6	< 0.10
Anthracene	U	2700	mg/kg	0.10	0.26	< 0.10	0.36	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	4.0	< 0.10	4.2	0.23
Pyrene	U	2700	mg/kg	0.10	3.3	< 0.10	4.0	0.24
Benzo[a]anthracene	U	2700	mg/kg	0.10	1.0	< 0.10	2.6	< 0.10
Chrysene	U	2700	mg/kg	0.10	1.7	< 0.10	3.3	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	1.7	< 0.10	4.1	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	0.54	< 0.10	1.7	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	1.2	< 0.10	2.7	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	0.72	< 0.10	1.9	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.55	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	0.66	< 0.10	1.8	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	19	< 2.0	29	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616	546618	546620	546621
Order No.: 254391			Client Sample Ref.:		BH102	BH102	BHC27	BHC27
			Client Sample ID.:		V1	V3	V2	V3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	0.60	1.60
			Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	1.0 µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616	546618	546620	546621
Order No.: 254391			Client Sample Ref.:		BH102	BH102	BHC27	BHC27
			Client Sample ID.:		V1	V3	V2	V3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	0.60	1.60
			Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616	546618	546620	546621
Order No.: 254391			Client Sample Ref.:		BH102	BH102	BHC27	BHC27
			Client Sample ID.:		V1	V3	V2	V3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	0.60	1.60
			Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.2	< 0.50	1.7	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.57	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	1.9	< 0.50	5.7	< 0.50
Pyrene	U	2790	mg/kg	0.50	1.6	< 0.50	4.8	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.89	< 0.50	3.9	< 0.50
Chrysene	U	2790	mg/kg	0.50	1.2	< 0.50	3.7	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.5	< 0.50	5.2	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	2.1	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.79	< 0.50	3.2	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	0.61	< 0.50	2.6	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.0	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.70	< 0.50	2.8	< 0.50
PCB 28	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010			< 0.010

Results - Soil

Project: 254391 L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-31794	17-31794	17-31794	17-31794
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		546616	546618	546620	546621
Order No.: 254391			Client Sample Ref.:		BH102	BH102	BHC27	BHC27
			Client Sample ID.:		V1	V3	V2	V3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	0.60	1.60
			Date Sampled:		24-Nov-2017	24-Nov-2017	24-Nov-2017	24-Nov-2017
			Asbestos Lab:		COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
PCB 180	U	2815	mg/kg	0.010		< 0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010			< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010			< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12			< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-31797-1
Initial Date of Issue:	07-Dec-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	254391 L14 Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	29-Nov-2017
Order No.:	254391	**Date Instructed:**	29-Nov-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	07-Dec-2017
Date Approved:	07-Dec-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 254391 L14 Lake Lothing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-31797						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	546633								
Sample Ref:	V1								
Sample ID:	BHC102								
Top Depth(m):	0.30								
Bottom Depth(m):									
Sampling Date:	24-Nov-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			7.2	3	5	6
Loss On Ignition	2610	U	%			11	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			140	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			18	100	--	--
pH	2010	U				11.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.11	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0023	0.0028	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.090	0.032	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.042	0.013	0.083	0.17	0.5	10	70
Copper	1450	U	0.014	0.0064	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.012	0.0034	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.0044	0.0038	< 0.010	0.039	0.06	0.7	5
Selenium	1450	U	0.0021	0.0017	< 0.010	0.017	0.1	0.5	7
Zinc	1450	U	0.0010	< 0.0010	< 0.50	< 0.50	4	50	200
Chloride	1220	U	19	3.5	38	55	800	15000	25000
Fluoride	1220	U	0.24	0.19	< 1.0	2.0	10	150	500
Sulphate	1220	U	70	24	140	300	1000	20000	50000
Total Dissolved Solids	1020	N	260	180	520	1900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	19	12	< 50	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	13

Leachate Test Information	
Leachant volume 1st extract/l	0.325
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.225

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-32753-1
Initial Date of Issue:	14-Dec-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI L14 Lake Loathing

Quotation No.:		**Date Received:**	07-Dec-2017
Order No.:	2543 GI	**Date Instructed:**	07-Dec-2017
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	13-Dec-2017
Date Approved:	13-Dec-2017		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI L14 Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-32753	17-32753	17-32753
Quotation No.:		**Chemtest Sample ID.:**			551527	551529	551535
Order No.: 2543 GI		Client Sample Ref.:			BHC102	BHC102	BHC102
		Client Sample ID.:			J4	J6	J12
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			2.50	4.50	10.50
		Date Sampled:			04-Dec-2017	04-Dec-2017	04-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	20	2.7	15
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	70	2.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	220	15	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	190	21	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	100	18	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	580	56	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	4.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	110	1.4	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	49	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	38	11	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	200	13	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	780	69	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.15
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.17
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI L14 Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-32753	17-32753	17-32753
Quotation No.:		**Chemtest Sample ID.:**			551527	551529	551535
Order No.: 2543 GI		Client Sample Ref.:			BHC102	BHC102	BHC102
		Client Sample ID.:			J4	J6	J12
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			2.50	4.50	10.50
		Date Sampled:			04-Dec-2017	04-Dec-2017	04-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	110	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	190	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI L14 Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-32753	17-32753	17-32753
Quotation No.:			**Chemtest Sample ID.:**		551527	551529	551535
Order No.: 2543 GI			Client Sample Ref.:		BHC102	BHC102	BHC102
			Client Sample ID.:		J4	J6	J12
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		2.50	4.50	10.50
			Date Sampled:		04-Dec-2017	04-Dec-2017	04-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	2800	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	110	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Test Methods

SOP	Title	Parameters included	Method summary
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-33041-1		
Initial Date of Issue:	18-Dec-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543 GI, L14 Lake Lothing		
Quotation No.:	Q17-10179	**Date Received:**	11-Dec-2017
Order No.:	2543, GI	**Date Instructed:**	11-Dec-2017
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	15-Dec-2017
Date Approved:	18-Dec-2017		
Approved By:			
Details:	Robert Monk, Technical Manager		

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	9.8
Ammonia (Free) as N	U	1220	mg/l	0.010	0.12
Sulphate	U	1220	mg/l	1.0	82
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.9
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.0
Copper (Dissolved)	U	1450	µg/l	1.0	4.3
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.3
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	5.3
pH	U	2010		N/A	10.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.12
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.6
Sulphate (Total)	U	2430	%	0.010	0.34
Arsenic	U	2450	mg/kg	1.0	16
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	21
Copper	U	2450	mg/kg	0.50	9.1
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	16
Lead	U	2450	mg/kg	0.50	19
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	29
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	8.1
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	100
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	210
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	29
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	350
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	52
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	810
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0

Results - Soil

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	860
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	1200
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543 GI, L14 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33041
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		552743
Order No.: 2543, GI			Client Sample Ref.:		BHC101
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.10
			Date Sampled:		07-Dec-2017
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-33044-1		
Initial Date of Issue:	19-Dec-2017		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543 GI, L14 Lake Lothing		
Quotation No.:	Q17-10179	**Date Received:**	11-Dec-2017
Order No.:	2543 GI	**Date Instructed:**	11-Dec-2017
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	19-Dec-2017
Date Approved:	19-Dec-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543 GI, L14 Lake Lothing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	17-33044						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	552760								
Sample Ref:	BHC101								
Sample ID:	J4								
Top Depth(m):	2.10								
Bottom Depth(m):									
Sampling Date:	07-Dec-2017								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			0.38	3	5	6
Loss On Ignition	2610	U	%			3.1	--	--	10
Total BTEX	2760	U	mg/kg			0.039	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			1500	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				10.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.097	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0018	0.0012	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.020	0.0044	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.0090	0.0018	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0029	< 0.0010	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0052	< 0.0010	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0027	0.0012	< 0.010	0.014	0.1	0.5	7
Zinc	1450	U	0.0070	0.0029	< 0.50	< 0.50	4	50	200
Chloride	1220	U	66	16	130	230	800	15000	25000
Fluoride	1220	U	0.19	0.17	< 1.0	1.7	10	150	500
Sulphate	1220	U	53	20	110	250	1000	20000	50000
Total Dissolved Solids	1020	N	250	120	500	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	23	13	< 50	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.2

Leachate Test Information	
Leachant volume 1st extract/l	0.339
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.259

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	17-33607-1
Initial Date of Issue:	21-Dec-2017
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI, L14 Lake Loathing, Lowestoft

Quotation No.:		**Date Received:**	15-Dec-2017
Order No.:	2543 GI	**Date Instructed:**	15-Dec-2017
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	21-Dec-2017
Date Approved:	21-Dec-2017		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI, L14 Lake Loathing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33607	17-33607	17-33607
Quotation No.:			**Chemtest Sample ID.:**		555523	555525	555531
Order No.: 2543 GI			Client Sample Ref.:		BHC101	BHC101	BHC101
			Client Sample ID.:		J6	J8	J14
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.00	4.00	10.00
			Date Sampled:		12-Dec-2017	12-Dec-2017	13-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	15	25	20
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	60	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	260	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	270	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	450	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	1000	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	3.8	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	110	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	50	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	200	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	360	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	1400	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI, L14 Lake Loathing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			17-33607	17-33607	17-33607
Quotation No.:		**Chemtest Sample ID.:**			555523	555525	555531
Order No.: 2543 GI		Client Sample Ref.:			BHC101	BHC101	BHC101
		Client Sample ID.:			J6	J8	J14
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			3.00	4.00	10.00
		Date Sampled:			12-Dec-2017	12-Dec-2017	13-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	56	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	7.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	13	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI, L14 Lake Loathing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		17-33607	17-33607	17-33607
Quotation No.:			**Chemtest Sample ID.:**		555523	555525	555531
Order No.: 2543 GI			Client Sample Ref.:		BHC101	BHC101	BHC101
			Client Sample ID.:		J6	J8	J14
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.00	4.00	10.00
			Date Sampled:		12-Dec-2017	12-Dec-2017	13-Dec-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	36	11	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	11	9.3	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Test Methods

SOP	Title	Parameters included	Method summary
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Interim Report

Report No.:	18-00159-0
Initial Date of Issue:	
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI Lake Lothing

Quotation No.:		**Date Received:**	04-Jan-2018
Order No.:	2543 GI	**Date Instructed:**	05-Jan-2018
No. of Samples:	5		
Turnaround (Wkdays):	10	**Results Due:**	18-Jan-2018

Date Approved:

Approved By:

Details:

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00159
Quotation No.:			**Chemtest Sample ID.:**		559757
Order No.: 2543 GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J2
			Sample Type:		SOIL
			Top Depth (m):		0.80
			Date Sampled:		02-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.3
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphate	U	1220	mg/l	1.0	2.9
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.9
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.5
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	5.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	4.9
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00159
Quotation No.:			**Chemtest Sample ID.:**		559757
Order No.: 2543 GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J2
			Sample Type:		SOIL
			Top Depth (m):		0.80
			Date Sampled:		02-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00159
Quotation No.:			**Chemtest Sample ID.:**		559757
Order No.: 2543 GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J2
			Sample Type:		SOIL
			Top Depth (m):		0.80
			Date Sampled:		02-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00159
Quotation No.:			**Chemtest Sample ID.:**		559757
Order No.: 2543 GI			Client Sample Ref.:		WSC19A
			Client Sample ID.:		J2
			Sample Type:		SOIL
			Top Depth (m):		0.80
			Date Sampled:		02-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00159	18-00159	18-00159	18-00159
Quotation No.:		**Chemtest Sample ID.:**			559757	559759	559762	559763
Order No.: 2543 GI		Client Sample Ref.:			WSC19A	WSC19A	WSC21	WSC21
		Client Sample ID.:			J2	J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.80	2.40	0.75	1.75
		Date Sampled:			02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
		Asbestos Lab:			COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-		-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	4.8	4.6	3.8	12
pH	U	2010		N/A	8.2	8.2	8.3	8.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.2	1.2	1.1	1.7
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010	< 0.010	0.018
Arsenic	U	2450	mg/kg	1.0	< 1.0	< 1.0	< 1.0	13
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	3.2	2.4	5.0	7.9
Copper	U	2450	mg/kg	0.50	5.4	1.8	2.9	5.5
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	2.1	1.4	2.9	5.3
Lead	U	2450	mg/kg	0.50	54	4.4	5.6	6.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	16	8.1	11	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00159	18-00159	18-00159	18-00159
Quotation No.:		**Chemtest Sample ID.:**			559757	559759	559762	559763
Order No.: 2543 GI		Client Sample Ref.:			WSC19A	WSC19A	WSC21	WSC21
		Client Sample ID.:			J2	J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.80	2.40	0.75	1.75
		Date Sampled:			02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
		Asbestos Lab:			COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00159	18-00159	18-00159	18-00159
Quotation No.:		**Chemtest Sample ID.:**			559757	559759	559762	559763
Order No.: 2543 GI		Client Sample Ref.:			WSC19A	WSC19A	WSC21	WSC21
		Client Sample ID.:			J2	J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.80	2.40	0.75	1.75
		Date Sampled:			02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
		Asbestos Lab:			COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00159	18-00159	18-00159	18-00159
Quotation No.:		**Chemtest Sample ID.:**			559757	559759	559762	559763
Order No.: 2543 GI		Client Sample Ref.:			WSC19A	WSC19A	WSC21	WSC21
		Client Sample ID.:			J2	J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.80	2.40	0.75	1.75
		Date Sampled:			02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
		Asbestos Lab:			COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00159	18-00159	18-00159	18-00159
Quotation No.:		**Chemtest Sample ID.:**			559757	559759	559762	559763
Order No.: 2543 GI		Client Sample Ref.:			WSC19A	WSC19A	WSC21	WSC21
		Client Sample ID.:			J2	J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.80	2.40	0.75	1.75
		Date Sampled:			02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
		Asbestos Lab:			COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010			< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010			
PCB 52	U	2815	mg/kg	0.010			< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010			
PCB 105	N	2815	mg/kg	0.010	< 0.010			
PCB 90+101	U	2815	mg/kg	0.010			< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010			
PCB 118	U	2815	mg/kg	0.010			< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010			
PCB 153	U	2815	mg/kg	0.010			< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010			
PCB 138	U	2815	mg/kg	0.010			< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010			

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00159	18-00159	18-00159	18-00159
Quotation No.:		**Chemtest Sample ID.:**			559757	559759	559762	559763
Order No.: 2543 GI		Client Sample Ref.:			WSC19A	WSC19A	WSC21	WSC21
		Client Sample ID.:			J2	J4	J2	J3
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.80	2.40	0.75	1.75
		Date Sampled:			02-Jan-2018	02-Jan-2018	02-Jan-2018	02-Jan-2018
		Asbestos Lab:			COVENTRY		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
PCB 180	U	2815	mg/kg	0.010			< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010			
PCB 157	N	2815	mg/kg	0.010	< 0.010			
PCB 167	N	2815	mg/kg	0.010	< 0.010			
PCB 169	N	2815	mg/kg	0.010	< 0.010			
PCB 189	N	2815	mg/kg	0.010	< 0.010			
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12			
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10			< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - 2 Stage WAC

Project: 2543 GI Lake Lothing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-00159						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	559758								
Sample Ref:	WSC19A								
Sample ID:	J3								
Top Depth(m):	1.40								
Bottom Depth(m):									
Sampling Date:	02-Jan-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			0.40	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.052	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	2	25
Barium	1450	U	To Follow	To Follow	To Follow	To Follow	20	100	300
Cadmium	1450	U	To Follow	To Follow	To Follow	To Follow	0.04	1	5
Chromium	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	10	70
Copper	1450	U	To Follow	To Follow	To Follow	To Follow	2	50	100
Mercury	1450	U	To Follow	To Follow	To Follow	To Follow	0.01	0.2	2
Molybdenum	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	10	30
Nickel	1450	U	To Follow	To Follow	To Follow	To Follow	0.4	10	40
Lead	1450	U	To Follow	To Follow	To Follow	To Follow	0.5	10	50
Antimony	1450	U	To Follow	To Follow	To Follow	To Follow	0.06	0.7	5
Selenium	1450	U	To Follow	To Follow	To Follow	To Follow	0.1	0.5	7
Zinc	1450	U	To Follow	To Follow	To Follow	To Follow	4	50	200
Chloride	1220	U	4.5	2.2	< 10	25	800	15000	25000
Fluoride	1220	U	0.10	0.099	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	3.3	< 1.0	< 10	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	To Follow	To Follow	To Follow	To Follow	4000	60000	100000
Phenol Index	1920	U	To Follow	To Follow	To Follow	To Follow	1	-	-
Dissolved Organic Carbon	1610	U	To Follow	To Follow	To Follow	To Follow	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.6

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.261

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-00228-1
Initial Date of Issue:	12-Jan-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543/GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	05-Jan-2018
Order No.:	2543/G1	**Date Instructed:**	05-Jan-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	11-Jan-2018
Date Approved:	11-Jan-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543/GI Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-00228	18-00228
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			560161	560163
Order No.: 2543/G1		Client Sample Ref.:			BHC14	BHC14
		Client Sample ID.:			J5	J7
		Sample Type:			SOIL	SOIL
		Top Depth (m):			3.10	5.10
		Date Sampled:			03-Jan-2018	03-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	16	11
pH	U	2010		N/A	9.3	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	< 0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	5.1	5.1
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	4.6	5.1
Copper	U	2450	mg/kg	0.50	3.5	3.8
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	4.6	4.4
Lead	U	2450	mg/kg	0.50	3.2	2.7
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	13	10
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[C] < 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[C] < 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[C] < 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[C] < 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543/GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-00228	18-00228
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	560161	560163
Order No.: 2543/G1					Client Sample Ref.:	BHC14	BHC14
					Client Sample ID.:	J5	J7
					Sample Type:	SOIL	SOIL
					Top Depth (m):	3.10	5.10
					Date Sampled:	03-Jan-2018	03-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Acenaphthylene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10		< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0		< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20		[C] < 20	< 20
Chloroethane	N	2760	µg/kg	2.0		[C] < 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0		[C] < 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0		[C] < 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0		[C] < 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10		[C] < 10	< 10
Toluene	U	2760	µg/kg	1.0		[C] < 1.0	< 1.0

Results - Soil

Project: 2543/GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00228	18-00228
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560161	560163
Order No.: 2543/G1			Client Sample Ref.:		BHC14	BHC14
			Client Sample ID.:		J5	J7
			Sample Type:		SOIL	SOIL
			Top Depth (m):		3.10	5.10
			Date Sampled:		03-Jan-2018	03-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[C] < 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[C] < 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[C] < 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	[C] < 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[C] < 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[C] < 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[C] < 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[C] < 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[C] < 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[C] < 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[C] < 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[C] < 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[C] < 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543/GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-00228	18-00228
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	560161	560163
Order No.: 2543/G1					Client Sample Ref.:	BHC14	BHC14
					Client Sample ID.:	J5	J7
					Sample Type:	SOIL	SOIL
					Top Depth (m):	3.10	5.10
					Date Sampled:	03-Jan-2018	03-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,2-Dichlorobenzene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50

Results - Soil

Project: 2543/GI Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-00228	18-00228
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	560161	560163
Order No.: 2543/G1					Client Sample Ref.:	BHC14	BHC14
					Client Sample ID.:	J5	J7
					Sample Type:	SOIL	SOIL
					Top Depth (m):	3.10	5.10
					Date Sampled:	03-Jan-2018	03-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Pentachlorophenol	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50		[C] < 0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30		< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
560161	BHC14	J5	03-Jan-2018	C	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Amended Report

Report No.:	18-00330-2		
Initial Date of Issue:	12-Jan-2018	**Date of Re-Issue:**	18-Jan-2018
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543,GL Lake Lothing		
Quotation No.:	Q17-10179	**Date Received:**	08-Jan-2018
Order No.:	2543,GL	**Date Instructed:**	08-Jan-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	12-Jan-2018
Date Approved:	18-Jan-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GL Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00330
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560625
Order No.: 2543,GL			Client Sample Ref.:		BHC102
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		04-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	0.25
Sulphur	N	1220	mg/l	1.0	18
Sulphate	U	1220	mg/l	1.0	53
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	9.2
Boron (Dissolved)	U	1450	µg/l	20	150
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	5.1
Copper (Dissolved)	U	1450	µg/l	1.0	8.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	9.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.2
Zinc (Dissolved)	U	1450	µg/l	1.0	24
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	27
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	210
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	440
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	150
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	820
Total Petroleum Hydrocarbons	N	1675	µg/l	10	820
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GL Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00330
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560625
Order No.: 2543,GL			Client Sample Ref.:		BHC102
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		04-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GL Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00330
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560625
Order No.: 2543,GL			Client Sample Ref.:		BHC102
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		04-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	1.5
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	1.4
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	11
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GL Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00330
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560625
Order No.: 2543,GL			Client Sample Ref.:		BHC102
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		04-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50

Results - Water

Project: 2543,GL Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00330
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560625
Order No.: 2543,GL			Client Sample Ref.:		BHC102
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		04-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-00356-1
Initial Date of Issue:	15-Jan-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543,GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	09-Jan-2018
Order No.:	2543,GI	**Date Instructed:**	09-Jan-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	15-Jan-2018
Date Approved:	15-Jan-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00356
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560719
Order No.: 2543,GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		05-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	6.9
Ammonia (Free) as N	U	1220	mg/l	0.010	< 0.010
Sulphur	N	1220	mg/l	1.0	22
Sulphate	U	1220	mg/l	1.0	65
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.1
Boron (Dissolved)	U	1450	µg/l	20	110
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	6.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	3.4
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.5
Zinc (Dissolved)	U	1450	µg/l	1.0	12
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00356
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560719
Order No.: 2543,GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		05-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00356
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560719
Order No.: 2543,GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		05-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00356
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560719
Order No.: 2543,GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		05-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50

Results - Water

Project: 2543,GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-00356
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		560719
Order No.: 2543,GI			Client Sample Ref.:		BHC02
			Client Sample ID.:		W1
			Sample Type:		WATER
			Date Sampled:		05-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-00959-1
Initial Date of Issue:	23-Jan-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543,GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	15-Jan-2018
Order No.:	2543,GI	**Date Instructed:**	15-Jan-2018
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	23-Jan-2018
Date Approved:	23-Jan-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: 2543,GI Lake Lothing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-00959						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	563299								
Sample Ref:	TPC23A								
Sample ID:	J1								
Top Depth(m):	1.1								
Bottom Depth(m):									
Sampling Date:	11-Jan-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			6.1	3	5	6
Loss On Ignition	2610	U	%			4.3	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			120	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				11.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.29	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0033	0.0089	< 0.050	0.080	0.5	2	25
Barium	1450	U	0.019	0.012	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.0036	0.0035	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0069	0.012	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.037	0.016	0.073	0.19	0.5	10	30
Nickel	1450	U	< 0.0010	0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	0.0028	< 0.010	0.024	0.5	10	50
Antimony	1450	U	0.0090	0.013	0.018	0.12	0.06	0.7	5
Selenium	1450	U	0.0015	0.0015	< 0.010	0.015	0.1	0.5	7
Zinc	1450	U	0.0044	0.011	< 0.50	< 0.50	4	50	200
Chloride	1220	U	27	5.8	54	92	800	15000	25000
Fluoride	1220	U	1.3	0.61	2.6	7.2	10	150	500
Sulphate	1220	U	110	25	210	380	1000	20000	50000
Total Dissolved Solids	1020	N	230	67	460	930	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	12	8.2	< 50	88	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.328
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.278

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-01626-1
Initial Date of Issue:	26-Jan-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 91 Lake Lothing
Quotation No.:	Q17-10179
Date Received:	19-Jan-2018
Order No.:	
Date Instructed:	22-Jan-2018
No. of Samples:	3
Turnaround (Wkdays):	5
Results Due:	26-Jan-2018
Date Approved:	26-Jan-2018
Approved By:	
[redacted]	
Details:	Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-01626	18-01626	18-01626
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		566454	566457	566472
Order No.:			Client Sample Ref.:		BHC15	BHC15	BHC22
			Client Sample ID.:		J7	J10	J4
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.7	6.7	2.0
			Date Sampled:		17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	12	12	16
pH	U	2010		N/A	8.7	8.3	9.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.86
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	0.13
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammoniacal Nitrogen	U	2425	mg/kg	0.50	< 0.50	< 0.50	0.73
Sulphate (Total)	U	2430	mg/kg	100	< 100	< 100	3500
Arsenic	U	2450	mg/kg	1.0	2.5	3.3	18
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	4.3	6.2	25
Copper	U	2450	mg/kg	0.50	2.4	2.6	19
Mercury	U	2450	mg/kg	0.10	0.16	< 0.10	0.11
Nickel	U	2450	mg/kg	0.50	5.1	4.2	30
Lead	U	2450	mg/kg	0.50	2.9	2.0	12
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	0.80
Zinc	U	2450	mg/kg	0.50	9.6	8.8	38
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40	0.62
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-01626	18-01626	18-01626
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		566454	566457	566472
Order No.:			Client Sample Ref.:		BHC15	BHC15	BHC22
			Client Sample ID.:		J7	J10	J4
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.7	6.7	2.0
			Date Sampled:		17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-01626	18-01626	18-01626
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			566454	566457	566472
Order No.:		Client Sample Ref.:			BHC15	BHC15	BHC22
		Client Sample ID.:			J7	J10	J4
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			3.7	6.7	2.0
		Date Sampled:			17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-01626	18-01626	18-01626
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		566454	566457	566472
Order No.:			Client Sample Ref.:		BHC15	BHC15	BHC22
			Client Sample ID.:		J7	J10	J4
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.7	6.7	2.0
			Date Sampled:		17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-01626	18-01626	18-01626
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			566454	566457	566472
Order No.:		Client Sample Ref.:			BHC15	BHC15	BHC22
		Client Sample ID.:			J7	J10	J4
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			3.7	6.7	2.0
		Date Sampled:			17-Jan-2018	17-Jan-2018	17-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-02499-1
Initial Date of Issue:	06-Feb-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	29-Jan-2018
Order No.:	2543, GI	**Date Instructed:**	31-Jan-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	06-Feb-2018
Date Approved:	06-Feb-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02499	18-02499
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		570546	570549
Order No.: 2543, GI			Client Sample Ref.:		BHC17	BHC17
			Client Sample ID.:		J6	J9
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.50	5.30
			Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	20	14
pH	U	2010		N/A	6.0	
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.021	
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	
Ammonium (Extractable)	U	2425	mg/kg	0.50	3.0	
Sulphate (Total)	U	2430	%	0.010	0.088	
Arsenic	U	2450	mg/kg	1.0	18	
Cadmium	U	2450	mg/kg	0.10	0.21	
Chromium	U	2450	mg/kg	1.0	26	
Copper	U	2450	mg/kg	0.50	20	
Mercury	U	2450	mg/kg	0.10	0.31	
Nickel	U	2450	mg/kg	0.50	33	
Lead	U	2450	mg/kg	0.50	22	
Selenium	U	2450	mg/kg	0.20	< 0.20	
Zinc	U	2450	mg/kg	0.50	46	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	
Organic Matter	U	2625	%	0.40	0.76	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02499	18-02499
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		570546	570549
Order No.: 2543, GI			Client Sample Ref.:		BHC17	BHC17
			Client Sample ID.:		J6	J9
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.50	5.30
			Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	0.51	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	1.5	< 0.10
Pyrene	U	2700	mg/kg	0.10	1.5	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	0.90	< 0.10
Chrysene	U	2700	mg/kg	0.10	0.98	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	1.0	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	0.57	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	0.85	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	0.40	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	0.51	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	8.7	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02499	18-02499
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		570546	570549
Order No.: 2543, GI			Client Sample Ref.:		BHC17	BHC17
			Client Sample ID.:		J6	J9
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.50	5.30
			Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02499	18-02499
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		570546	570549
Order No.: 2543, GI			Client Sample Ref.:		BHC17	BHC17
			Client Sample ID.:		J6	J9
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.50	5.30
			Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02499	18-02499
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		570546	570549
Order No.: 2543, GI			Client Sample Ref.:		BHC17	BHC17
			Client Sample ID.:		J6	J9
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.50	5.30
			Date Sampled:		23-Jan-2018	23-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-02644-1
Initial Date of Issue:	08-Feb-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	Lake Lothing, Lowestoft 2543 GI

Quotation No.:	Q17-10179	**Date Received:**	30-Jan-2018
Order No.:		**Date Instructed:**	01-Feb-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	07-Feb-2018
Date Approved:	08-Feb-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.7
Ammonia (Free) as N	U	1220	mg/l	0.050	0.14
Sulphate	U	1220	mg/l	1.0	15
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.7
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.2
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10

Results - Leachate

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	6.8
pH	U	2010		N/A	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.91
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	2.0
Sulphate (Total)	U	2430	%	0.010	0.057
Arsenic	U	2450	mg/kg	1.0	12
Cadmium	U	2450	mg/kg	0.10	0.12
Chromium	U	2450	mg/kg	1.0	14
Copper	U	2450	mg/kg	0.50	36
Mercury	U	2450	mg/kg	0.10	0.80
Nickel	U	2450	mg/kg	0.50	18
Lead	U	2450	mg/kg	0.50	52
Selenium	U	2450	mg/kg	0.20	0.25
Zinc	U	2450	mg/kg	0.50	83
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	12
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	12
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	24
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	24

Chemtest
The right chemistry to deliver results

Results - Soil

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	36
Naphthalene	U	2700	mg/kg	0.10	0.44
Acenaphthylene	U	2700	mg/kg	0.10	0.99
Acenaphthene	U	2700	mg/kg	0.10	0.57
Fluorene	U	2700	mg/kg	0.10	0.40
Phenanthrene	U	2700	mg/kg	0.10	4.4
Anthracene	U	2700	mg/kg	0.10	2.2
Fluoranthene	U	2700	mg/kg	0.10	15
Pyrene	U	2700	mg/kg	0.10	14
Benzo[a]anthracene	U	2700	mg/kg	0.10	7.5
Chrysene	U	2700	mg/kg	0.10	6.7
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	9.2
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	3.8
Benzo[a]pyrene	U	2700	mg/kg	0.10	7.3
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	4.8
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	1.3
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	5.1
Total Of 16 PAH's	U	2700	mg/kg	2.0	84
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0

Results - Soil

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: Lake Lothing, Lowestoft 2543 GI

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-02644
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		571137
Order No.:			Client Sample Ref.:		BHC18
			Sample Type:		SOIL
			Top Depth (m):		0.1
			Date Sampled:		26-Jan-2018
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	1.1
Pyrene	U	2790	mg/kg	0.50	1.0
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.69
Chrysene	U	2790	mg/kg	0.50	0.62
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	1.1
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	0.77
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	0.57
PCB 81	N	2815	mg/kg	0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-02978-1
Initial Date of Issue:	12-Feb-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543,GI Lake Lothing, Lowestoft

Quotation No.:		**Date Received:**	01-Feb-2018
Order No.:	2543 GI	**Date Instructed:**	01-Feb-2018
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	09-Feb-2018
Date Approved:	12-Feb-2018		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Results - 2 Stage WAC

Project: 2543,GI Lake Lothing, Lowestoft

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-02978						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	572715								
Sample Ref:	BHC17								
Sample ID:									
Top Depth(m):	2.50								
Bottom Depth(m):									
Sampling Date:									
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			[A] 0.23	3	5	6
Loss On Ignition	2610	U	%			3.6	--	--	10
Total BTEX	2760	U	mg/kg			[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.041	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0017	0.0041	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0091	0.032	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.0089	0.028	< 0.050	0.25	0.5	10	70
Copper	1450	U	0.0026	0.0061	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0041	0.0027	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.0036	0.014	< 0.050	0.12	0.4	10	40
Lead	1450	U	0.0019	0.0058	< 0.010	0.051	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.0013	< 0.010	0.014	0.1	0.5	7
Zinc	1450	U	0.012	0.025	< 0.50	< 0.50	4	50	200
Chloride	1220	U	< 1.0	1.5	< 10	12	800	15000	25000
Fluoride	1220	U	0.12	0.29	< 1.0	2.6	10	150	500
Sulphate	1220	U	23	21	45	210	1000	20000	50000
Total Dissolved Solids	1020	N	43	55	84	530	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	27	14	53	160	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	19

Leachate Test Information	
Leachant volume 1st extract/l	0.309
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.308

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
572715	BHC17			A	Amber Glass 250ml
572715	BHC17			A	Plastic Tub 500g

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-03574-1
Initial Date of Issue:	19-Feb-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 91 LAKE LOTHING, LOWESTOFT

Quotation No.:	Q17-10179	**Date Received:**	07-Feb-2018
Order No.:		**Date Instructed:**	09-Feb-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	15-Feb-2018
Date Approved:	16-Feb-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-03574
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		575449
Order No.:			Client Sample Ref.:		BHC19
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		3.00
			Date Sampled:		05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	310
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	310
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	7.9
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	7.9
Total Petroleum Hydrocarbons	N	1675	µg/l	10	320
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-03574
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		575449
Order No.:			Client Sample Ref.:		BHC19
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		3.00
			Date Sampled:		05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-03574
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		575449
Order No.:			Client Sample Ref.:		BHC19
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		3.00
			Date Sampled:		05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-03574	18-03574
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		575449	575450
Order No.:			Client Sample Ref.:		BHC19	BHC19
			Client Sample ID.:		J6	J7
			Sample Type:		SOIL	SOIL
			Top Depth (m):		3.00	4.00
			Date Sampled:		05-Feb-2018	05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	17	15
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	50	33
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	50	33
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	50	34
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-03574	18-03574
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			575449	575450
Order No.:		Client Sample Ref.:			BHC19	BHC19
		Client Sample ID.:			J6	J7
		Sample Type:			SOIL	SOIL
		Top Depth (m):			3.00	4.00
		Date Sampled:			05-Feb-2018	05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	2.5	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-03574	18-03574
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	575449	575450
Order No.:				Client Sample Ref.:	BHC19	BHC19
				Client Sample ID.:	J6	J7
				Sample Type:	SOIL	SOIL
				Top Depth (m):	3.00	4.00
				Date Sampled:	05-Feb-2018	05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Results - Soil

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-03574	18-03574
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			575449	575450
Order No.:		Client Sample Ref.:			BHC19	BHC19
		Client Sample ID.:			J6	J7
		Sample Type:			SOIL	SOIL
		Top Depth (m):			3.00	4.00
		Date Sampled:			05-Feb-2018	05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Results - Soil

Project: 2543 91 LAKE LOTHING, LOWESTOFT

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-03574	18-03574
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			575449	575450
Order No.:		Client Sample Ref.:			BHC19	BHC19
		Client Sample ID.:			J6	J7
		Sample Type:			SOIL	SOIL
		Top Depth (m):			3.00	4.00
		Date Sampled:			05-Feb-2018	05-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
PCB 28	U	2815	mg/kg	0.010	< 0.010	
PCB 81	N	2815	mg/kg	0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010		< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-05699-1
Initial Date of Issue:	05-Mar-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist Joe Glenwright
Project	2543,91 LAKE LOTHING

Quotation No.:	Q17-10179	**Date Received:**	27-Feb-2018
Order No.:	2543,91	**Date Instructed:**	27-Feb-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	05-Mar-2018
Date Approved:	05-Mar-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,91 LAKE LOTHING

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-05699	18-05699
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		585039	585049
Order No.: 2543,91			Client Sample Ref.:		BHC20	BHC24
			Client Sample ID.:		J7	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		4.7	2.5
			Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	9.5	11
pH	U	2010		N/A	10.4	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.034	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammoniacal Nitrogen	U	2425	mg/kg	0.50	3.9	1.2
Sulphate (Total)	U	2430	mg/kg	100	150	< 100
Arsenic	U	2450	mg/kg	1.0	3.6	1.5
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	10	3.4
Copper	U	2450	mg/kg	0.50	3.9	1.3
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	6.1	1.5
Lead	U	2450	mg/kg	0.50	5.5	4.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	12	4.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,91 LAKE LOTHING

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-05699	18-05699
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		585039	585049
Order No.: 2543,91			Client Sample Ref.:		BHC20	BHC24
			Client Sample ID.:		J7	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		4.7	2.5
			Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,91 LAKE LOTHING

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-05699	18-05699
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		585039	585049
Order No.: 2543,91			Client Sample Ref.:		BHC20	BHC24
			Client Sample ID.:		J7	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		4.7	2.5
			Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,91 LAKE LOTHING

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-05699	18-05699
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			585039	585049
Order No.: 2543,91		Client Sample Ref.:			BHC20	BHC24
		Client Sample ID.:			J7	J6
		Sample Type:			SOIL	SOIL
		Top Depth (m):			4.7	2.5
		Date Sampled:			22-Feb-2018	22-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,91 LAKE LOTHING

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-05699	18-05699
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		585039	585049
Order No.: 2543,91			Client Sample Ref.:		BHC20	BHC24
			Client Sample ID.:		J7	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		4.7	2.5
			Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010		< 0.010
PCB 81	N	2815	mg/kg	0.010	< 0.010	
PCB 52	U	2815	mg/kg	0.010		< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010	
PCB 105	N	2815	mg/kg	0.010	< 0.010	
PCB 90+101	U	2815	mg/kg	0.010		< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010	
PCB 118	U	2815	mg/kg	0.010		< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010	
PCB 153	U	2815	mg/kg	0.010		< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010	
PCB 138	U	2815	mg/kg	0.010		< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010	
PCB 180	U	2815	mg/kg	0.010		< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10

Results - Soil

Project: 2543,91 LAKE LOTHING

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-05699	18-05699
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		585039	585049
Order No.: 2543,91			Client Sample Ref.:		BHC20	BHC24
			Client Sample ID.:		J7	J6
			Sample Type:		SOIL	SOIL
			Top Depth (m):		4.7	2.5
			Date Sampled:		22-Feb-2018	22-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-06475-1
Initial Date of Issue:	17-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist Lianne Fountain
Project	2543 GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	08-Mar-2018
Order No.:		**Date Instructed:**	04-Apr-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	10-Apr-2018
Date Approved:	11-Apr-2018		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06475
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588382
Order No.:			Client Sample Ref.:		BHC26
			Client Sample ID.:		J2
			Sample Type:		SOIL
			Top Depth (m):		0.7
			Date Sampled:		26-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	7.6
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	9.9
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.9
Boron (Dissolved)	U	1450	µg/l	20	41
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.2
Copper (Dissolved)	U	1450	µg/l	1.0	4.6
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.1
Lead (Dissolved)	U	1450	µg/l	1.0	3.7
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	3.4
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-06475
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	588382
Order No.:				Client Sample Ref.:	BHC26
				Client Sample ID.:	J2
				Sample Type:	SOIL
				Top Depth (m):	0.7
				Date Sampled:	26-Feb-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	[B] < 1.0
Toluene	U	1760	µg/l	1.0	[B] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	[B] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[B] < 1.0
o-Xylene	U	1760	µg/l	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	[B] < 0.0010
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06475	18-06475
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588382	588384
Order No.:			Client Sample Ref.:		BHC26	BHC26
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.7	2.3
			Date Sampled:		26-Feb-2018	26-Feb-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	
Moisture	N	2030	%	0.020	8.7	16
pH	U	2010		N/A	[B] 8.8	[B] 4.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.71	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.016	0.020
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	[B] 2.3	[B] 2.2
Sulphate (Total)	U	2430	%	0.010	[B] 0.026	[B] 0.033
Arsenic	U	2450	mg/kg	1.0	4.7	25
Cadmium	U	2450	mg/kg	0.10	0.22	< 0.10
Chromium	U	2450	mg/kg	1.0	6.8	29
Copper	U	2450	mg/kg	0.50	9.0	12
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	7.3	16
Lead	U	2450	mg/kg	0.50	19	11
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	27	54
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		[B] 0.47
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06475	18-06475
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588382	588384
Order No.:			Client Sample Ref.:		BHC26	BHC26
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.7	2.3
			Date Sampled:		26-Feb-2018	26-Feb-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10	[B] < 10
Naphthalene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Acenaphthylene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Acenaphthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Fluorene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Phenanthrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Anthracene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Pyrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Chrysene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	[B] < 2.0	[B] < 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06475	18-06475
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588382	588384
Order No.:			Client Sample Ref.:		BHC26	BHC26
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.7	2.3
			Date Sampled:		26-Feb-2018	26-Feb-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06475	18-06475
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588382	588384
Order No.:			Client Sample Ref.:		BHC26	BHC26
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.7	2.3
			Date Sampled:		26-Feb-2018	26-Feb-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06475	18-06475
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588382	588384
Order No.:			Client Sample Ref.:		BHC26	BHC26
			Client Sample ID.:		J2	J4
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.7	2.3
			Date Sampled:		26-Feb-2018	26-Feb-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
PCB 28	U	2815	mg/kg	0.010	[B] < 0.010	
PCB 52	U	2815	mg/kg	0.010	[B] < 0.010	
PCB 90+101	U	2815	mg/kg	0.010	[B] < 0.010	
PCB 118	U	2815	mg/kg	0.010	[B] < 0.010	
PCB 153	U	2815	mg/kg	0.010	[B] < 0.010	
PCB 138	U	2815	mg/kg	0.010	[B] < 0.010	
PCB 180	U	2815	mg/kg	0.010	[B] < 0.010	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[B] < 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
588382	BHC26	J2	26-Feb-2018	B	Amber Glass 250ml
588382	BHC26	J2	26-Feb-2018	B	Plastic Tub 500g
588384	BHC26	J4	26-Feb-2018	B	Amber Glass 250ml
588384	BHC26	J4	26-Feb-2018	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.

Test Methods

SOP	Title	Parameters included	Method summary
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-06487-1
Initial Date of Issue:	17-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist Lianne Fountain
Project	2543 GI Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	08-Mar-2018
Order No.:		**Date Instructed:**	27-Mar-2018
No. of Samples:	2		
Turnaround (Wkdays):	9	**Results Due:**	10-Apr-2018
Date Approved:	11-Apr-2018	**Subcon Results Due:**	10-Apr-2018

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453
Order No.:			Client Sample Ref.:		BHC23
			Client Sample ID.:		J2
			Sample Type:		SOIL
			Top Depth (m):		0.8
			Date Sampled:		05-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	7.1
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	6.4
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.1
Boron (Dissolved)	U	1450	µg/l	20	25
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.6
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.8
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[B] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[B] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[B] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[B] < 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Results - Leachate

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-06487
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	588453
Order No.:				Client Sample Ref.:	BHC23
				Client Sample ID.:	J2
				Sample Type:	SOIL
				Top Depth (m):	0.8
				Date Sampled:	05-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	[B] < 1.0
Toluene	U	1760	µg/l	1.0	[B] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	[B] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[B] < 1.0
o-Xylene	U	1760	µg/l	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	[B] < 0.0010
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487	18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453	588456
Order No.:			Client Sample Ref.:		BHC23	BHC23
			Client Sample ID.:		J2	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.8	3.0
			Date Sampled:		05-Mar-2018	05-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	
Moisture	N	2030	%	0.020	5.9	14
pH	U	2010		N/A	7.3	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.4	0.68
Sulphate (Total)	U	2430	%	0.010	< 0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	3.3	1.3
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	4.0	2.3
Copper	U	2450	mg/kg	0.50	1.0	0.63
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	3.2	1.9
Lead	U	2450	mg/kg	0.50	3.8	1.9
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	6.7	3.9
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487	18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453	588456
Order No.:			Client Sample Ref.:		BHC23	BHC23
			Client Sample ID.:		J2	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.8	3.0
			Date Sampled:		05-Mar-2018	05-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10	[B] < 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.52	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.42	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487	18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453	588456
Order No.:			Client Sample Ref.:		BHC23	BHC23
			Client Sample ID.:		J2	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.8	3.0
			Date Sampled:		05-Mar-2018	05-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487	18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453	588456
Order No.:			Client Sample Ref.:		BHC23	BHC23
			Client Sample ID.:		J2	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.8	3.0
			Date Sampled:		05-Mar-2018	05-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487	18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453	588456
Order No.:			Client Sample Ref.:		BHC23	BHC23
			Client Sample ID.:		J2	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.8	3.0
			Date Sampled:		05-Mar-2018	05-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010	
PCB 105	N	2815	mg/kg	0.010	< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010	
PCB 157	N	2815	mg/kg	0.010	< 0.010	
PCB 167	N	2815	mg/kg	0.010	< 0.010	
PCB 169	N	2815	mg/kg	0.010	< 0.010	
PCB 189	N	2815	mg/kg	0.010	< 0.010	
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	

Results - Soil

Project: 2543 GI Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06487	18-06487
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		588453	588456
Order No.:			Client Sample Ref.:		BHC23	BHC23
			Client Sample ID.:		J2	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.8	3.0
			Date Sampled:		05-Mar-2018	05-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
588453	BHC23	J2	05-Mar-2018	B	Amber Glass 250ml
588453	BHC23	J2	05-Mar-2018	B	Plastic Tub 500g
588456	BHC23	J5	05-Mar-2018	B	Amber Glass 250ml
588456	BHC23	J5	05-Mar-2018	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.

Test Methods

SOP	Title	Parameters included	Method summary
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-06961-1		
Initial Date of Issue:	03-Apr-2018		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	254JGI Lake Lothing, L34		
Quotation No.:	Q17-10179	**Date Received:**	13-Mar-2018
Order No.:		**Date Instructed:**	27-Mar-2018
No. of Samples:	2		
Turnaround (Wkdays):	4	**Results Due:**	03-Apr-2018
Date Approved:	03-Apr-2018		
Approved By:			
[redacted]			
Details:	Robert Monk, Technical Manager		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254JGI Lake Lothing, L34

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06961	18-06961
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		590907	590914
Order No.:			Client Sample Ref.:		BHC32	BHC32
			Client Sample ID.:		J2	J8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.6	4.5
			Date Sampled:		07-Mar-2018	08-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	
Moisture	N	2030	%	0.020	12	16
pH	U	2010		N/A	8.9	8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.55	1.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.056
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.75	13
Sulphate (Total)	U	2430	%	0.010	< 0.010	0.34
Arsenic	U	2450	mg/kg	1.0	7.9	9.8
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	10	8.9
Copper	U	2450	mg/kg	0.50	43	4.6
Mercury	U	2450	mg/kg	0.10	0.19	< 0.10
Nickel	U	2450	mg/kg	0.50	12	8.9
Lead	U	2450	mg/kg	0.50	22	8.4
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	32	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		0.90
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254JGI Lake Lothing, L34

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-06961	18-06961
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	590907	590914
Order No.:				Client Sample Ref.:	BHC32	BHC32
				Client Sample ID.:	J2	J8
				Sample Type:	SOIL	SOIL
				Top Depth (m):	0.6	4.5
				Date Sampled:	07-Mar-2018	08-Mar-2018
				Asbestos Lab:	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10	[B] < 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	0.12	< 0.10
Pyrene	U	2700	mg/kg	0.10	0.15	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20
Chloroethane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254JGI Lake Lothing, L34

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-06961	18-06961
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			590907	590914
Order No.:		Client Sample Ref.:			BHC32	BHC32
		Client Sample ID.:			J2	J8
		Sample Type:			SOIL	SOIL
		Top Depth (m):			0.6	4.5
		Date Sampled:			07-Mar-2018	08-Mar-2018
		Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[B] < 10	[B] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254JGI Lake Lothing, L34

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-06961	18-06961
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		590907	590914
Order No.:			Client Sample Ref.:		BHC32	BHC32
			Client Sample ID.:		J2	J8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.6	4.5
			Date Sampled:		07-Mar-2018	08-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 254JGI Lake Lothing, L34

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-06961	18-06961
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			590907	590914
Order No.:		Client Sample Ref.:			BHC32	BHC32
		Client Sample ID.:			J2	J8
		Sample Type:			SOIL	SOIL
		Top Depth (m):			0.6	4.5
		Date Sampled:			07-Mar-2018	08-Mar-2018
		Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
590907	BHC32	J2	07-Mar-2018	B	Amber Glass 250ml
590907	BHC32	J2	07-Mar-2018	B	Plastic Tub 500g
590914	BHC32	J8	08-Mar-2018	B	Amber Glass 250ml
590914	BHC32	J8	08-Mar-2018	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-07089-1
Initial Date of Issue:	21-Mar-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Joe Glenwright Stephen Gilchrist
Project	2543,GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	14-Mar-2018
Order No.:	2543,GI	**Date Instructed:**	14-Mar-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	20-Mar-2018
Date Approved:	21-Mar-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585
Order No.: 2543,GI			Client Sample Ref.:		BHC08
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.6
			Date Sampled:		09-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	9.7
Ammonia (Free) as N	U	1220	mg/l	0.050	0.85
Sulphate	U	1220	mg/l	1.0	13
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.8
Boron (Dissolved)	U	1450	µg/l	20	30
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.21
Chromium (Dissolved)	U	1450	µg/l	1.0	52
Copper (Dissolved)	U	1450	µg/l	1.0	22
Mercury (Dissolved)	U	1450	µg/l	0.50	0.53
Nickel (Dissolved)	U	1450	µg/l	1.0	65
Lead (Dissolved)	U	1450	µg/l	1.0	19
Selenium (Dissolved)	U	1450	µg/l	1.0	7.8
Zinc (Dissolved)	U	1450	µg/l	1.0	190
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585
Order No.: 2543,GI			Client Sample Ref.:		BHC08
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.6
			Date Sampled:		09-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585
Order No.: 2543,GI			Client Sample Ref.:		BHC08
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.6
			Date Sampled:		09-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585
Order No.: 2543,GI			Client Sample Ref.:		BHC08
			Client Sample ID.:		J4
			Sample Type:		SOIL
			Top Depth (m):		2.6
			Date Sampled:		09-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089	18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585	591586
Order No.: 2543,GI			Client Sample Ref.:		BHC08	BHC08
			Client Sample ID.:		J4	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.6	3.7
			Date Sampled:		09-Mar-2018	09-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	
Moisture	N	2030	%	0.020	17	27
pH	U	2010		N/A	10.1	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	1.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.18
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	0.91	29
Sulphate (Total)	U	2430	%	0.010	0.15	1.2
Arsenic	U	2450	mg/kg	1.0	4.8	15
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	9.0	22
Copper	U	2450	mg/kg	0.50	9.5	11
Mercury	U	2450	mg/kg	0.10	0.11	< 0.10
Nickel	U	2450	mg/kg	0.50	14	22
Lead	U	2450	mg/kg	0.50	28	41
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	34	49
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		1.6
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089	18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585	591586
Order No.: 2543,GI			Client Sample Ref.:		BHC08	BHC08
			Client Sample ID.:		J4	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.6	3.7
			Date Sampled:		09-Mar-2018	09-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	1.2
Pyrene	U	2700	mg/kg	0.10	< 0.10	1.2
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	2.4
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089	18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585	591586
Order No.: 2543,GI			Client Sample Ref.:		BHC08	BHC08
			Client Sample ID.:		J4	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.6	3.7
			Date Sampled:		09-Mar-2018	09-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089	18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585	591586
Order No.: 2543,GI			Client Sample Ref.:		BHC08	BHC08
			Client Sample ID.:		J4	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.6	3.7
			Date Sampled:		09-Mar-2018	09-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50

Results - Soil

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089	18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585	591586
Order No.: 2543,GI			Client Sample Ref.:		BHC08	BHC08
			Client Sample ID.:		J4	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.6	3.7
			Date Sampled:		09-Mar-2018	09-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	1.5
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50
PCB 81	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 77	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 114	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 123	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 126	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 156	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010	< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12	< 0.12

Results - Soil

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07089	18-07089
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		591585	591586
Order No.: 2543,GI			Client Sample Ref.:		BHC08	BHC08
			Client Sample ID.:		J4	J5
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.6	3.7
			Date Sampled:		09-Mar-2018	09-Mar-2018
			Asbestos Lab:		COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-07130-1		
Initial Date of Issue:	22-Mar-2018		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Joe Glenwright Stephen Gilchrist		
Project	2543,GI Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	14-Mar-2018
Order No.:	2543,GI	**Date Instructed:**	14-Mar-2018
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	22-Mar-2018
Date Approved:	22-Mar-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Results - 2 Stage WAC

Project: 2543,GI Lake Lothing, Lowestoft

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-07130						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	591820								
Sample Ref:	BHC08								
Sample ID:	J4								
Top Depth(m):	2.6								
Bottom Depth(m):									
Sampling Date:	09-Mar-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			1.5	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				10.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.054	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.014	0.018	< 0.050	0.17	0.5	2	25
Barium	1450	U	0.045	0.076	< 0.50	0.71	20	100	300
Cadmium	1450	U	0.00014	0.00016	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.050	0.082	0.098	0.77	0.5	10	70
Copper	1450	U	0.015	0.023	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0037	0.0035	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.024	0.036	< 0.050	0.34	0.4	10	40
Lead	1450	U	0.023	0.041	0.045	0.38	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.020	0.015	0.039	0.16	0.1	0.5	7
Zinc	1450	U	0.076	0.11	< 0.50	1.0	4	50	200
Chloride	1220	U	2.3	3.5	< 10	33	800	15000	25000
Fluoride	1220	U	0.36	0.30	< 1.0	3.1	10	150	500
Sulphate	1220	U	32	29	63	290	1000	20000	50000
Total Dissolved Solids	1020	N	230	210	450	2100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	17	16	< 50	160	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	19

Leachate Test Information	
Leachant volume 1st extract/l	0.310
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.265

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-07811-1
Initial Date of Issue:	28-Mar-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543,GI Lake Lothing, L20
Quotation No.:	Q17-10179
Order No.:	2543,GI
No. of Samples:	1
Turnaround (Wkdays):	5
Date Approved:	28-Mar-2018
Approved By:	[redacted]
Details:	Glynn Harvey, Laboratory Manager

Date Received:	21-Mar-2018
Date Instructed:	22-Mar-2018
Results Due:	28-Mar-2018

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07811
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		595263
Order No.: 2543,GI			Client Sample Ref.:		BHC05
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.5
			Date Sampled:		19-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	30
pH	U	2010		N/A	9.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	3.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.073
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	150
Sulphate (Total)	U	2430	%	0.010	1.2
Arsenic	U	2450	mg/kg	1.0	22
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	28
Copper	U	2450	mg/kg	0.50	13
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	26
Lead	U	2450	mg/kg	0.50	31
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	64
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	1.9
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07811
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		595263
Order No.: 2543,GI			Client Sample Ref.:		BHC05
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.5
			Date Sampled:		19-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07811
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		595263
Order No.: 2543,GI			Client Sample Ref.:		BHC05
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.5
			Date Sampled:		19-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Lothing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07811
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		595263
Order No.: 2543,GI			Client Sample Ref.:		BHC05
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.5
			Date Sampled:		19-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543,GI Lake Lothing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-07811
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		595263
Order No.: 2543,GI			Client Sample Ref.:		BHC05
			Client Sample ID.:		J6
			Sample Type:		SOIL
			Top Depth (m):		2.5
			Date Sampled:		19-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-08472-1
Initial Date of Issue:	06-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	254JGI Lake Lothing, L34
Quotation No.:	Q17-10179
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	6
Date Approved:	06-Apr-2018
Approved By:	[redacted]
Details:	Glynn Harvey, Laboratory Manager

Date Received:	13-Mar-2018
Date Instructed:	27-Mar-2018
Results Due:	05-Apr-2018

Results - 2 Stage WAC

Project: 254JGI Lake Lothing, L34

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-08472						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	598509								
Sample Ref:	BHC32								
Sample ID:	J2								
Top Depth(m):	0.6								
Bottom Depth(m):									
Sampling Date:	07-Mar-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			17	3	5	6
Loss On Ignition	2610	U	%			35	--	--	10
Total BTEX	2760	U	mg/kg			[B] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			[B] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.033	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0091	0.0026	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0080	0.0023	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.00026	0.00023	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.0059	0.0013	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.011	0.0026	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.011	0.0013	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.0073	0.0019	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	0.0080	0.0016	0.016	0.022	0.5	10	50
Antimony	1450	U	0.0016	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0018	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.013	0.0061	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1.8	2.7	< 10	26	800	15000	25000
Fluoride	1220	U	0.94	0.55	1.9	2.4	10	150	500
Sulphate	1220	U	130	< 1.0	260	130	1000	20000	50000
Total Dissolved Solids	1020	N	32	29	63	290	4000	60000	100000
Phenol Index	1920	U	0.21	< 0.030	0.42	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	17	6.0	< 50	71	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	12

Leachate Test Information	
Leachant volume 1st extract/l	0.327
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.170

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
598509	BHC32	J2	07-Mar-2018	B	Amber Glass 250ml
598509	BHC32	J2	07-Mar-2018	B	Plastic Tub 500g

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-09165-1
Initial Date of Issue:	17-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI Lake Loathing

Quotation No.:		**Date Received:**	04-Apr-2018
Order No.:		**Date Instructed:**	04-Apr-2018
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	12-Apr-2018
Date Approved:	13-Apr-2018		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Results - 2 Stage WAC

Project: 2543 GI Lake Loathing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-09165						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	602005								
Sample Ref:	BHC23								
Sample ID:									
Top Depth(m):	0.80								
Bottom Depth(m):									
Sampling Date:									
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			[A] 0.26	3	5	6
Loss On Ignition	2610	U	%			0.41	--	--	10
Total BTEX	2760	U	mg/kg			[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			[A] 31	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	0.0012	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0048	0.0055	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	0.0018	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	0.0012	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0029	0.0010	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	0.0028	< 0.010	0.025	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	0.0054	< 0.50	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	1.4	0.66	2.8	7.4	10	150	500
Sulphate	1220	U	5.4	< 1.0	11	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	70	24	140	290	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	11	11	< 50	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.6

Leachate Test Information	
Leachant volume 1st extract/l	0.338
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.192

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
602005	BHC23			A	Amber Glass 250ml
602005	BHC23			A	Plastic Tub 500g

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-09173-1
Initial Date of Issue:	17-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI Lake Loathing

Quotation No.:		**Date Received:**	04-Apr-2018
Order No.:		**Date Instructed:**	04-Apr-2018
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	12-Apr-2018
Date Approved:	13-Apr-2018		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Results - 2 Stage WAC

Project: 2543 GI Lake Loathing

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-09173						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	602029								
Sample Ref:	BHC26								
Sample ID:									
Top Depth(m):	0.70								
Bottom Depth(m):									
Sampling Date:									
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			[A] 0.56	3	5	6
Loss On Ignition	2610	U	%			1.5	--	--	10
Total BTEX	2760	U	mg/kg			[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			[A] < 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0030	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	0.0033	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0048	0.0094	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	0.0019	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0029	0.0087	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0031	0.0022	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	0.0029	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	0.014	< 0.010	0.12	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0011	0.0083	< 0.50	< 0.50	4	50	200
Chloride	1220	U	< 1.0	1.7	< 10	14	800	15000	25000
Fluoride	1220	U	0.17	0.25	< 1.0	2.4	10	150	500
Sulphate	1220	U	10	2.7	20	39	1000	20000	50000
Total Dissolved Solids	1020	N	48	44	96	450	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	15	9.9	< 50	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	7.3

Leachate Test Information	
Leachant volume 1st extract/l	0.336
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.277

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
602029	BHC26			A	Amber Glass 250ml
602029	BHC26			A	Plastic Tub 500g

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-09432-1
Initial Date of Issue:	17-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543,GI Lake Loathing, L20

Quotation No.:	Q17-10179	**Date Received:**	06-Apr-2018
Order No.:	2543,GI	**Date Instructed:**	09-Apr-2018
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	13-Apr-2018
Date Approved:	16-Apr-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09432
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		602978
Order No.: 2543,GI			Client Sample Ref.:		BHC06B
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.45
			Date Sampled:		29-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.7
Ammonia (Free) as N	U	1220	mg/l	0.050	0.16
Sulphate	U	1220	mg/l	1.0	13
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.0
Boron (Dissolved)	U	1450	µg/l	20	36
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	3.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.2
Lead (Dissolved)	U	1450	µg/l	1.0	1.2
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	2.3
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09432
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		602978
Order No.: 2543,GI			Client Sample Ref.:		BHC06B
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.45
			Date Sampled:		29-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	mg/l	0.0010	< 0.0010
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09432
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		602978
Order No.: 2543,GI			Client Sample Ref.:		BHC06B
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.45
			Date Sampled:		29-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Leachate

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-09432
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	602978
Order No.: 2543,GI				Client Sample Ref.:	BHC06B
				Client Sample ID.:	J1
				Sample Type:	SOIL
				Top Depth (m):	0.45
				Date Sampled:	29-Mar-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-09432	18-09432	18-09432
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			602978	602981	602993
Order No.: 2543,GI		Client Sample Ref.:			BHC06B	BHC06B	BHC10
		Client Sample ID.:			J1	J4	J1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.45	2.60	0.20
		Date Sampled:			29-Mar-2018	03-Apr-2018	03-Apr-2018
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	10	32	9.4
pH	U	2010		N/A	8.1	9.2	10.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.0	2.5	1.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.068	0.12	0.55
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	17	92	7.1
Sulphate (Total)	U	2430	%	0.010	0.089	0.80	0.36
Arsenic	U	2450	mg/kg	1.0	11	27	25
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	2.4
Chromium	U	2450	mg/kg	1.0	11	34	50
Copper	U	2450	mg/kg	0.50	35	18	270
Mercury	U	2450	mg/kg	0.10	0.24	< 0.10	0.43
Nickel	U	2450	mg/kg	0.50	14	33	50
Lead	U	2450	mg/kg	0.50	67	49	280
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	51	76	590
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		1.7	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	9.8
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	27

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-09432	18-09432	18-09432
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			602978	602981	602993
Order No.: 2543,GI		Client Sample Ref.:			BHC06B	BHC06B	BHC10
		Client Sample ID.:			J1	J4	J1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.45	2.60	0.20
		Date Sampled:			29-Mar-2018	03-Apr-2018	03-Apr-2018
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	2.7
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	39
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	39
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.21
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.42
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.24
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.25
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.3
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.2
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	5.1
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	6.1
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.8
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	3.5
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	3.9
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.8
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	3.1
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.2
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.2
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.1
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	36
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-09432	18-09432	18-09432
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			602978	602981	602993
Order No.: 2543,GI		Client Sample Ref.:			BHC06B	BHC06B	BHC10
		Client Sample ID.:			J1	J4	J1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.45	2.60	0.20
		Date Sampled:			29-Mar-2018	03-Apr-2018	03-Apr-2018
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-09432	18-09432	18-09432
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			602978	602981	602993
Order No.: 2543,GI		Client Sample Ref.:			BHC06B	BHC06B	BHC10
		Client Sample ID.:			J1	J4	J1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.45	2.60	0.20
		Date Sampled:			29-Mar-2018	03-Apr-2018	03-Apr-2018
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-09432	18-09432	18-09432
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			602978	602981	602993
Order No.: 2543,GI		Client Sample Ref.:			BHC06B	BHC06B	BHC10
		Client Sample ID.:			J1	J4	J1
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.45	2.60	0.20
		Date Sampled:			29-Mar-2018	03-Apr-2018	03-Apr-2018
		Asbestos Lab:			COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.70
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.58
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.5
Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.8
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	2.2
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	2.3
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	4.4
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.9
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.3
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.6
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	1.1
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	3.5
PCB 28	U	2815	mg/kg	0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010	< 0.010		< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543,GI Lake Loathing, L20

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09432	18-09432	18-09432
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		602978	602981	602993
Order No.: 2543,GI			Client Sample Ref.:		BHC06B	BHC06B	BHC10
			Client Sample ID.:		J1	J4	J1
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.45	2.60	0.20
			Date Sampled:		29-Mar-2018	03-Apr-2018	03-Apr-2018
			Asbestos Lab:		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PCB 180	U	2815	mg/kg	0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010	< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010	< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12	< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
602978	BHC06B	J1	29-Mar-2018	B	Amber Glass 250ml
602978	BHC06B	J1	29-Mar-2018	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-09752-1
Initial Date of Issue:	17-Apr-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543 GI Lake Loathing

Quotation No.:	Q17-10179	**Date Received:**	10-Apr-2018
Order No.:		**Date Instructed:**	10-Apr-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	16-Apr-2018
Date Approved:	17-Apr-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09752
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		604511
Order No.:			Client Sample Ref.:		BHC10
			Client Sample ID.:		J11
			Sample Type:		SOIL
			Top Depth (m):		6.50
			Date Sampled:		05-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	24
pH	U	2010		N/A	9.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.099
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	27
Sulphate (Total)	U	2430	%	0.010	0.31
Arsenic	U	2450	mg/kg	1.0	5.8
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	8.2
Copper	U	2450	mg/kg	0.50	3.9
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	8.0
Lead	U	2450	mg/kg	0.50	9.8
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09752
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		604511
Order No.:			Client Sample Ref.:		BHC10
			Client Sample ID.:		J11
			Sample Type:		SOIL
			Top Depth (m):		6.50
			Date Sampled:		05-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0

Results - Soil

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09752
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		604511
Order No.:			Client Sample Ref.:		BHC10
			Client Sample ID.:		J11
			Sample Type:		SOIL
			Top Depth (m):		6.50
			Date Sampled:		05-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50

Results - Soil

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-09752
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		604511
Order No.:			Client Sample Ref.:		BHC10
			Client Sample ID.:		J11
			Sample Type:		SOIL
			Top Depth (m):		6.50
			Date Sampled:		05-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-09752
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	604511
Order No.:				Client Sample Ref.:	BHC10
				Client Sample ID.:	J11
				Sample Type:	SOIL
				Top Depth (m):	6.50
				Date Sampled:	05-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Fluoranthene	U	2790	mg/kg	0.50	< 0.50
Pyrene	U	2790	mg/kg	0.50	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Amended Report

Report No.:	18-10291-3		
Initial Date of Issue:	25-Apr-2018	**Date of Re-Issue:**	21-May-2018
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Stephen Gilchrist		
Project	2543 GI, Lake Loathing		
Quotation No.:	Q17-10179	**Date Received:**	16-Apr-2018
Order No.:		**Date Instructed:**	19-Apr-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	25-Apr-2018
Date Approved:	25-Apr-2018		
Approved By:			
Details:	Robert Monk, Technical Manager		

Results - Soil

Project: 2543 GI, Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-10291
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		607194
Order No.:			Client Sample Ref.:		BHC09
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		5.50
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	26
pH	U	2010		N/A	[A] 9.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.12
Cyanide (Free)	U	2300	mg/kg	0.50	[A] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	[A] 13
Sulphate (Total)	U	2430	%	0.010	[A] 0.99
Arsenic	U	2450	mg/kg	1.0	9.7
Cadmium	U	2450	mg/kg	0.10	< 0.10
Chromium	U	2450	mg/kg	1.0	11
Copper	U	2450	mg/kg	0.50	5.0
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	10
Lead	U	2450	mg/kg	0.50	13
Selenium	U	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	28
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	[A] 1.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10
Naphthalene	U	2700	mg/kg	0.10	[A] < 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI, Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-10291
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		607194
Order No.:			Client Sample Ref.:		BHC09
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		5.50
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthylene	U	2700	mg/kg	0.10	[A] < 0.10
Acenaphthene	U	2700	mg/kg	0.10	[A] < 0.10
Fluorene	U	2700	mg/kg	0.10	[A] < 0.10
Phenanthrene	U	2700	mg/kg	0.10	[A] < 0.10
Anthracene	U	2700	mg/kg	0.10	[A] < 0.10
Fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10
Pyrene	U	2700	mg/kg	0.10	[A] < 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	[A] < 0.10
Chrysene	U	2700	mg/kg	0.10	[A] < 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	[A] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[A] < 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[A] < 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[A] < 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	[A] < 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	[A] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[A] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[A] < 1.0
Bromomethane	U	2760	µg/kg	20	[A] < 20
Chloroethane	N	2760	µg/kg	2.0	[A] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[A] < 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	[A] < 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	[A] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[A] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[A] < 1.0
Bromochloromethane	N	2760	µg/kg	5.0	[A] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[A] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[A] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[A] < 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	[A] < 1.0
Benzene	U	2760	µg/kg	1.0	[A] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[A] < 2.0
Trichloroethene	U	2760	µg/kg	1.0	[A] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[A] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[A] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[A] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[A] < 10
Toluene	U	2760	µg/kg	1.0	[A] < 1.0

Results - Soil

Project: 2543 GI, Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-10291
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		607194
Order No.:			Client Sample Ref.:		BHC09
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		5.50
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[A] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[A] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[A] < 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	[A] < 2.0
Dibromochloromethane	N	2760	µg/kg	10	[A] < 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	[A] < 5.0
Chlorobenzene	U	2760	µg/kg	1.0	[A] < 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[A] < 2.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0
Styrene	U	2760	µg/kg	1.0	[A] < 1.0
Tribromomethane	N	2760	µg/kg	1.0	[A] < 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	[A] < 1.0
Bromobenzene	U	2760	µg/kg	1.0	[A] < 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	[A] < 50
N-Propylbenzene	N	2760	µg/kg	1.0	[A] < 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	[A] < 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	[A] < 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	[A] < 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	[A] < 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[A] < 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	[A] < 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[A] < 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	[A] < 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[A] < 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	[A] < 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[A] < 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	[A] < 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	[A] < 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[A] < 0.50
Phenol	U	2790	mg/kg	0.50	[A] < 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	[A] < 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[A] < 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[A] < 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[A] < 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543 GI, Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-10291
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		607194
Order No.:			Client Sample Ref.:		BHC09
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		5.50
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[A] < 0.50
2-Methylphenol	U	2790	mg/kg	0.50	[A] < 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[A] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[A] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[A] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[A] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[A] < 0.50
Isophorone	U	2790	mg/kg	0.50	[A] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[A] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[A] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[A] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[A] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[A] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[A] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[A] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[A] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[A] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[A] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[A] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[A] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[A] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[A] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[A] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[A] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[A] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[A] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[A] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[A] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[A] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[A] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[A] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[A] < 0.50
Fluorene	U	2790	mg/kg	0.50	[A] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[A] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[A] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[A] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[A] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[A] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[A] < 0.50

Results - Soil

Project: 2543 GI, Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-10291
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		607194
Order No.:			Client Sample Ref.:		BHC09
			Client Sample ID.:		J7
			Sample Type:		SOIL
			Top Depth (m):		5.50
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Pentachlorophenol	N	2790	mg/kg	0.50	[A] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[A] < 0.50
Anthracene	U	2790	mg/kg	0.50	[A] < 0.50
Carbazole	U	2790	mg/kg	0.50	[A] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[A] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[A] < 0.50
Pyrene	U	2790	mg/kg	0.50	[A] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[A] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[A] < 0.50
Chrysene	U	2790	mg/kg	0.50	[A] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[A] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[A] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[A] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[A] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[A] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[A] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[A] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[A] < 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
607194	BHC09	J7		A	Amber Glass 250ml
607194	BHC09	J7		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-11312-1
Initial Date of Issue:	03-May-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Stephen Gilchrist
Project	2543, GI Lake Loathing
Quotation No.:	Q17-10179
Order No.:	2543, GI
No. of Samples:	4
Turnaround (Wkdays):	5
Date Approved:	03-May-2018

Date Received: 25-Apr-2018

Date Instructed: 26-Apr-2018

Results Due: 02-May-2018

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-11312
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		612825
Order No.: 2543, GI			Client Sample Ref.:		BHC01
			Client Sample ID.:		J1
			Sample Type:		SOIL
			Top Depth (m):		0.30
			Date Sampled:		19-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.6
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050
Sulphate	U	1220	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.1
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd					Chemtest Job No.:	18-11312
Quotation No.: Q17-10179					Chemtest Sample ID.:	612825
Order No.: 2543, GI					Client Sample Ref.:	BHC01
					Client Sample ID.:	J1
					Sample Type:	SOIL
					Top Depth (m):	0.30
					Date Sampled:	19-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	
Chrysene	U	1700	µg/l	0.10	< 0.10	
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	
Benzene	U	1760	µg/l	1.0	< 1.0	
Toluene	U	1760	µg/l	1.0	< 1.0	
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	
o-Xylene	U	1760	µg/l	1.0	< 1.0	
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	
Phenol	N	1790	µg/l	0.50	< 0.50	
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	
Isophorone	N	1790	µg/l	0.50	< 0.50	
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	
Naphthalene	N	1790	µg/l	0.50	< 0.50	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	

Results - Leachate

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-11312
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	612825
Order No.: 2543, GI				Client Sample Ref.:	BHC01
				Client Sample ID.:	J1
				Sample Type:	SOIL
				Top Depth (m):	0.30
				Date Sampled:	19-Apr-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-11312	18-11312	18-11312	18-11312
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		612825	612828	612839	612841
Order No.: 2543, GI			Client Sample Ref.:		BHC01	BHC01	TPC09	TPC09
			Client Sample ID.:		J1	J4	J1	J3
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.70	0.20	1.50
			Date Sampled:		19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018
			Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-		-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	4.2	15	12	19
pH	U	2010		N/A	8.6	8.7	8.4	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.71	2.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	0.016	0.16
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	4.9	< 0.50
Ammonium (Extractable)	U	2425	mg/kg	0.50	1.2	< 0.50	1.6	53
Sulphate (Total)	U	2430	%	0.010	0.018	< 0.010	0.16	1.1
Arsenic	U	2450	mg/kg	1.0	4.5	2.0	24	25
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10	0.19	< 0.10
Chromium	U	2450	mg/kg	1.0	6.6	3.4	10	26
Copper	U	2450	mg/kg	0.50	9.8	1.8	810	22
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	1.3	< 0.10
Nickel	U	2450	mg/kg	0.50	7.7	3.0	25	27
Lead	U	2450	mg/kg	0.50	19	4.3	340	45
Selenium	U	2450	mg/kg	0.20	0.23	0.20	1.3	0.56
Zinc	U	2450	mg/kg	0.50	23	9.4	150	68
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40		< 0.40		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	5.3	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	58	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	64	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	1.3	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	190	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	190	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	250	< 10

Results - Soil

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-11312	18-11312	18-11312	18-11312
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	612825	612828	612839	612841
Order No.: 2543, GI				Client Sample Ref.:	BHC01	BHC01	TPC09	TPC09
				Client Sample ID.:	J1	J4	J1	J3
				Sample Type:	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.70	0.20	1.50
				Date Sampled:	19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018
				Asbestos Lab:	COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	2.9	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.29	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.25	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.66	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	1.6	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.30	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	1.0	< 0.10	1.2	0.75
Pyrene	U	2700	mg/kg	0.10	0.82	< 0.10	1.4	0.51
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.60	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.94	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.64	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.43	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	0.56	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	12	< 2.0
Dichlorodifluoromethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	2760	µg/kg	20	< 20	< 20	< 20	< 20
Chloroethane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	N	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10	< 10	< 10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-11312	18-11312	18-11312	18-11312
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	612825	612828	612839	612841
Order No.: 2543, GI				Client Sample Ref.:	BHC01	BHC01	TPC09	TPC09
				Client Sample ID.:	J1	J4	J1	J3
				Sample Type:	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.70	0.20	1.50
				Date Sampled:	19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018
				Asbestos Lab:	COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,1,2-Trichloroethane	U	2760	µg/kg	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	N	2760	µg/kg	10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	2760	µg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
N-Propylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	N	2760	µg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-11312	18-11312	18-11312	18-11312
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	612825	612828	612839	612841
Order No.: 2543, GI				Client Sample Ref.:	BHC01	BHC01	TPC09	TPC09
				Client Sample ID.:	J1	J4	J1	J3
				Sample Type:	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.70	0.20	1.50
				Date Sampled:	19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018
				Asbestos Lab:	COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	U	2790	mg/kg	0.50	1.0	< 0.50	0.87	< 0.50
Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Soil

Project: 2543, GI Lake Loathing

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-11312	18-11312	18-11312	18-11312
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	612825	612828	612839	612841
Order No.: 2543, GI				Client Sample Ref.:	BHC01	BHC01	TPC09	TPC09
				Client Sample ID.:	J1	J4	J1	J3
				Sample Type:	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.70	0.20	1.50
				Date Sampled:	19-Apr-2018	19-Apr-2018	23-Apr-2018	23-Apr-2018
				Asbestos Lab:	COVENTRY		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Fluoranthene	U	2790	mg/kg	0.50	1.2	< 0.50	1.5	< 0.50
Pyrene	U	2790	mg/kg	0.50	0.83	< 0.50	1.2	< 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	0.64	< 0.50	0.77	< 0.50
Chrysene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.98	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	0.69	< 0.50	1.2	< 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.71	< 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	< 0.50	< 0.50	0.59	< 0.50
PCB 28	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 81	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 77	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 105	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 114	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 118	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 123	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 126	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010		< 0.010	
PCB 156	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 157	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 167	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 169	N	2815	mg/kg	0.010		< 0.010		< 0.010
PCB 189	N	2815	mg/kg	0.010		< 0.010		< 0.010
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12		< 0.12		< 0.12
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10		< 0.10	
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-13032-1
Initial Date of Issue:	22-May-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Tom Powling
Project	2543,GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	10-May-2018
Order No.:	2543,GI	**Date Instructed:**	16-May-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	22-May-2018
Date Approved:	22-May-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13032
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		620297
Order No.: 2543,GI			Client Sample Ref.:		BHC07
			Client Sample ID.:		W1
			Sample Type:		WATER
			Top Depth (m):		1.70
			Date Sampled:		09-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.2
Ammonia (Free) as N	U	1220	mg/l	0.050	0.39
Sulphate	U	1220	mg/l	1.0	33
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.1
Boron (Dissolved)	U	1450	µg/l	20	270
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	9.7
Copper (Dissolved)	U	1450	µg/l	1.0	1.5
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	7.8
Zinc (Dissolved)	U	1450	µg/l	1.0	7.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13032
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		620297
Order No.: 2543,GI			Client Sample Ref.:		BHC07
			Client Sample ID.:		W1
			Sample Type:		WATER
			Top Depth (m):		1.70
			Date Sampled:		09-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13032
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		620297
Order No.: 2543,GI			Client Sample Ref.:		BHC07
			Client Sample ID.:		W1
			Sample Type:		WATER
			Top Depth (m):		1.70
			Date Sampled:		09-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	5.2
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13032
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		620297
Order No.: 2543,GI			Client Sample Ref.:		BHC07
			Client Sample ID.:		W1
			Sample Type:		WATER
			Top Depth (m):		1.70
			Date Sampled:		09-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13032
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		620297
Order No.: 2543,GI			Client Sample Ref.:		BHC07
			Client Sample ID.:		W1
			Sample Type:		WATER
			Top Depth (m):		1.70
			Date Sampled:		09-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-13180-1
Initial Date of Issue:	22-May-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Tom Powling
Project	2543 GI Lake Loathing
Quotation No.:	Q17-10179
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	22-May-2018
Approved By:	[redacted]
Details:	Glynn Harvey, Laboratory Manager

Date Received:	11-May-2018
Date Instructed:	16-May-2018
Results Due:	22-May-2018

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-13180	18-13180
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			621138	621139
Order No.:		Client Sample Ref.:			BHC27	BHC24
		Sample Type:			WATER	WATER
		Top Depth (m):			2.00	1.43
		Date Sampled:			11-May-2018	11-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	U	1010		N/A	8.6	12.4
Ammonia (Free) as N	U	1220	mg/l	0.050	0.15	1.1
Sulphate	U	1220	mg/l	1.0	120	38
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	17	2.9
Boron (Dissolved)	U	1450	µg/l	20	210	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	12	2.4
Copper (Dissolved)	U	1450	µg/l	1.0	3.1	37
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	3.3	77
Lead (Dissolved)	U	1450	µg/l	1.0	1.1	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	4.8	9.4
Zinc (Dissolved)	U	1450	µg/l	1.0	9.0	3.4
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	62	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	62	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	30	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	30	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	92	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13180	18-13180
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		621138	621139
Order No.:			Client Sample Ref.:		BHC27	BHC24
			Sample Type:		WATER	WATER
			Top Depth (m):		2.00	1.43
			Date Sampled:		11-May-2018	11-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-13180	18-13180
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			621138	621139
Order No.:		Client Sample Ref.:			BHC27	BHC24
		Sample Type:			WATER	WATER
		Top Depth (m):			2.00	1.43
		Date Sampled:			11-May-2018	11-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-13180	18-13180
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			621138	621139
Order No.:		Client Sample Ref.:			BHC27	BHC24
		Sample Type:			WATER	WATER
		Top Depth (m):			2.00	1.43
		Date Sampled:			11-May-2018	11-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-13180	18-13180
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			621138	621139
Order No.:		Client Sample Ref.:			BHC27	BHC24
		Sample Type:			WATER	WATER
		Top Depth (m):			2.00	1.43
		Date Sampled:			11-May-2018	11-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-13183-1
Initial Date of Issue:	22-May-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Tom Powling
Project	2543 GI Lake Loathing
Quotation No.:	Q17-10179
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	5
Date Approved:	22-May-2018
Approved By:	
Details:	Glynn Harvey, Laboratory Manager

Date Received:	11-May-2018
Date Instructed:	16-May-2018
Results Due:	22-May-2018

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13183
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		621158
Order No.:			Client Sample Ref.:		BHC09
			Sample Type:		WATER
			Top Depth (m):		4.84
			Bottom Depth (m):		10.70
			Date Sampled:		10-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	11.7
Ammonia (Free) as N	U	1220	mg/l	0.050	1.1
Sulphate	U	1220	mg/l	1.0	160
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.8
Boron (Dissolved)	U	1450	µg/l	20	34
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.082
Chromium (Dissolved)	U	1450	µg/l	1.0	19
Copper (Dissolved)	U	1450	µg/l	1.0	4.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	11
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	9.8
Zinc (Dissolved)	U	1450	µg/l	1.0	7.6
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13183
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		621158
Order No.:			Client Sample Ref.:		BHC09
			Sample Type:		WATER
			Top Depth (m):		4.84
			Bottom Depth (m):		10.70
			Date Sampled:		10-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13183
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		621158
Order No.:			Client Sample Ref.:		BHC09
			Sample Type:		WATER
			Top Depth (m):		4.84
			Bottom Depth (m):		10.70
			Date Sampled:		10-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13183
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		621158
Order No.:			Client Sample Ref.:		BHC09
			Sample Type:		WATER
			Top Depth (m):		4.84
			Bottom Depth (m):		10.70
			Date Sampled:		10-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13183
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		621158
Order No.:			Client Sample Ref.:		BHC09
			Sample Type:		WATER
			Top Depth (m):		4.84
			Bottom Depth (m):		10.70
			Date Sampled:		10-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-13535-1		
Initial Date of Issue:	23-May-2018		
Client	Geosphere Environmental Ltd		
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ		
Contact(s):	Tom Powling		
Project	2543 GI, Lake Lothing, Lowestoft		
Quotation No.:	Q17-10179	**Date Received:**	16-May-2018
Order No.:		**Date Instructed:**	16-May-2018
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	22-May-2018
Date Approved:	23-May-2018		
Approved By:	[redacted]		
Details:	Glynn Harvey, Laboratory Manager		

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI, Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			623008	623009	623010	623011
Order No.:		Client Sample Ref.:			BHC24(D)	BHC08	BHC01	BHC14
		Sample Type:			WATER	WATER	WATER	WATER
		Top Depth (m):			1.92	3.20	2.58	1.91
		Date Sampled:			14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
pH	U	1010		N/A	12.3	9.9	13.2	12.8
Ammonia (Free) as N	U	1220	mg/l	0.050	0.57	0.55	0.31	0.66
Sulphate	U	1220	mg/l	1.0	28	100	350	8.7
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	6.7	4.2	2.4	2.4
Boron (Dissolved)	U	1450	µg/l	20	< 20	64	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	0.088	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	16	22	160	7.4
Copper (Dissolved)	U	1450	µg/l	1.0	1.9	1.6	61	23
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	8.3	16	43	19
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	5.2	1.8
Selenium (Dissolved)	U	1450	µg/l	1.0	10	4.2	9.6	7.2
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.7	17	6.4
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	160	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	63	46
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	63	46
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	63	46
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI, Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		623008	623009	623010	623011
Order No.:			Client Sample Ref.:		BHC24(D)	BHC08	BHC01	BHC14
			Sample Type:		WATER	WATER	WATER	WATER
			Top Depth (m):		1.92	3.20	2.58	1.91
			Date Sampled:		14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI, Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		623008	623009	623010	623011
Order No.:			Client Sample Ref.:		BHC24(D)	BHC08	BHC01	BHC14
			Sample Type:		WATER	WATER	WATER	WATER
			Top Depth (m):		1.92	3.20	2.58	1.91
			Date Sampled:		14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI, Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		623008	623009	623010	623011
Order No.:			Client Sample Ref.:		BHC24(D)	BHC08	BHC01	BHC14
			Sample Type:		WATER	WATER	WATER	WATER
			Top Depth (m):		1.92	3.20	2.58	1.91
			Date Sampled:		14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI, Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-13535	18-13535	18-13535	18-13535
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			623008	623009	623010	623011
Order No.:		Client Sample Ref.:			BHC24(D)	BHC08	BHC01	BHC14
		Sample Type:			WATER	WATER	WATER	WATER
		Top Depth (m):			1.92	3.20	2.58	1.91
		Date Sampled:			14-May-2018	14-May-2018	14-May-2018	14-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	0.28	0.083

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-14854-1
Initial Date of Issue:	05-Jun-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Lianne Fountain
Project	2543 GI Lake Loathing
Quotation No.:	Q17-10179
Date Received:	25-May-2018
Order No.:	
Date Instructed:	29-May-2018
No. of Samples:	7
Turnaround (Wkdays):	5
Results Due:	04-Jun-2018
Date Approved:	05-Jun-2018
Approved By:	

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			628019	628909	628910	628911	628912	628913	628914
Order No.:		Client Sample Ref.:			BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09
		Client Sample ID.:			W2	W2	W2	W2	W2	W2	W2
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.10	2.54	2.09	2.74	1.52	2.04	6.03
		Date Sampled:			23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
pH	U	1010		N/A	8.7	9.1	8.4	11.4	11.8	12.6	8.5
Ammonia (Free) as N	U	1220	mg/l	0.050	0.16	0.096	0.098	0.49	0.90	0.25	0.28
Sulphate	U	1220	mg/l	1.0	120	79	50	37	9.2	110	160
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	9.8	1.4	3.4	2.3	2.1	1.3	7.6
Boron (Dissolved)	U	1450	µg/l	20	170	60	130	< 20	< 20	< 20	60
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	7.3	1.0	< 1.0	< 1.0	< 1.0	42	3.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.9	2.2	< 1.0	< 1.0	19	36	2.1
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.68	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.8	19	1.8	4.8	41	30	8.7
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	5.7	7.4	2.7	5.9	5.1	2.7	5.2
Zinc (Dissolved)	U	1450	µg/l	1.0	5.8	2.7	1.6	< 1.0	1.4	5.5	6.3
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	40	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	6.8	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	53	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	60	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	9.5	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	59	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	50	< 0.10	36	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	72	< 5.0	100	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	130	< 10	110	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	628019	628909	628910	628911	628912	628913	628914
Order No.:					Client Sample Ref.:	BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09
					Client Sample ID.:	W2	W2	W2	W2	W2	W2	W2
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):	2.10	2.54	2.09	2.74	1.52	2.04	6.03
					Date Sampled:	23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Phenanthrene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			628019	628909	628910	628911	628912	628913	628914
Order No.:		Client Sample Ref.:			BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09
		Client Sample ID.:			W2	W2	W2	W2	W2	W2	W2
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.10	2.54	2.09	2.74	1.52	2.04	6.03
		Date Sampled:			23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	628019	628909	628910	628911	628912	628913	628914
Order No.:					Client Sample Ref.:	BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09
					Client Sample ID.:	W2	W2	W2	W2	W2	W2	W2
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):	2.10	2.54	2.09	2.74	1.52	2.04	6.03
					Date Sampled:	23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Hexachloroethane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Loathing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			628019	628909	628910	628911	628912	628913	628914
Order No.:		Client Sample Ref.:			BHC27	BHC08	BHC102	BHC24 (d)	BHC24 (s)	BHC01	BHC09
		Client Sample ID.:			W2	W2	W2	W2	W2	W2	W2
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.10	2.54	2.09	2.74	1.52	2.04	6.03
		Date Sampled:			23-May-2018	24-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	24-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	0.12	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-15148-1
Initial Date of Issue:	04-Jun-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Lianne Fountain
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	31-May-2018
Order No.:	2543, GI	**Date Instructed:**	31-May-2018
No. of Samples:	2		
Turnaround (Wkdays):	3	**Results Due:**	04-Jun-2018
Date Approved:	04-Jun-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-15148	18-15148
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		630538	630539
Order No.: 2543, GI			Client Sample Ref.:		BHC02	BHC07
			Client Sample ID.:		W2	W2
			Sample Type:		WATER	WATER
			Top Depth (m):		1.10	1.15
			Bottom Depth (m):		1.40	1.40
			Date Sampled:		30-May-2018	30-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	U	1010		N/A	7.7	8.3
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050	0.32
Sulphate	U	1220	mg/l	1.0	110	27
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	3.4	7.2
Boron (Dissolved)	U	1450	µg/l	20	140	250
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.098	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.7	3.1
Copper (Dissolved)	U	1450	µg/l	1.0	3.1	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.4	2.7
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	3.9	2.8
Zinc (Dissolved)	U	1450	µg/l	1.0	11	1.9
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-15148	18-15148
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		630538	630539
Order No.: 2543, GI			Client Sample Ref.:		BHC02	BHC07
			Client Sample ID.:		W2	W2
			Sample Type:		WATER	WATER
			Top Depth (m):		1.10	1.15
			Bottom Depth (m):		1.40	1.40
			Date Sampled:		30-May-2018	30-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-15148	18-15148
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		630538	630539
Order No.: 2543, GI			Client Sample Ref.:		BHC02	BHC07
			Client Sample ID.:		W2	W2
			Sample Type:		WATER	WATER
			Top Depth (m):		1.10	1.15
			Bottom Depth (m):		1.40	1.40
			Date Sampled:		30-May-2018	30-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-15148	18-15148
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		630538	630539
Order No.: 2543, GI			Client Sample Ref.:		BHC02	BHC07
			Client Sample ID.:		W2	W2
			Sample Type:		WATER	WATER
			Top Depth (m):		1.10	1.15
			Bottom Depth (m):		1.40	1.40
			Date Sampled:		30-May-2018	30-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-15148	18-15148
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			630538	630539
Order No.: 2543, GI		Client Sample Ref.:			BHC02	BHC07
		Client Sample ID.:			W2	W2
		Sample Type:			WATER	WATER
		Top Depth (m):			1.10	1.15
		Bottom Depth (m):			1.40	1.40
		Date Sampled:			30-May-2018	30-May-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-16645-1
Initial Date of Issue:	18-Jun-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Lianne Fountain
Project	2543,GI - Lake Lothing

Quotation No.:	Q17-10179	**Date Received:**	12-Jun-2018
Order No.:	2543,GI	**Date Instructed:**	12-Jun-2018
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	18-Jun-2018
Date Approved:	18-Jun-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-16645	18-16645	18-16645
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			636835	636836	636837
Order No.: 2543,GI		Client Sample Ref.:			BHC102	BHC02	BHC07
		Client Sample ID.:			W3	W3	W3
		Sample Type:			WATER	WATER	WATER
		Top Depth (m):			2.12	1.71	1.41
		Date Sampled:			11-Jun-2018	11-Jun-2018	11-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
pH	U	1010		N/A	8.2	8.4	7.9
Ammonia (Free) as N	U	1220	mg/l	0.050	0.050	0.31	< 0.050
Sulphate	U	1220	mg/l	1.0	48	26	130
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	6.2	7.6	3.5
Boron (Dissolved)	U	1450	µg/l	20	94	220	170
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	0.14
Chromium (Dissolved)	U	1450	µg/l	1.0	5.0	5.8	5.8
Copper (Dissolved)	U	1450	µg/l	1.0	1.2	1.4	4.3
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.1	< 1.0	2.2
Lead (Dissolved)	U	1450	µg/l	1.0	13	1.6	8.4
Selenium (Dissolved)	U	1450	µg/l	1.0	1.5	2.5	4.4
Zinc (Dissolved)	U	1450	µg/l	1.0	2.4	2.1	18
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-16645	18-16645	18-16645
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		636835	636836	636837
Order No.: 2543,GI			Client Sample Ref.:		BHC102	BHC02	BHC07
			Client Sample ID.:		W3	W3	W3
			Sample Type:		WATER	WATER	WATER
			Top Depth (m):		2.12	1.71	1.41
			Date Sampled:		11-Jun-2018	11-Jun-2018	11-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-16645	18-16645	18-16645
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			636835	636836	636837
Order No.: 2543,GI		Client Sample Ref.:			BHC102	BHC02	BHC07
		Client Sample ID.:			W3	W3	W3
		Sample Type:			WATER	WATER	WATER
		Top Depth (m):			2.12	1.71	1.41
		Date Sampled:			11-Jun-2018	11-Jun-2018	11-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-16645	18-16645	18-16645
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			636835	636836	636837
Order No.: 2543,GI		Client Sample Ref.:			BHC102	BHC02	BHC07
		Client Sample ID.:			W3	W3	W3
		Sample Type:			WATER	WATER	WATER
		Top Depth (m):			2.12	1.71	1.41
		Date Sampled:			11-Jun-2018	11-Jun-2018	11-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-16645	18-16645	18-16645
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			636835	636836	636837
Order No.: 2543,GI		Client Sample Ref.:			BHC102	BHC02	BHC07
		Client Sample ID.:			W3	W3	W3
		Sample Type:			WATER	WATER	WATER
		Top Depth (m):			2.12	1.71	1.41
		Date Sampled:			11-Jun-2018	11-Jun-2018	11-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-16841-1
Initial Date of Issue:	19-Jun-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Lianne Fountain
Project	2543,GI - Lake Lothing
Quotation No.:	Q17-10179
Date Received:	13-Jun-2018
Order No.:	2543,GI
Date Instructed:	13-Jun-2018
No. of Samples:	6
Turnaround (Wkdays):	5
Results Due:	19-Jun-2018
Date Approved:	19-Jun-2018
Approved By:	

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-16841	18-16841	18-16841	18-16841	18-16841	18-16841
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			637748	637749	637750	637751	637752	637753
Order No.: 2543,GI		Client Sample Ref.:			BHC27	BHC24 (D)	BHC24 (S)	BHC01	BHC09	BHC08
		Client Sample ID.:			W3	W3	W3	W3	W3	W3
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			2.13	2.02	1.84	2.90	3.80	4.28
		Date Sampled:			12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
pH	U	1010		N/A	8.6	8.2	11.2	12.2	8.3	8.3
Ammonia (Free) as N	U	1220	mg/l	0.050	0.11	0.078	0.27	0.17	0.17	0.068
Sulphate	U	1220	mg/l	1.0	140	71	190	49	140	160
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.0	1.6	2.1	1.3	8.2	4.2
Boron (Dissolved)	U	1450	µg/l	20	260	130	48	26	95	140
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	0.12	0.12	0.085	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	14	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.6	1.7	5.0	38	3.3	1.9
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	2.4	4.2	41	38	7.5	9.4
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	5.5	1.8	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	5.9	5.7	7.8	2.2	3.6	3.3
Zinc (Dissolved)	U	1450	µg/l	1.0	22	1.3	4.5	11	3.7	4.7
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-16841	18-16841	18-16841	18-16841	18-16841	18-16841
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		637748	637749	637750	637751	637752	637753
Order No.: 2543,GI			Client Sample Ref.:		BHC27	BHC24 (D)	BHC24 (S)	BHC01	BHC09	BHC08
			Client Sample ID.:		W3	W3	W3	W3	W3	W3
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.13	2.02	1.84	2.90	3.80	4.28
			Date Sampled:		12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-16841	18-16841	18-16841	18-16841	18-16841	18-16841
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		637748	637749	637750	637751	637752	637753
Order No.: 2543,GI			Client Sample Ref.:		BHC27	BHC24 (D)	BHC24 (S)	BHC01	BHC09	BHC08
			Client Sample ID.:		W3	W3	W3	W3	W3	W3
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.13	2.02	1.84	2.90	3.80	4.28
			Date Sampled:		12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-16841	18-16841	18-16841	18-16841	18-16841
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	637748	637749	637750	637751	637752	637753
Order No.: 2543,GI					Client Sample Ref.:	BHC27	BHC24 (D)	BHC24 (S)	BHC01	BHC09	BHC08
					Client Sample ID.:	W3	W3	W3	W3	W3	W3
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):	2.13	2.02	1.84	2.90	3.80	4.28
					Date Sampled:	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Hexachloroethane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI - Lake Lothing

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-16841	18-16841	18-16841	18-16841	18-16841	18-16841
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		637748	637749	637750	637751	637752	637753
Order No.: 2543,GI			Client Sample Ref.:		BHC27	BHC24 (D)	BHC24 (S)	BHC01	BHC09	BHC08
			Client Sample ID.:		W3	W3	W3	W3	W3	W3
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.13	2.02	1.84	2.90	3.80	4.28
			Date Sampled:		12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	0.10	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-18455-1
Initial Date of Issue:	03-Jul-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Joe Glenwright
Project	2543 GI Lake Lothing, Lowestoft
Quotation No.:	Q17-10179
Date Received:	26-Jun-2018
Order No.:	2543, GI
Date Instructed:	27-Jun-2018
No. of Samples:	8
Turnaround (Wkdays):	5
Results Due:	03-Jul-2018
Date Approved:	03-Jul-2018

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	644758	644759	644760	644761	645238	645239	645240	645241
Order No.: 2543, GI				Client Sample Ref.:	BHC27	BHC102	BHC07	BHC02	BHC01	BHC08	BHC09	BHC24(D)
				Client Sample ID.:	W4	W4	W4	W4	W4	W4	W4	W4
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Top Depth (m):	2.18	2.15	1.65	1.41	3.12	2.98	3.06	2.10
				Date Sampled:	25-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	10.4	7.5	7.5	7.2	12.5	7.8	9.1	9.9
Ammonia (Free) as N	U	1220	mg/l	0.050	0.53	< 0.050	0.10	< 0.050	1.1	0.054	2.1	1.3
Sulphate	U	1220	mg/l	1.0	110	45	32	150	11	160	160	67
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	7.9	7.9	4.7	3.7	1.8	4.0	5.1	1.9
Boron (Dissolved)	U	1450	µg/l	20	150	170	240	200	< 20	90	61	73
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	0.19	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.8	4.6	4.9	3.6	8.2	< 1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	7.9	2.4	2.0	11	53	5.2	3.2	1.8
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	3.6	1.5	1.3	2.8	43	11	13	4.7
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.6	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.7	1.2	2.3	5.3	< 1.0	3.5	2.6	5.2
Zinc (Dissolved)	U	1450	µg/l	1.0	13	2.0	1.2	23	19	10	3.6	4.5
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	16	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	16	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	19	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	51	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	29	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	140	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.6	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	17	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	200	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	250	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		644758	644759	644760	644761	645238	645239	645240	645241
Order No.: 2543, GI			Client Sample Ref.:		BHC27	BHC102	BHC07	BHC02	BHC01	BHC08	BHC09	BHC24(D)
			Client Sample ID.:		W4	W4	W4	W4	W4	W4	W4	W4
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.18	2.15	1.65	1.41	3.12	2.98	3.06	2.10
			Date Sampled:		25-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd			**Chemtest Job No.:**		18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455
Quotation No.: Q17-10179			**Chemtest Sample ID.:**		644758	644759	644760	644761	645238	645239	645240	645241
Order No.: 2543, GI			Client Sample Ref.:		BHC27	BHC102	BHC07	BHC02	BHC01	BHC08	BHC09	BHC24(D)
			Client Sample ID.:		W4	W4	W4	W4	W4	W4	W4	W4
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Top Depth (m):		2.18	2.15	1.65	1.41	3.12	2.98	3.06	2.10
			Date Sampled:		25-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	644758	644759	644760	644761	645238	645239	645240	645241
Order No.: 2543, GI				Client Sample Ref.:	BHC27	BHC102	BHC07	BHC02	BHC01	BHC08	BHC09	BHC24(D)
				Client Sample ID.:	W4	W4	W4	W4	W4	W4	W4	W4
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Top Depth (m):	2.18	2.15	1.65	1.41	3.12	2.98	3.06	2.10
				Date Sampled:	25-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543 GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	644758	644759	644760	644761	645238	645239	645240	645241
Order No.: 2543, GI				Client Sample Ref.:	BHC27	BHC102	BHC07	BHC02	BHC01	BHC08	BHC09	BHC24(D)
				Client Sample ID.:	W4	W4	W4	W4	W4	W4	W4	W4
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Top Depth (m):	2.18	2.15	1.65	1.41	3.12	2.98	3.06	2.10
				Date Sampled:	25-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	0.049	< 0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-20442-1
Initial Date of Issue:	18-Jul-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Joe Glenwright
Project	2543,GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	12-Jul-2018
Order No.:	2543,GI	**Date Instructed:**	12-Jul-2018
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	18-Jul-2018
Date Approved:	18-Jul-2018		

Approved By:

[redacted]

Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			652928	652929	652930	652931	652932	652933	652934	652935
Order No.: 2543,GI		Client Sample Ref.:			BHC07	BHC24(D)	BHC02	BHC102	BHC08	BHC27	BHC01	BHC09
		Client Sample ID.:			W5	W5	W5	W5	W5	W5	W5	W5
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			1.65	4.35	1.47	2.23	2.46	2.22	3.24	3.56
		Date Sampled:			10-Jul-2018	10-Jul-2018	10-Jul-2018	10-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	8.3	8.2	8.5	8.3	8.2	8.3	11.2	9.2
Ammonia (Free) as N	U	1220	mg/l	0.050	0.33	0.061	< 0.050	0.084	0.052	0.054	0.29	3.0
Sulphate	U	1220	mg/l	1.0	27	50	130	37	150	130	19	130
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	5.3	2.8	4.5	11	6.9	3.8	2.5	7.9
Boron (Dissolved)	U	1450	µg/l	20	220	63	220	200	130	170	< 20	100
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	0.18	< 0.080	< 0.080	< 0.080	< 0.080	0.089
Chromium (Dissolved)	U	1450	µg/l	1.0	5.0	5.2	9.4	7.0	13	4.7	14	8.6
Copper (Dissolved)	U	1450	µg/l	1.0	1.2	1.0	3.9	< 1.0	2.4	1.2	50	5.4
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.7	4.9	2.5	2.7	11	2.6	58	26
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.5	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	2.9	6.1	6.5	2.2	5.9	4.4	2.8	7.5
Zinc (Dissolved)	U	1450	µg/l	1.0	4.7	1.3	18	3.9	13	8.1	8.6	5.9
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	35	< 0.10	< 0.10	38	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	25	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	60	< 5.0	< 5.0	48	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	60	< 10	< 10	48	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			652928	652929	652930	652931	652932	652933	652934	652935
Order No.: 2543,GI		Client Sample Ref.:			BHC07	BHC24(D)	BHC02	BHC102	BHC08	BHC27	BHC01	BHC09
		Client Sample ID.:			W5	W5	W5	W5	W5	W5	W5	W5
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			1.65	4.35	1.47	2.23	2.46	2.22	3.24	3.56
		Date Sampled:			10-Jul-2018	10-Jul-2018	10-Jul-2018	10-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	652928	652929	652930	652931	652932	652933	652934	652935
Order No.: 2543,GI					Client Sample Ref.:	BHC07	BHC24(D)	BHC02	BHC102	BHC08	BHC27	BHC01	BHC09
					Client Sample ID.:	W5	W5	W5	W5	W5	W5	W5	W5
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):	1.65	4.35	1.47	2.23	2.46	2.22	3.24	3.56
					Date Sampled:	10-Jul-2018	10-Jul-2018	10-Jul-2018	10-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,3-Dichloropropane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			652928	652929	652930	652931	652932	652933	652934	652935
Order No.: 2543,GI		Client Sample Ref.:			BHC07	BHC24(D)	BHC02	BHC102	BHC08	BHC27	BHC01	BHC09
		Client Sample ID.:			W5	W5	W5	W5	W5	W5	W5	W5
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			1.65	4.35	1.47	2.23	2.46	2.22	3.24	3.56
		Date Sampled:			10-Jul-2018	10-Jul-2018	10-Jul-2018	10-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543,GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442	18-20442
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	652928	652929	652930	652931	652932	652933	652934	652935
Order No.: 2543,GI				Client Sample Ref.:	BHC07	BHC24(D)	BHC02	BHC102	BHC08	BHC27	BHC01	BHC09
				Client Sample ID.:	W5	W5	W5	W5	W5	W5	W5	W5
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Top Depth (m):	1.65	4.35	1.47	2.23	2.46	2.22	3.24	3.56
				Date Sampled:	10-Jul-2018	10-Jul-2018	10-Jul-2018	10-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018	11-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-21920-1
Initial Date of Issue:	01-Aug-2018
Client	Geosphere Environmental Ltd
Client Address:	Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ
Contact(s):	Joe Glenwright Tom Powling
Project	2543, GI Lake Lothing, Lowestoft

Quotation No.:	Q17-10179	**Date Received:**	24-Jul-2018
Order No.:	2543, GI	**Date Instructed:**	25-Jul-2018
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	31-Jul-2018
Date Approved:	01-Aug-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			659181	659182	659183	659945	659946	659947	659948	659949
Order No.: 2543, GI		Client Sample Ref.:			BHC02	BHC102	BHC07	BHC01	BHC24(D)	BHC27	BHC09	BHC08
		Client Sample ID.:			W6	W6	W6	W6	W6	W6	W6	W6
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			1.57	2.24	1.72	3.31	2.13	2.16	3.12	4.04
		Date Sampled:			23-Jul-2018	23-Jul-2018	23-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	8.3	8.3	8.4	10.7	8.0	8.3	8.2	8.2
Ammonia (Free) as N	U	1220	mg/l	0.050	< 0.050	0.061	0.30	0.22	0.050	< 0.050	0.13	< 0.050
Sulphate	U	1220	mg/l	1.0	140	40	29	13	70	130	140	150
Cyanide (Total)	U	1300	mg/l	0.050	0.070	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	0.070	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.9	< 1.0	6.9	1.2	2.8	1.4	3.0	3.0
Boron (Dissolved)	U	1450	µg/l	20	220	170	320	< 20	110	180	78	98
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.14	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.1	1.2	3.4	4.1	3.3	1.5	1.4	2.5
Copper (Dissolved)	U	1450	µg/l	1.0	4.3	< 1.0	< 1.0	36	5.9	2.0	< 1.0	1.7
Mercury (Dissolved)	U	1450	µg/l	0.50	0.64	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.8	3.0	3.1	40	6.0	2.9	9.0	7.5
Lead (Dissolved)	U	1450	µg/l	1.0	2.5	< 1.0	< 1.0	2.5	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	4.1	1.5	2.6	< 1.0	4.5	3.6	1.3	2.2
Zinc (Dissolved)	U	1450	µg/l	1.0	16	< 1.0	< 1.0	2.9	< 1.0	1.8	1.4	3.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			659181	659182	659183	659945	659946	659947	659948	659949
Order No.: 2543, GI		Client Sample Ref.:			BHC02	BHC102	BHC07	BHC01	BHC24(D)	BHC27	BHC09	BHC08
		Client Sample ID.:			W6	W6	W6	W6	W6	W6	W6	W6
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			1.57	2.24	1.72	3.31	2.13	2.16	3.12	4.04
		Date Sampled:			23-Jul-2018	23-Jul-2018	23-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd		**Chemtest Job No.:**			18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920
Quotation No.: Q17-10179		**Chemtest Sample ID.:**			659181	659182	659183	659945	659946	659947	659948	659949
Order No.: 2543, GI		Client Sample Ref.:			BHC02	BHC102	BHC07	BHC01	BHC24(D)	BHC27	BHC09	BHC08
		Client Sample ID.:			W6	W6	W6	W6	W6	W6	W6	W6
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):			1.57	2.24	1.72	3.31	2.13	2.16	3.12	4.04
		Date Sampled:			23-Jul-2018	23-Jul-2018	23-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd					**Chemtest Job No.:**	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920
Quotation No.: Q17-10179					**Chemtest Sample ID.:**	659181	659182	659183	659945	659946	659947	659948	659949
Order No.: 2543, GI					Client Sample Ref.:	BHC02	BHC102	BHC07	BHC01	BHC24(D)	BHC27	BHC09	BHC08
					Client Sample ID.:	W6	W6	W6	W6	W6	W6	W6	W6
					Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
					Top Depth (m):	1.57	2.24	1.72	3.31	2.13	2.16	3.12	4.04
					Date Sampled:	23-Jul-2018	23-Jul-2018	23-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Hexachloroethane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results - Water

Project: 2543, GI Lake Lothing, Lowestoft

Client: Geosphere Environmental Ltd				**Chemtest Job No.:**	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920	18-21920
Quotation No.: Q17-10179				**Chemtest Sample ID.:**	659181	659182	659183	659945	659946	659947	659948	659949
Order No.: 2543, GI				Client Sample Ref.:	BHC02	BHC102	BHC07	BHC01	BHC24(D)	BHC27	BHC09	BHC08
				Client Sample ID.:	W6	W6	W6	W6	W6	W6	W6	W6
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Top Depth (m):	1.57	2.24	1.72	3.31	2.13	2.16	3.12	4.04
				Date Sampled:	23-Jul-2018	23-Jul-2018	23-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018	24-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	0.54	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

APPENDIX 14 – GEOTECHNICAL LABORATORY TEST RESULTS INCLUDING BATCH SUMMARY AND UNSUITABLE SAMPLE RECORDS

Summary of Geotechnical batches and exploratory hole locations.

Geotechnical Batch Number	Exploratory Hole Reference
1	TPC01, TPC03, TPC04, TPC05, TPC101, TPC102, TPC103
2	BHC06, BHC02, BHC03, TPC21, TPC22, TPC23
3	BHC103, BHC28
4	BHC04, TPC07, TPC08, TPC10
5	BHC101, BHC102
6	BHC14, BHC22, BHC27
7	BHC17, BHC15
8	BHC18, BHC19
9	BHC08, BHC23, BHC24, BHC26, BHC32
10	BHC05, BHC06B, BHC07
11	BHC01, BHC09, BHC10, BHC20

Soil Property Testing Ltd.
18 Halcyon Court, St Margarets Way, Stukeley Meadows,
Huntingdon, Cambs. PE29 6DG
Telephone (01480) 455579
E-mail: jgarner@soilpropertytesting.com

UKAS TESTING No.0958

TO:

CUSTOMER:

DATE/ TIME:

SAMPLE UNSUITABLE FOR TEST

Contract: LAKE CLOTHING	
Job No. S31694-6	**Description:** Soft BROWNISH YELLOW + black grey / orange mottling fine sandy silty CLAY.
BH/WS/TP No. BHC 22	
Sample No. D7	
Depth (m) 3-00	

Test(s) Scheduled:

LIMIT + M/C
BROWNFIELD SITE - PYRITE

Reason(s) test(s) can not be carried out as scheduled:

Only 320g not enough for both tests.

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORIZATION

Soil Property Testing Ltd.
18 Halcyon Court, St Margarets Way, Stukeley Meadows,
Huntingdon, Cambs. PE29 6DG
Telephone (01480) 455579
E-mail: jgarner@soilpropertytesting.com

UKAS TESTING No.0998

TO:

CUSTOMER:

DATE/ TIME:

SAMPLE UNSUITABLE FOR TEST

Contract: LAKE LOTHING, LOWESTOFT	
Job No. 531644-6	**Description:** Damp DARK GREY Fm SAND.
BH/WS/TP No. BHC27	
Sample No. UT 43	
Depth (m) 25.00	

Test(s) Scheduled:

LIMIT + MC

Reason(s) test(s) can not be carried out as scheduled:

Sand non-plastic.

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORIZATION

Soil Property Testing Ltd.
18 Halcyon Court, St Margarets Way, Stukeley Meadows,
Huntingdon, Cambs. PE29 6DG
Telephone (01480) 455579
E-mail: jgarner@soilpropertytesting.com

UKAS TESTING No.0998

TO:

CUSTOMER:

DATE/ TIME:

SAMPLE UNSUITABLE FOR TEST

Contract: LAKE LOTHING, LOWESTOFT

Job No. S31644-6	**Description:** Damp DARK GREY Fine SAND.
BH/WS/TP No. BHC14	
Sample No. UT 69	
Depth (m) 34.00	

Test(s) Scheduled:

TRIAXIAL
LIMIT + M/C

Reason(s) test(s) can not be carried out as scheduled:

Sand Non-plastic.

Triaxial on sand?

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORIZATION

Soil Property Testing Ltd.
18 Halcyon Court, St Margarets Way, Stukeley Meadows,
Huntingdon, Cambs. PE29 6DG
Telephone (01480) 455579
E-mail: jgarner@soilpropertytesting.com

UKAS TESTING No.0998

TO:

CUSTOMER:

DATE/ TIME:

SAMPLE UNSUITABLE FOR TEST

Contract: LAKE LOTHING	
Job No. 531644-7	**Description:** Damp YELLOWISH BROWN
BH/WS/TP No. BHC 17	M— SAND.
Sample No. UT 8	
Depth (m) 2.00	

Test(s) Scheduled:

TRIAXIAL
LIMIT + MC

Reason(s) test(s) can not be carried out as scheduled:

TRIAXIAL ON SAND ?

Non - plastic

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORIZATION

Soil Property Testing Ltd

18 Halcyon Court, St Margaret's Way, Stukeley Meadows,
Huntingdon, Cambs, PE29 6DG
Tel: 01480 455579
Email: jgarner@soilpropertytesting.com

UKAS TESTING
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**
Your Ref.	**2543,GI**

SAMPLE UNSUITABLE FOR TEST

Borehole /Pit No.	Depth (m)	Type	Reference	Description
BHC05	13.00	UT	30	Very dark grey organic CLAY changing to very dark grey silty organic SAND

Test(s) Scheduled:

Triaxial x 2

Limits/MC

Reason(s) test(s) can not be carried out as scheduled:

Second triaxial not carried out as sample changed to sand. Only enough clay material for one triaxial test.

All other tests carried out on clay portion

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORISATION:

Soil Property Testing Ltd

18 Halcyon Court, St Margaret's Way, Stukeley Meadows,
Huntingdon, Cambs, PE29 6DG
Tel: 01480 455579
Email: jgarner@soilpropertytesting.com

UKAS TESTING
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**
Your Ref.	**2543,GI**

SAMPLE UNSUITABLE FOR TEST

Borehole /Pit No.	Depth (m)	Type	Reference	Description
BHC05	18.00	UT	39	Dark grey organic CLAY changing to dark grey organic silty SAND

Test(s) Scheduled:

Triaxial x 2
Limits/MC
PSD

Reason(s) test(s) can not be carried out as scheduled:

Second triaxial not carried out as sample changed to sand. Only enough clay material for one triaxial test.
All other tests carried out on clay portion

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORISATION:

Soil Property Testing Ltd

18 Halcyon Court, St Margaret's Way, Stukeley Meadows,
Huntingdon, Cambs, PE29 6DG
Tel: 01480 455579
Email: jgarner@soilpropertytesting.com

UKAS TESTING
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**
Your Ref.	**2543,GI**

SAMPLE UNSUITABLE FOR TEST

Borehole /Pit No.	Depth (m)	Type	Reference	Description
BHC06B	26.00	UT	55	Dark grey SAND with occasional shell debris. Sand is fine to medium.

Test(s) Scheduled:

Water Content
Liquid/Plastic Limits
2Nr Triaxial Test

Reason(s) test(s) can not be carried out as scheduled:

Sample is sand and unsuitable for triaxial and limits tests.

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORISATION:

Soil Property Testing Ltd

18 Halcyon Court, St Margaret's Way, Stukeley Meadows,
Huntingdon, Cambs, PE29 6DG
Tel: 01480 455579
Email: jgarner@soilpropertytesting.com

UKAS TESTING
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**
Your Ref.	**2543,GI**

SAMPLE UNSUITABLE FOR TEST

Borehole /Pit No.	Depth (m)	Type	Reference	Description
BHC07	6.00	UT	15	Dark grey organic fine to medium SAND with rare fine to medium flint gravel.

Test(s) Scheduled:

Water Content
Liquid/Plastic Limits
2Nr Triaxial Tests

Reason(s) test(s) can not be carried out as scheduled:

Sample is sand and unsuitable for triaixial and limits tests.

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORISATION:

Soil Property Testing Ltd

18 Halcyon Court, St Margaret's Way, Stukeley Meadows,
Huntingdon, Cambs, PE29 6DG
Tel: 01480 455579
Email: jgarner@soilpropertytesting.com

UKAS TESTING
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**
Your Ref.	**2543,GI**

SAMPLE UNSUITABLE FOR TEST

Borehole /Pit No.	Depth (m)	Type	Reference	Description
BHC10	33.00	UT	78	Light olive brown silty slightly clayey SAND with occasional shell debris.

Test(s) Scheduled:

Triaxial Test
Particle Size Distribution
Water Content

Reason(s) test(s) can not be carried out as scheduled:

Sample is sand - unsuitable for triaxial tests, and not carried out as per client instructions.
(PSD and water content undertaken)

Alternative suitable sample(s) available:

CUSTOMERS INSTRUCTIONS AND AUTHORISATION:

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : 30/09/17 **PAGE 1 of 68 Pages**

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing Ltd.

15,16 & 18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

☑ **J.C.GARNER B.Eng (Hons.) FGS**
Technical Director

☐ **S.P.TOWNEND FGS**
Quality Manager

☐ **W.JOHNSTONE**
Materials Lab Manager

[redacted]

SAMPLES LABELLED:

Lake Lothing

DATE RECEIVED: 24/08/17 **SAMPLES TESTED BETWEEN** 24/08/17 **and** 30/09/17

REMARKS: For the attention of Mr S Gilchrist
Your reference 2543,GI
Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

NOTES:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. (a) UKAS - United Kingdom Accreditation Service.
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 2 of 68

Contract Lake Lothing

Serial No. S31644-1

SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	1:Moisture Content BS1377	7:PSD by Wet Sieve BS1377	27:Dry Density/MC 2.5Kg (Proctor)	19:California Bearing Ratio Test	20:CBR Compaction Specified Dens.	35:CBR Soaking + Measurement	705:Organic content (Dichromate)	703:Mass Loss on Ignition	29:Dry Density/MC 4.5Kg (CBR)	710:BRE Brownfield suite-pyrite	11:Hydrometer	28:Dry Density/MC 4.5Kg (CBR)	4:Liquid/Plastic limit 1 point	5:Wet Sieve preparation for Limit	10:PSD by Hydr.inc pre-sieve	Remarks
TPC01	B1	0.55	*	*	*	*	*	*										
	B2	1.80							*	*								
	B3	2.70	*	*							*	*						
TPC03	B1	0.50	*	*	*	*	*	*		*		*						
	B2	1.10				*	*	*	*		*							
	B3	1.80	*	*														
TPC04	B1	0.55	*	*		*	*	*					*	*				
	B2	1.20							*									
	B3	2.20	*	*									*					
	B4	2.70	*	*					*	*	*		*		*	*		
TPC05	B1	0.50	*	*		*	*	*						*				
	B2	1.00										*						
	B3	1.10	*	*	*	*	*	*	*	*			*		*	*		
	B4	2.30	*	*					*		*		*		*			
	B5	2.90	*	*									*		*	*		
TPC06	B1	0.70		*	*	*	*	*					*					
	B2	1.10		*									*					
	B3	2.00	*						*						*		*	
	B4	3.20	*												*		*	
TPC101	B1	0.30	*	*						*								
	B2	0.80		*	*	*	*	*	*			*						
	B3	1.80	*	*														
TPC102	B1	0.50	*	*	*	*	*	*										
	B2	1.60	*	*					*	*		*						
TPC103	B1	0.50	*	*		*	*	*	*				*					
	B2	1.10								*								
	B3	1.50	*	*								*						
	B4	2.00	*	*														
-	-	-	20	21	6	10	10	10	10	7	4	6	8	3	6	3	2	<— Total Number of Tests —

Scheduled by: Geosphere Environmental Ltd.

Target Date: 30/09/17

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 3 of 6

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC01	0.55	B1	2.6	Pale yellowish brown slightly gravelly slightly silty SAND. Gravel is black, brown and white subangular and subrounded flint	
TPC01	2.70	B3	2.8	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	
TPC03	0.50	B1	5.7	Dark brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	
TPC03	1.80	B3	20	Light yellowish brown slightly silty slightly gravelly SAND with rare soft light yellowish brown clay lumps. Gravel is black, white and brown subangular and subrounded flint	
TPC04	0.55	B1	19	Dark brown slightly clayey silty very gravelly SAND with occasional brick and concrete fragments. Gravel is black and brown subangular and subrounded flint	
TPC04	2.20	B3	21	Light olive brown gravelly clayey silty SAND. Gravel is black, white and brown subangular and subrounded flint	
TPC04	2.70	B4	22	Dark olive brown slightly gravelly clayey silty SAND with occasional pockets of dark brown clay (possibly organic). Gravel is black, white and brown subangular and subrounded flint	
TPC05	0.50	B1	9.1	MADE GROUND comprising dark brown slightly clayey slightly silty sand, concrete fragments, black, brown and white subangular and subrounded flint gravel, occasional soft dark brown clay lumps and rare metal and asphalt fragments	
TPC05	1.10	B3	24	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	
TPC05	2.30	B4	22	Olive brown silty clayey SAND with rare fine and medium gravel	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3

METHOD OF TEST : BS 1377:PART 2:1990:3.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 4 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC05	2.90	B5	35	Dark brown and brown slightly gravelly sandy silty CLAY. Gravel is black, white and brown subangular and subrounded flint	
TPC06	2.00	B3	63	Very soft very dark grey organic silty CLAY locally oxidised to brown	
TPC06	3.20	B4	60	Very soft very dark grey organic silty CLAY locally oxidised to brown	
TPC101	0.30	B1	8.7	Black, white and brown slightly silty very sandy subangular and subrounded flint GRAVEL with rare concrete fragments. Sand is dark orangish brown	
TPC101	1.80	B3	17	Olive brown slightly silty slightly gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	
TPC102	0.50	B1	3.6	Dark orangish brown slightly gravelly slightly silty SAND. Gravel is brown subangular and subrounded flint	
TPC102	1.60	B2	2.9	Pale yellowish brown slightly silty gravelly SAND. Gravel is black and brown subangular and subrounded flint	
TPC103	0.50	B1	18	Very dark brown silty very gravelly SAND with rare soft very dark brown clay lumps and brick, glass, concrete and ceramic fragments. Gravel is black, white and brown subangular and subrounded flint	
TPC103	1.50	B3	16	Dark brown slightly silty very gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	
TPC103	2.00	B4	21	Light brownish grey slightly silty SAND with rare flint gravel	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3

METHOD OF TEST : BS 1377:PART 2:1990:3.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 5 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
TPC04	2.70	B4	22	23	11	12		S	25(M)		46	Dark olive brown slightly gravelly clayey silty SAND with occasional pockets of dark brown clay (possibly organic). Gravel is black, white and brown subangular and subrounded flint	CL
TPC05	1.10	B3	24	33	13	20		S	8(M)		26	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	CL
TPC05	2.90	B5	35	37	17	20		S	22(M)		46	Dark brown and brown slightly gravelly sandy silty CLAY. Gravel is black, white and brown subangular and subrounded flint	CI
TPC06	2.00	B3	63	71	27	44	0.82	N	0(A)		168	Very soft very dark grey organic silty CLAY locally oxidised to brown	CVO
TPC06	3.20	B4	60	68	26	42	0.81	N	0(A)		168	Very soft very dark grey organic silty CLAY locally oxidised to brown	CHO

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

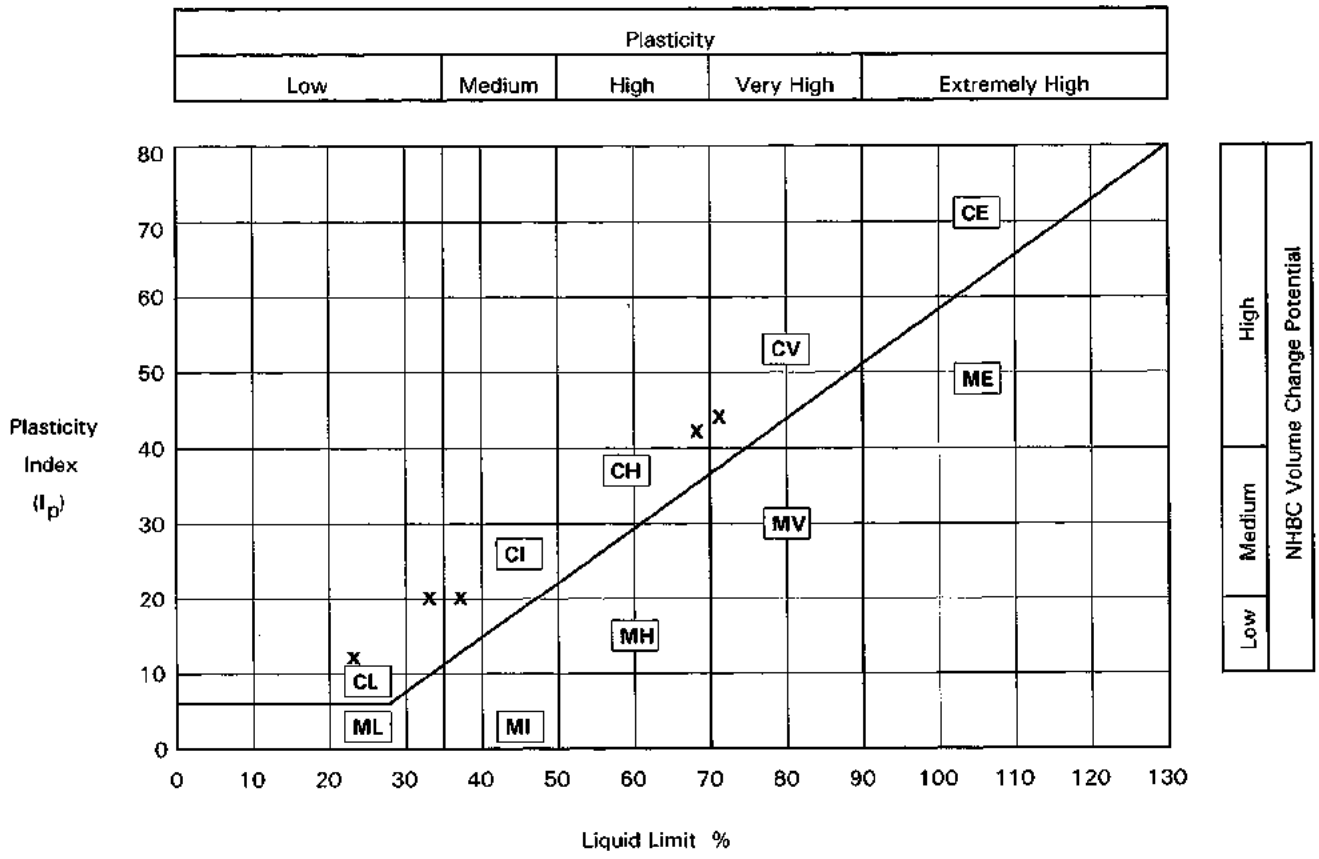
ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 6 of 68

Contract Lake Lothing

Serial No. S31644-1

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 7 of 68

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

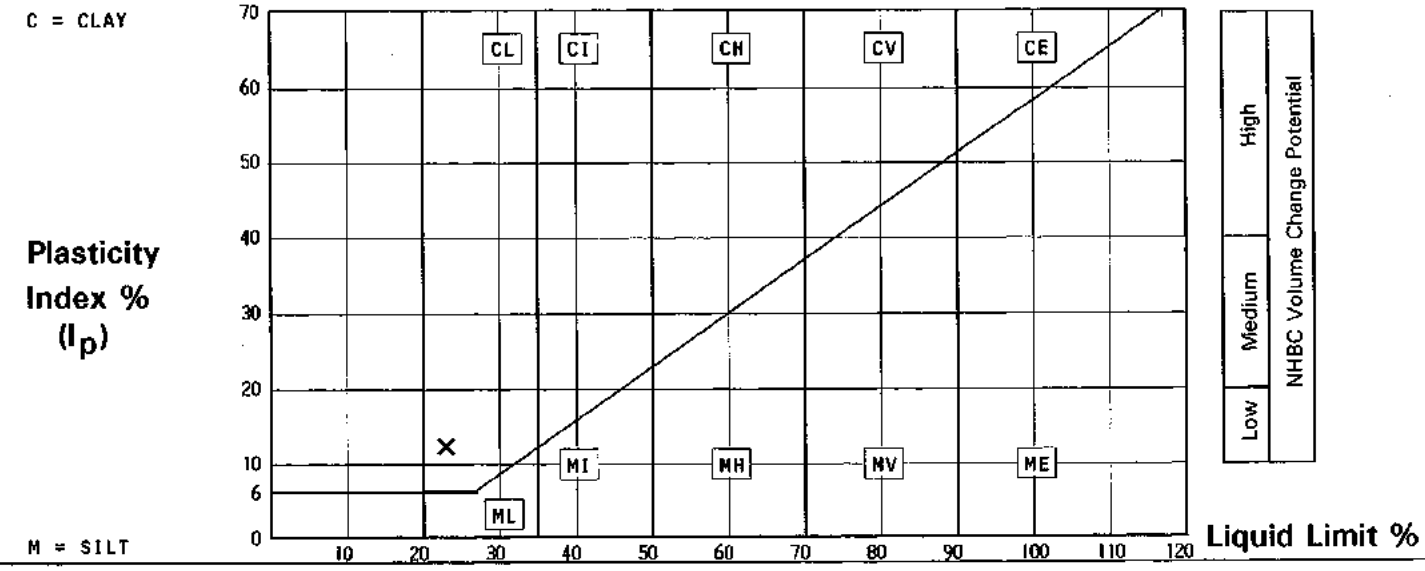
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC04	2.70	B4	22	Dark olive brown slightly gravelly clayey silty SAND with occasional pockets of dark brown clay (possibly organic). Gravel is black, white and brown subangular and subrounded flint	

PREPARATION

Method of Preparation	Sieved Specimen
Sample retained 0.425 sieve (Measured)	25 %
Corrected moisture content for material passing 0.425mm	%
Curing Time	46 Hours

Liquid Limit	23 %
Plastic Limit	11 %
Plasticity Index	12 %
Liquidity Index	
Clay Content	8.0 %
Derived Activity (PI/CC)	1.50



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 8 of 64

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

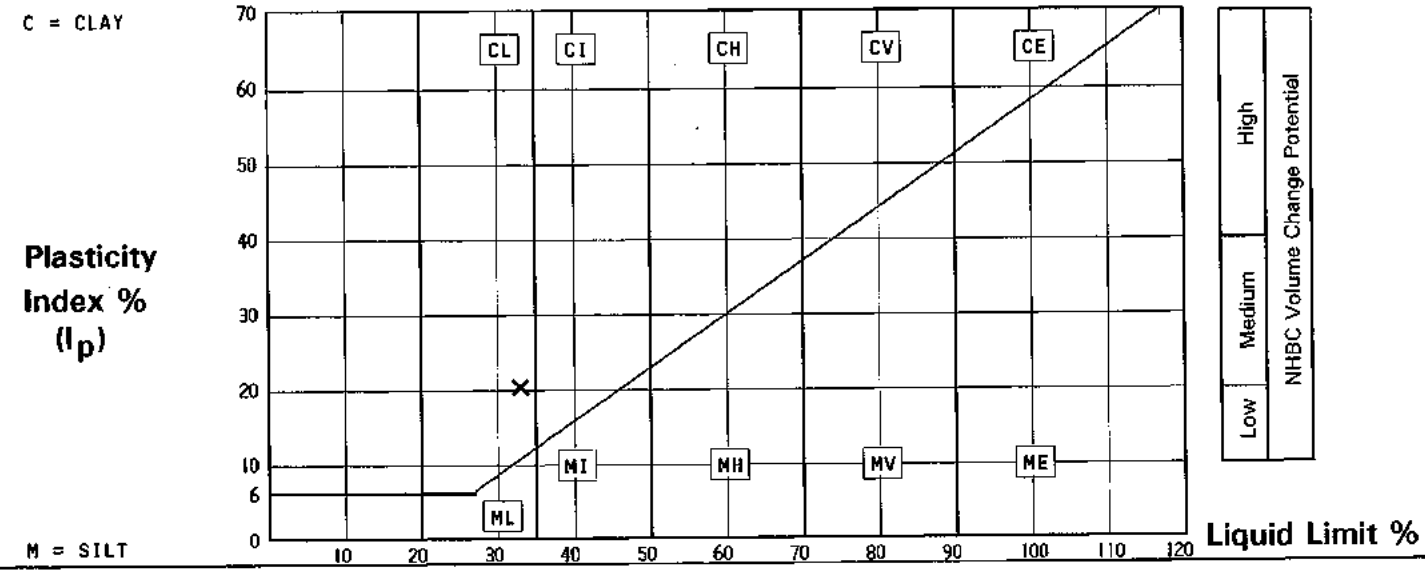
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC05	1.10	B3	24	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=22% Bottom=20%

PREPARATION

Method of Preparation	Sieved Specimen
Sample retained 0.425 sieve (Measured)	8 %
Corrected moisture content for material passing 0.425mm	%
Curing Time	26 Hours

Liquid Limit	33 %
Plastic Limit	13 %
Plasticity Index	20 %
Liquidity Index	
Clay Content	24 %
Derived Activity (PI/CC)	0.83



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE: As page 1

CONTRACT
Lake Lothing

Serial No.
S31644-1

UKAS TESTING No.0998

DETERMINATION OF THE PLASTIC LIMIT

TP / BH	DEPTH (m)	SAMPLE	MOISTURE CONTENT (%)	DESCRIPTION	REMARKS
TPC05	2.30	B4	22	Olive brown silty clayey SAND with rare fine and medium gravel	

PREPARATION:

~~NATURAL /~~ WET SIEVED (0.425mm) and AIR DRIED ~~/ OVEN DRIED and DRY SIEVED~~

Percentage of mass passing 0.425mm sieve.....96%

TEST CONDITIONS

	YES	NO
1. Can a 20g ball be formed and dried between the palms of the hands?	√	O
2. Do slight cracks appear on its surface as it is being hand dried?	O	√
3. Is it possible to form 5g sub samples into a thread of approximately 6mm diameter?	O	√
4. Is it possible to reduce 6mm threads to 3mm diameter in between 5-10 complete rolls (10-15 for heavy clays)?	O	√
5. After alternately forming into threads and rolling out is it possible to shear the thread both longitudinally and transversely when it is rolled to about 3mm?	O	√

NOTE:

	DIFFICULT
Soils that are marginally plastic it is often difficult to obtain the correct crumbling conditions (if "difficult" define as non-plastic)	O

NON-PLASTIC BY BS1377:Part1:1990:2.2.11 – A soil with a plasticity index of zero, or one on which the plastic limit cannot be determined

All conditions 1-5 must be achievable for material to be deemed plastic, if achieved measure moisture content.

PLASTIC LIMIT	%
NON-PLASTIC	YES

If plastic limit is obtainable, does the liquid limit – plastic limit = zero – if so material is defined as non-plastic

LIQUID LIMIT	%
LIQUID LIMIT – PLASTIC LIMIT	%
FINES MATERIAL IS DEEMED NON PLASTIC	

METHOD OF PREPARATION	:	BS1377:Part1:1990:7.4.3 & BS1377:Part2:1990:4.2
METHOD OF TEST	:	BS1377:Part2:1990:5.3
TYPE OF SAMPLE KEY	:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
COMMENTS	:	
REMARKS TO INCLUDE	:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105 – 110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 10 of 69

Contract: Lake Lothing

Serial No.: S31644-1

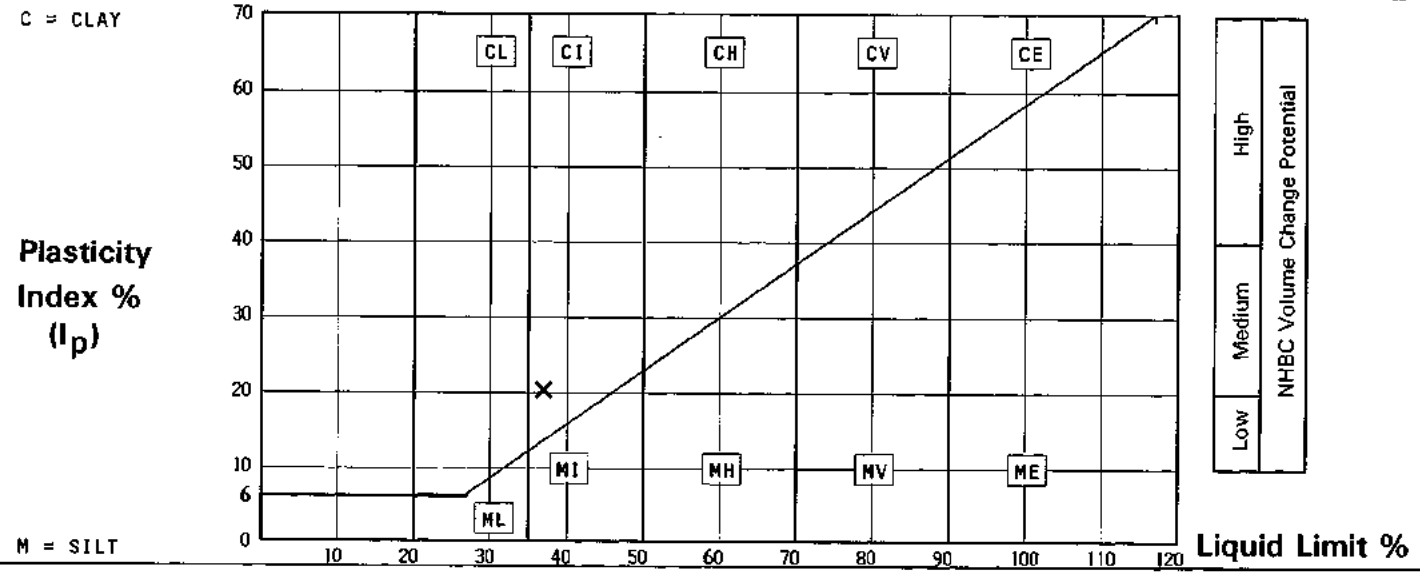
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC05	2.90	B5	35	Dark brown and brown slightly gravelly sandy silty CLAY. Gravel is black, white and brown subangular and subrounded flint	

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	37 %
Sample retained 0.425 sieve	(Measured) 22 %	Plastic Limit	17 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	20 %
Curing Time	46 Hours	Liquidity Index	
		Clay Content	18 %
		Derived Activity (PI/CC)	1.11



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 11 of 64

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

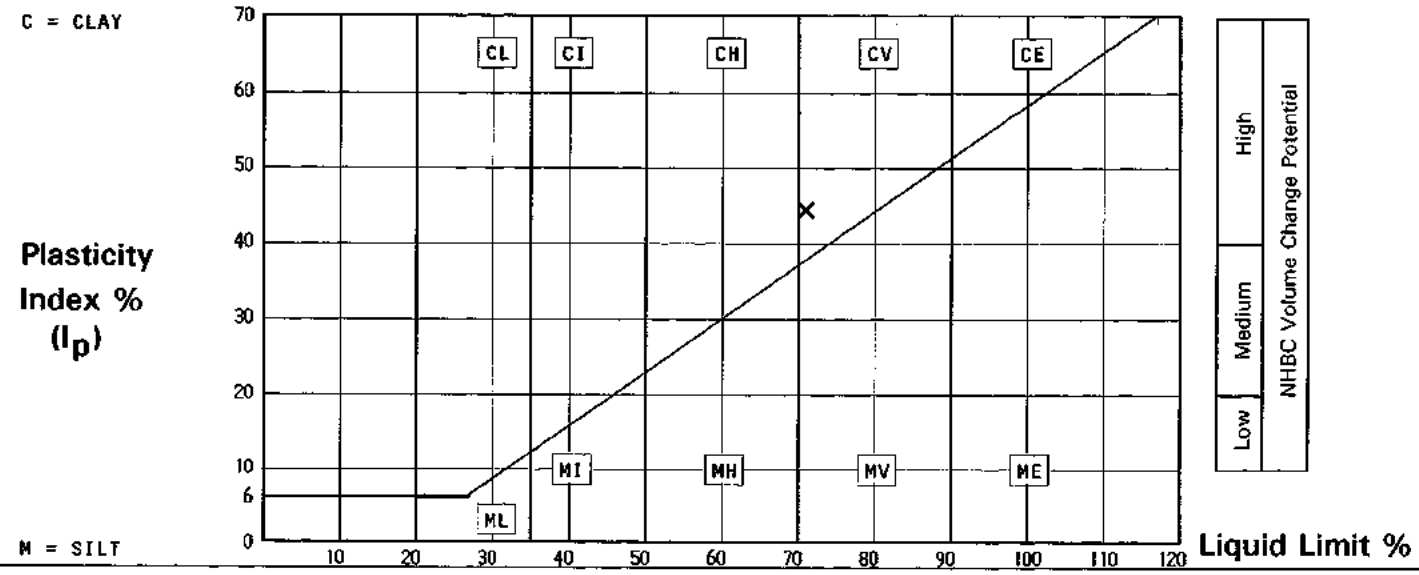
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC06	2.00	B3	63	Very soft very dark grey organic silty CLAY locally oxidised to brown	

PREPARATION

Method of Preparation	Specimen from Natural Soil		
Sample retained 0.425 sieve	(Assumed)	0	%
Corrected moisture content for material passing 0.425mm			%
Curing Time		168	Hours

Liquid Limit	71	%
Plastic Limit	27	%
Plasticity Index	44	%
Liquidity Index	0.82	
Clay Content	37	%
Derived Activity (PI/CC)	1.19	



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 12 of 68

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

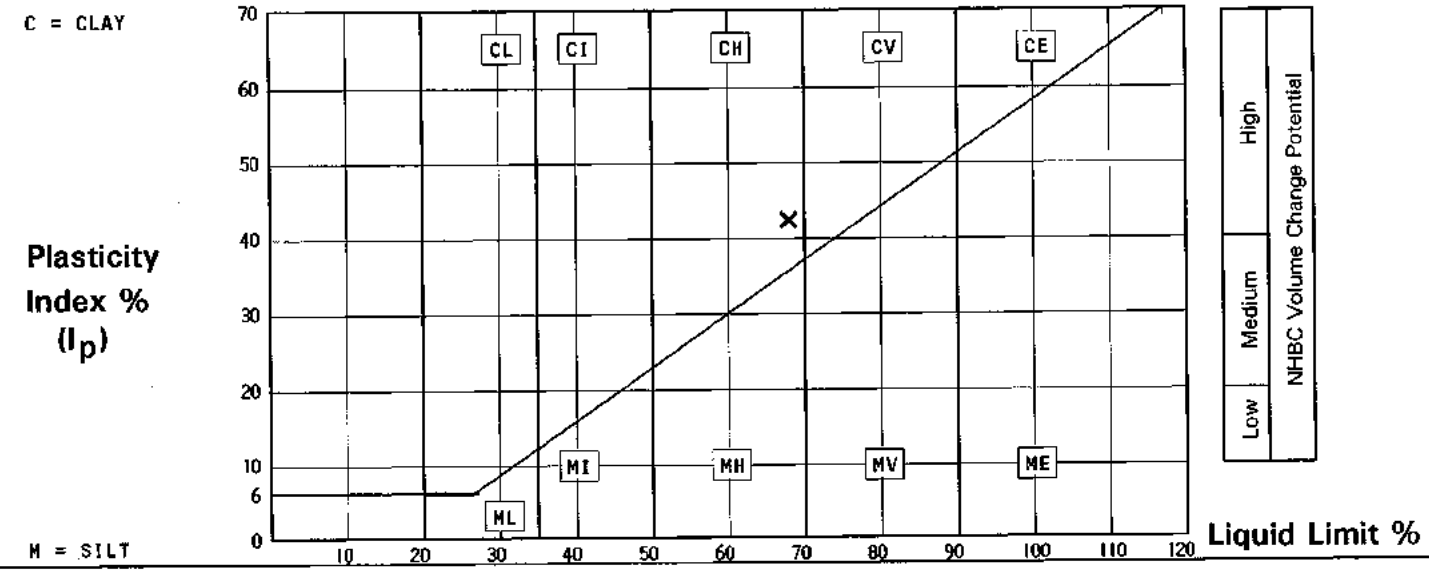
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC06	3.20	B4	60	Very soft very dark grey organic silty CLAY locally oxidised to brown	

PREPARATION

Method of Preparation	Specimen from Natural Soil
Sample retained 0.425 sieve (Assumed)	0 %
Corrected moisture content for material passing 0.425mm	%
Curing Time	168 Hours

Liquid Limit	68 %
Plastic Limit	26 %
Plasticity Index	42 %
Liquidity Index	0.81
Clay Content	36 %
Derived Activity (PI/CC)	1.17



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4 , 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 13 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

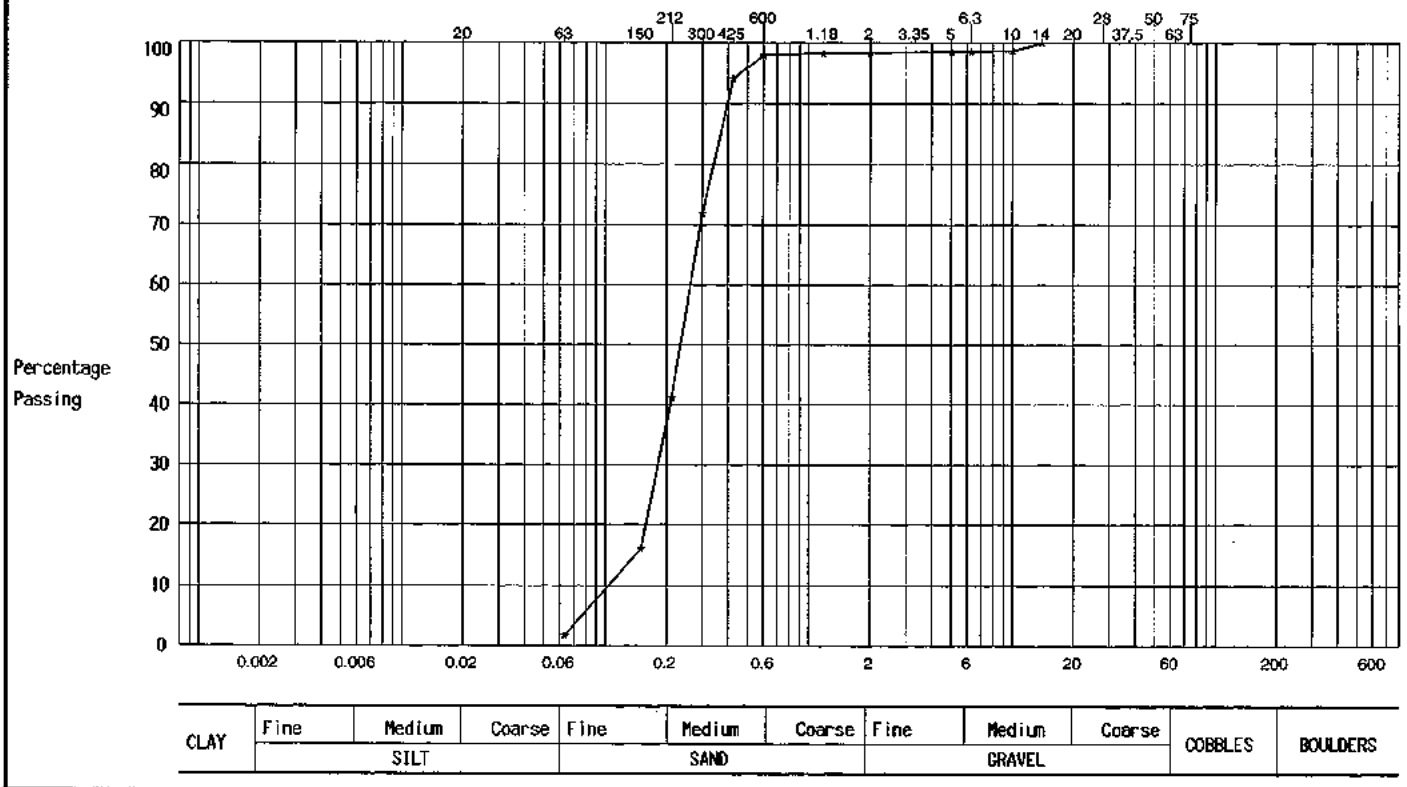
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC01	0.55	B1	Pale yellowish brown slightly gravelly slightly silty SAND. Gravel is black, brown and white subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)																Size (mm)										
Sieve Size												63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve												2	16	41	72	94	98	98	98	98	98	99	100	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 14 of 68

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

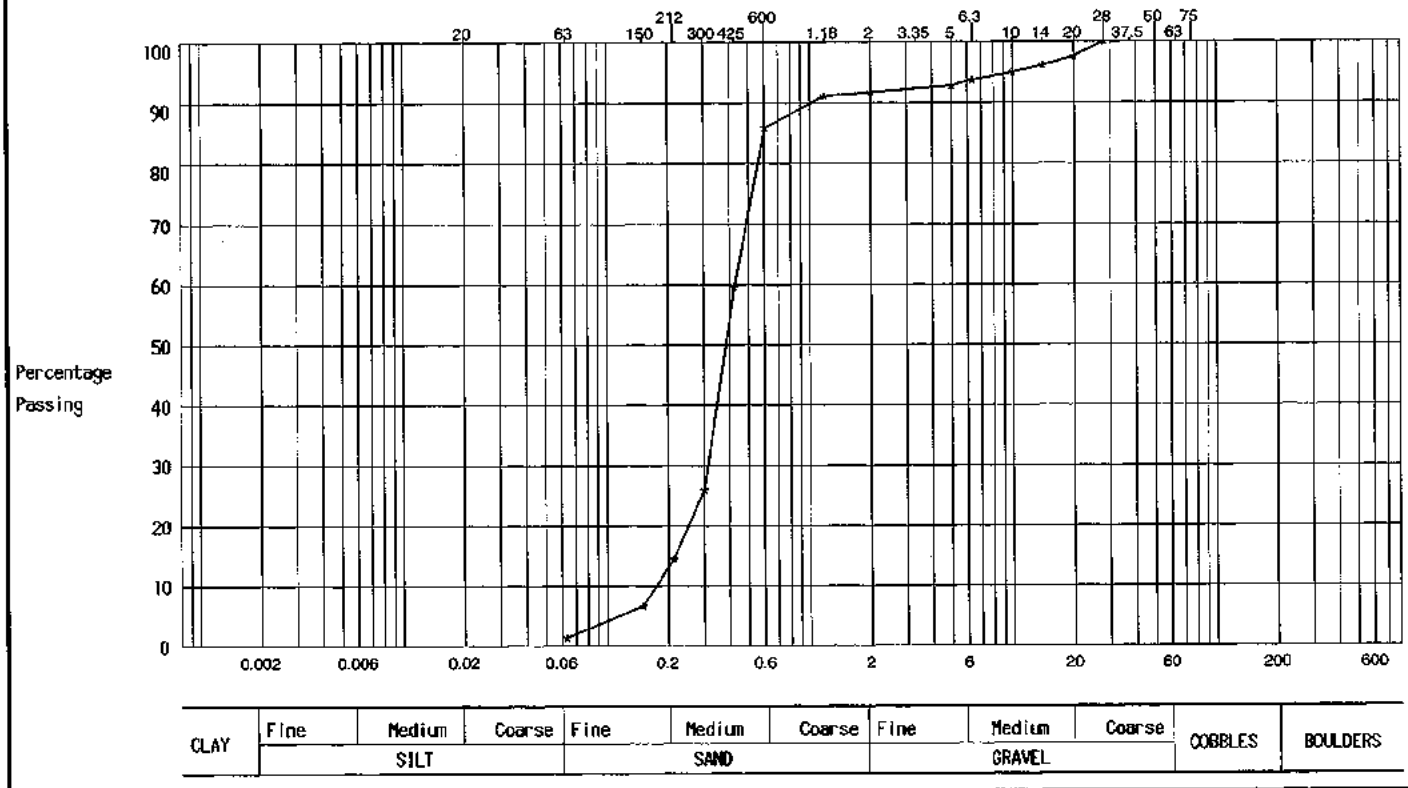
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC01	2.70	B3	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)							Size (mm)										
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	1	7	14	26	60	86	91	92	93	94	95	96	98	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 15 of 67

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

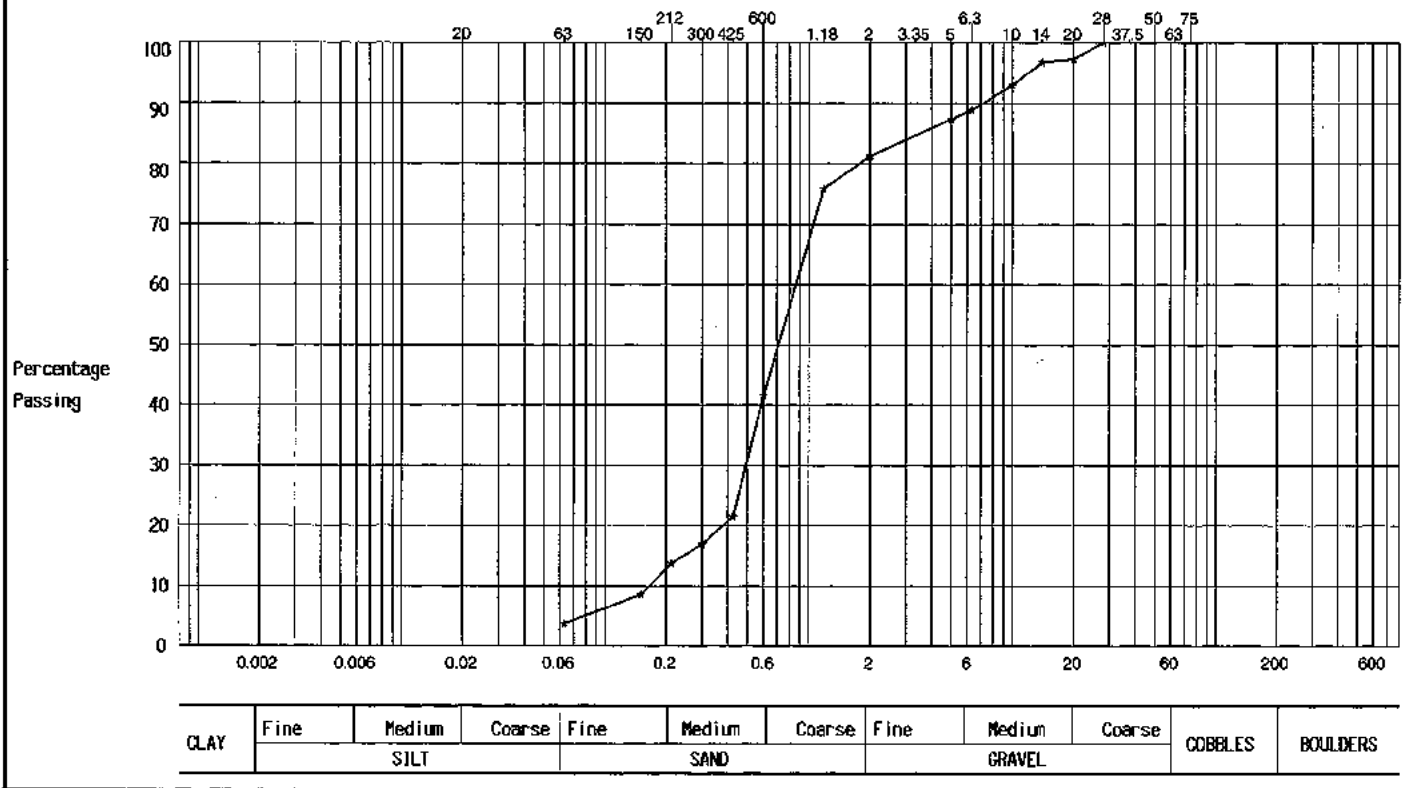
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC03	0.50	B1	Dark brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)																									Size (mm)																							
Sieve Size																									63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75							
Percentage by Mass passing Sieve																									4	8	14	17	21	41	76	81	87	89	93	97	97	100	-	-	-							



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 16 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

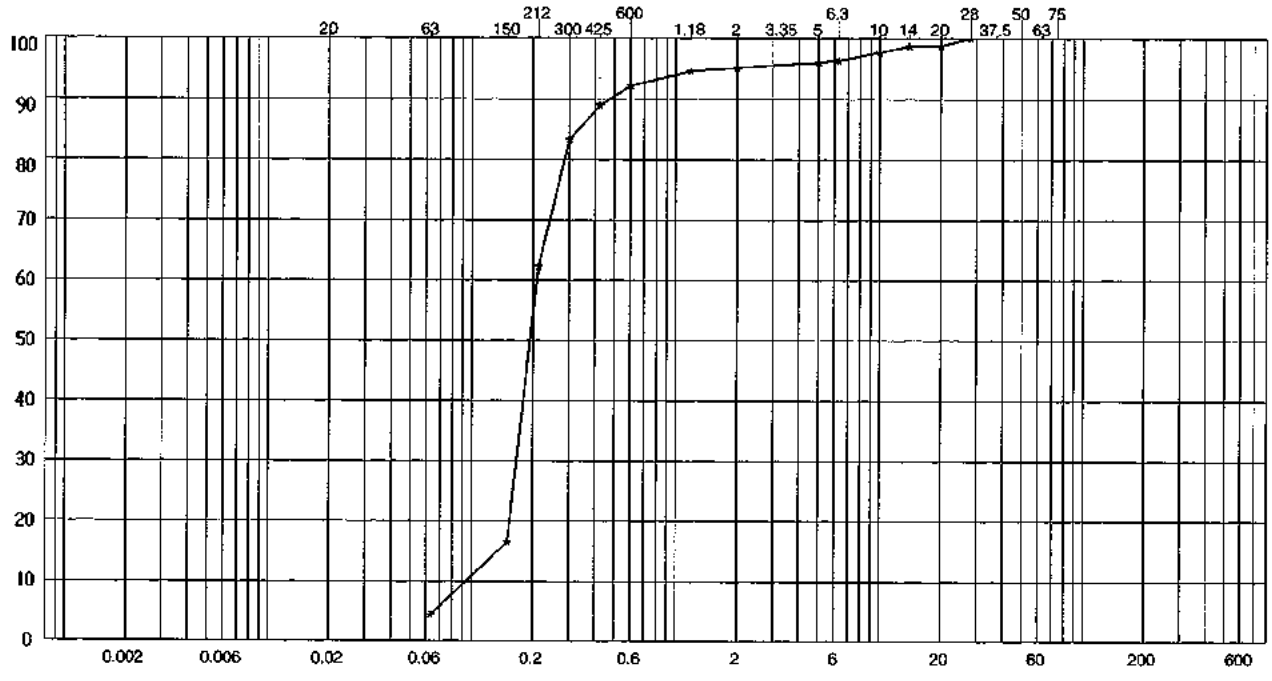
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC03	1.80	B3	Light yellowish brown slightly silty slightly gravelly SAND with rare soft light yellowish brown clay lumps. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

	Size (microns)													Size (mm)												
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75									
Percentage by Mass passing Sieve	4	16	62	83	89	92	95	95	96	96	98	99	99	100	-	-	-									



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 17 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

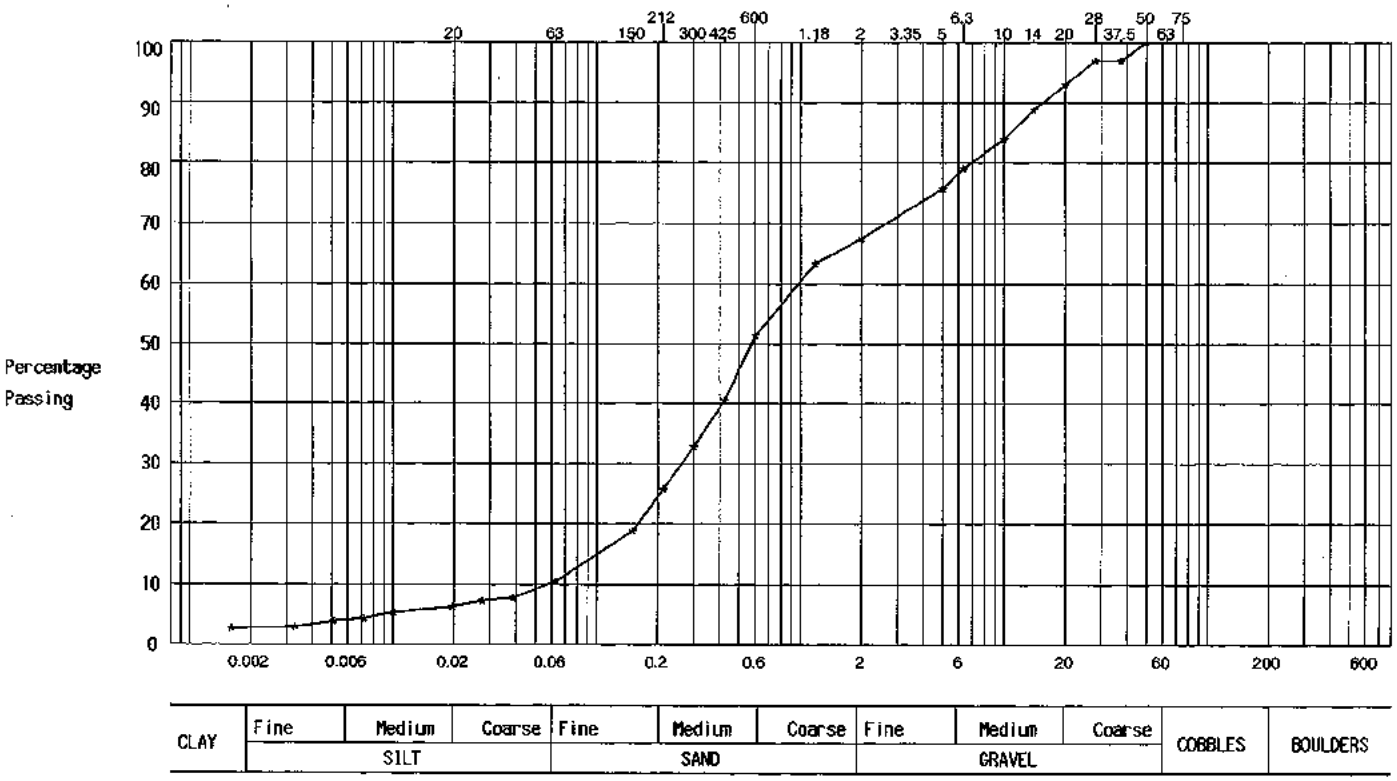
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC04	0.55	B1	Dark brown slightly clayey silty very gravelly SAND with occasional brick and concrete fragments. Gravel is black and brown subangular and subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

Size (microns)																	Size (mm)										
Sieve Size					1.6	3.3	5.1	7.2	10.1	19.5	27.5	38.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					3	3	4	4	5	6	7	8	10	19	26	33	41	51	63	67	76	79	84	89	93	97	97	100	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 18 of 64

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

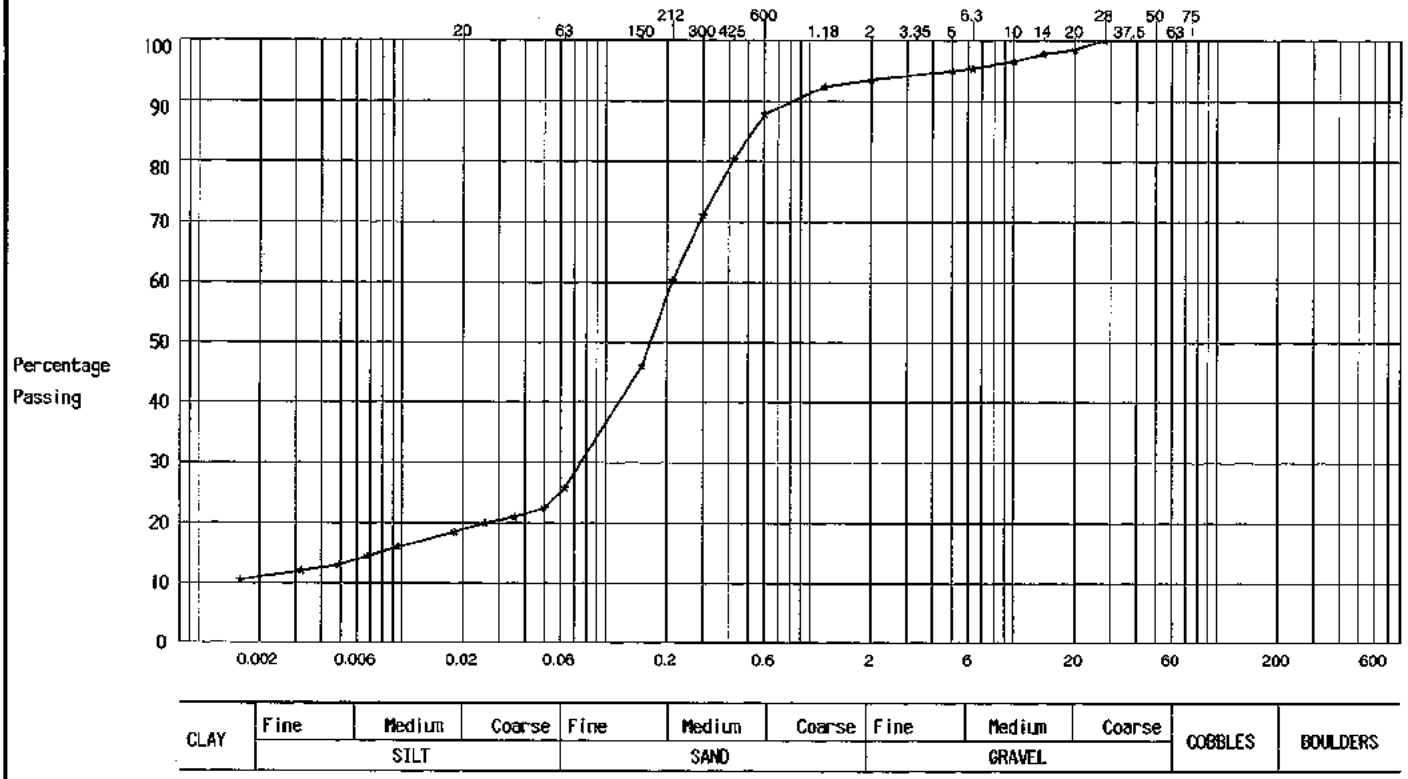
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC04	2.20	B3	Light olive brown gravelly clayey silty SAND. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

Size (microns)																Size (mm)										
Sieve Size	1.6	3.2	4.9	6.8	9.6	18.2	25.5	35.8	50.1	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	10	12	13	14	16	18	20	21	22	26	46	60	71	80	88	92	93	95	95	97	98	98	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 19 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

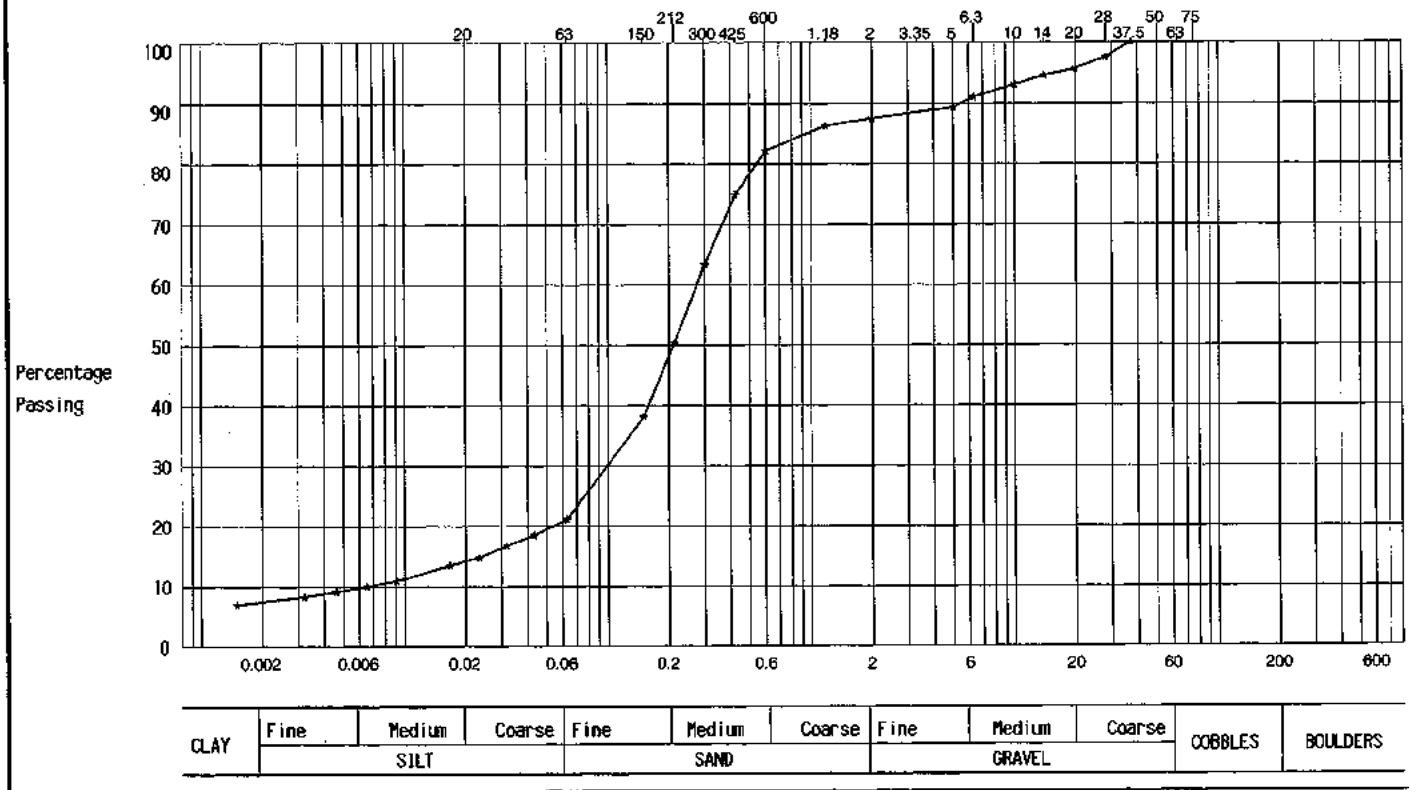
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC04	2.70	B4	Dark olive brown slightly gravelly clayey silty SAND with occasional pockets of dark brown clay (possibly organic). Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

Size (microns)																		Size (mm)										
Sieve Size	1.5	3.2	4.6	6.5	9.1	16.8	23.2	31.7	43.3	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	7	8	9	10	11	13	15	17	18	21	38	50	63	75	82	86	87	89	91	93	94	96	97	100	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 10 **of** 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

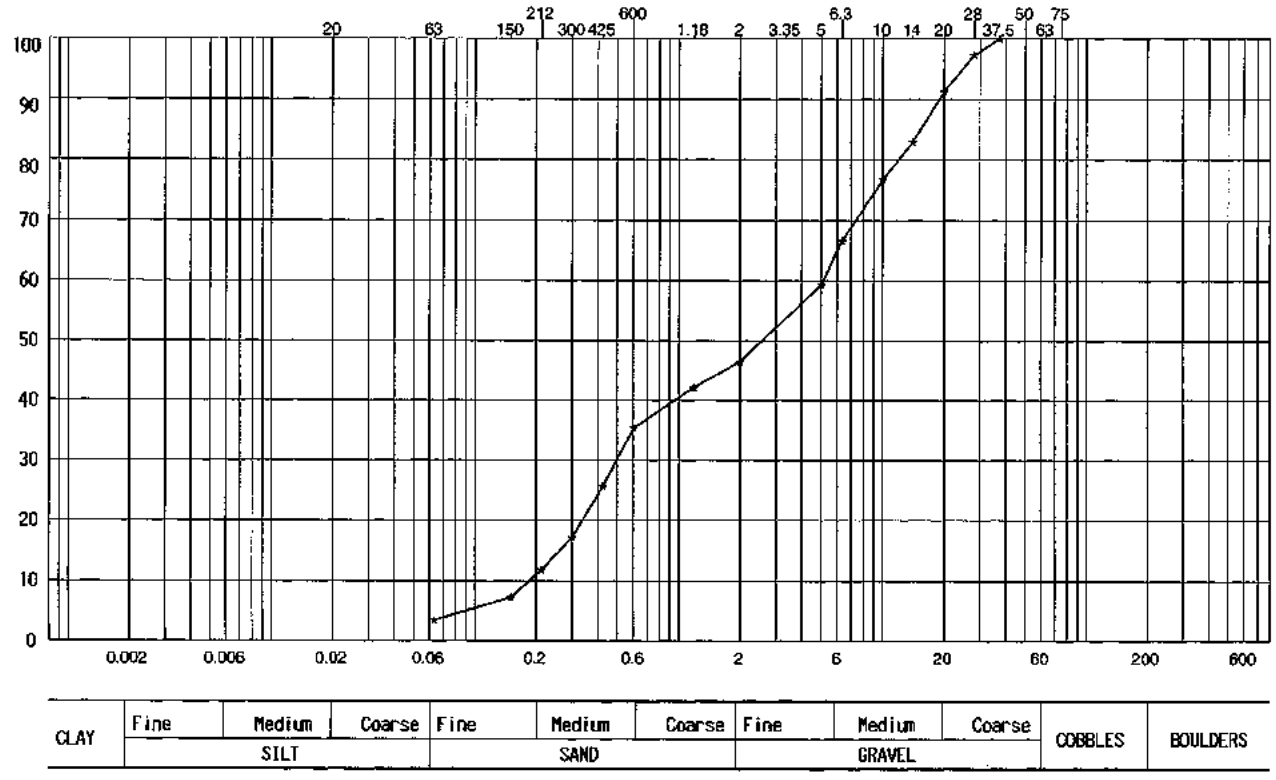
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC05	0.50	B1	MADE GROUND comprising dark brown slightly clayey slightly silty sand, concrete fragments, black, brown and white subangular and subrounded flint gravel, occasional soft dark brown clay lumps and rare metal and asphalt fragments	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)													Size (mm)										
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	3	7	12	17	26	35	42	46	59	67	77	83	91	97	100	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 4 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

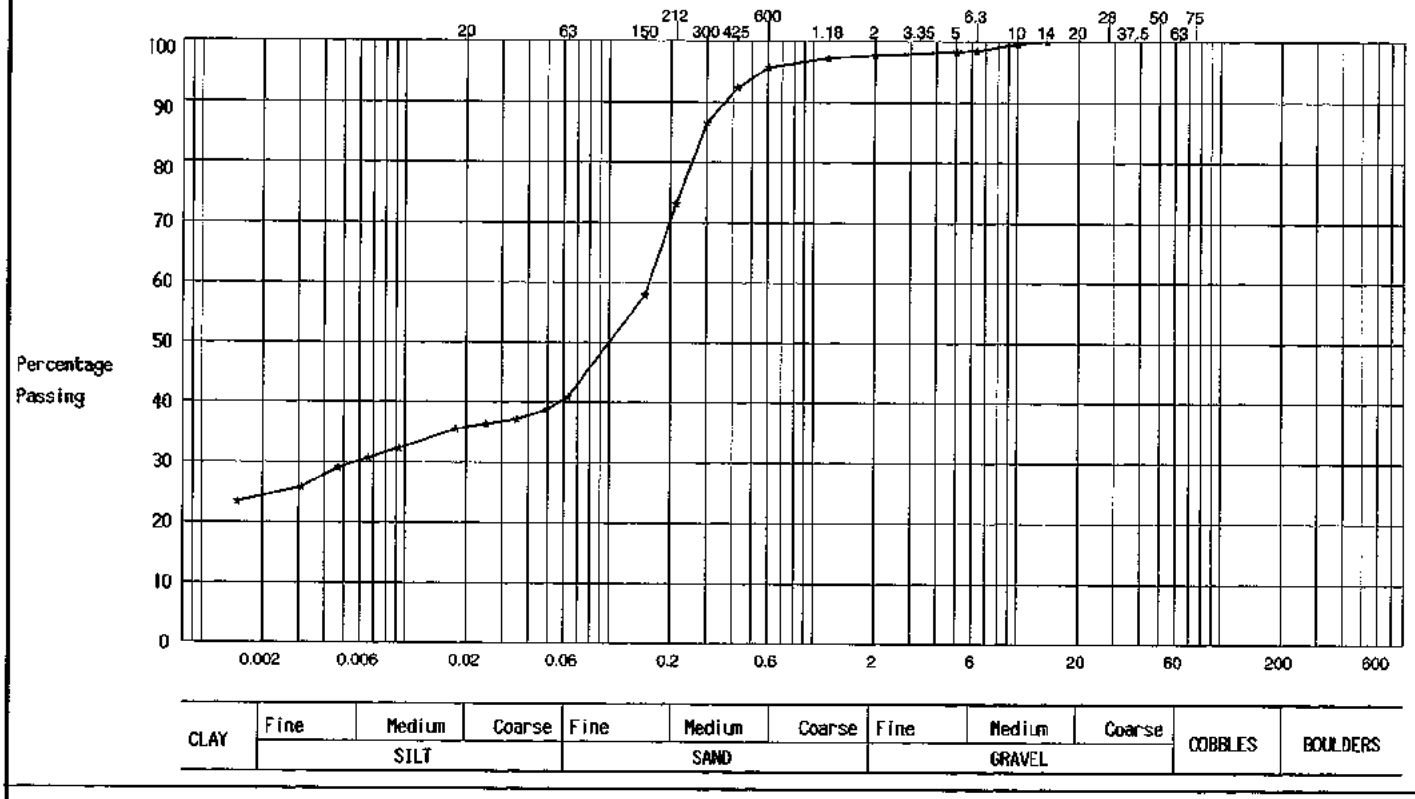
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC05	1.10	B3	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

Size (microns)																	Size (mm)										
Sieve Size				1.5	3.1	4.7	6.6	9.3	17.8	25.	35.3	49.6	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				23	26	29	31	32	35	36	37	39	41	58	73	86	92	96	97	98	98	98	100	100	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 22 of 64

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

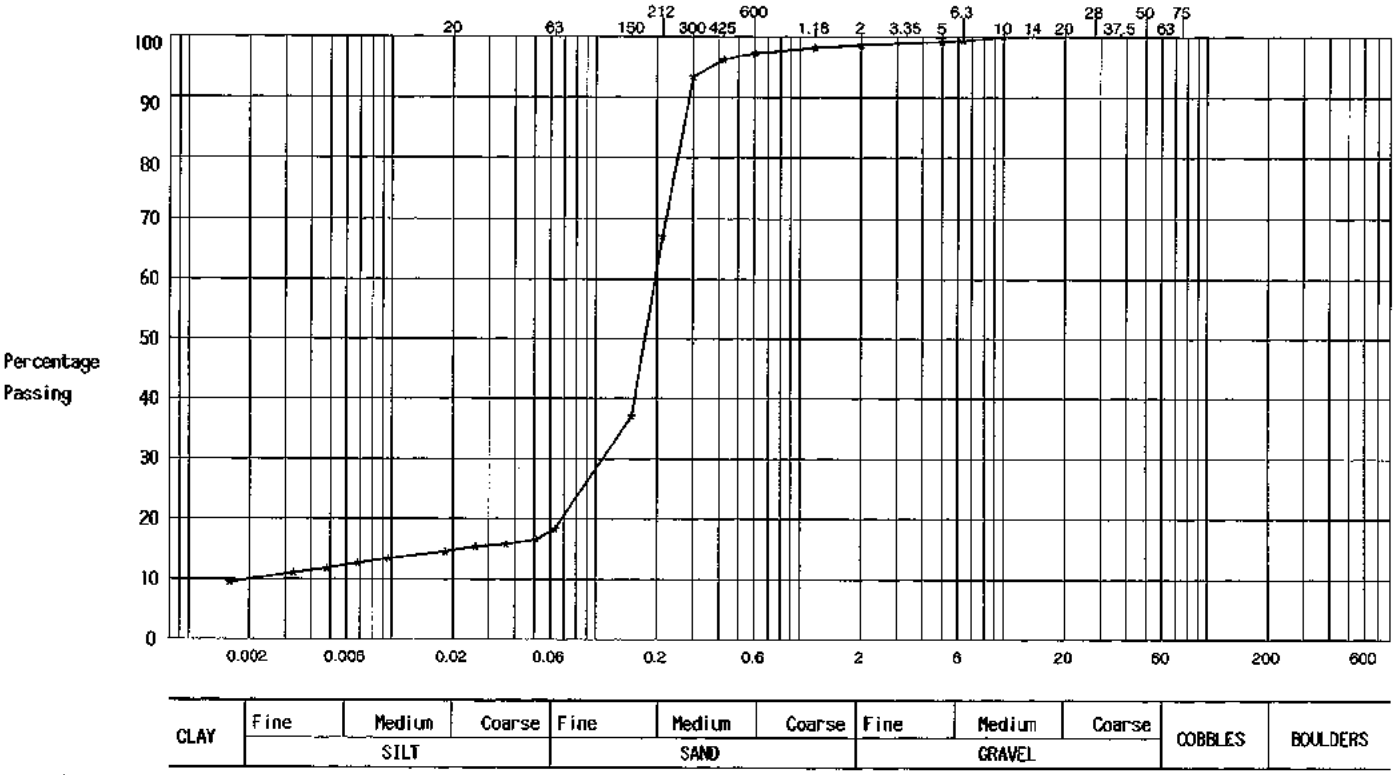
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC05	2.30	B4	Olive brown silty clayey SAND with rare fine and medium gravel	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

Size (microns)																		Size (mm)										
Sieve Size				1.6	3.3	4.8	6.8	9.6	18.4	25.8	36.4	51.1	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				9	11	12	13	13	15	15	16	16	18	37	67	93	96	97	98	99	99	99	100	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 23 of 68

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

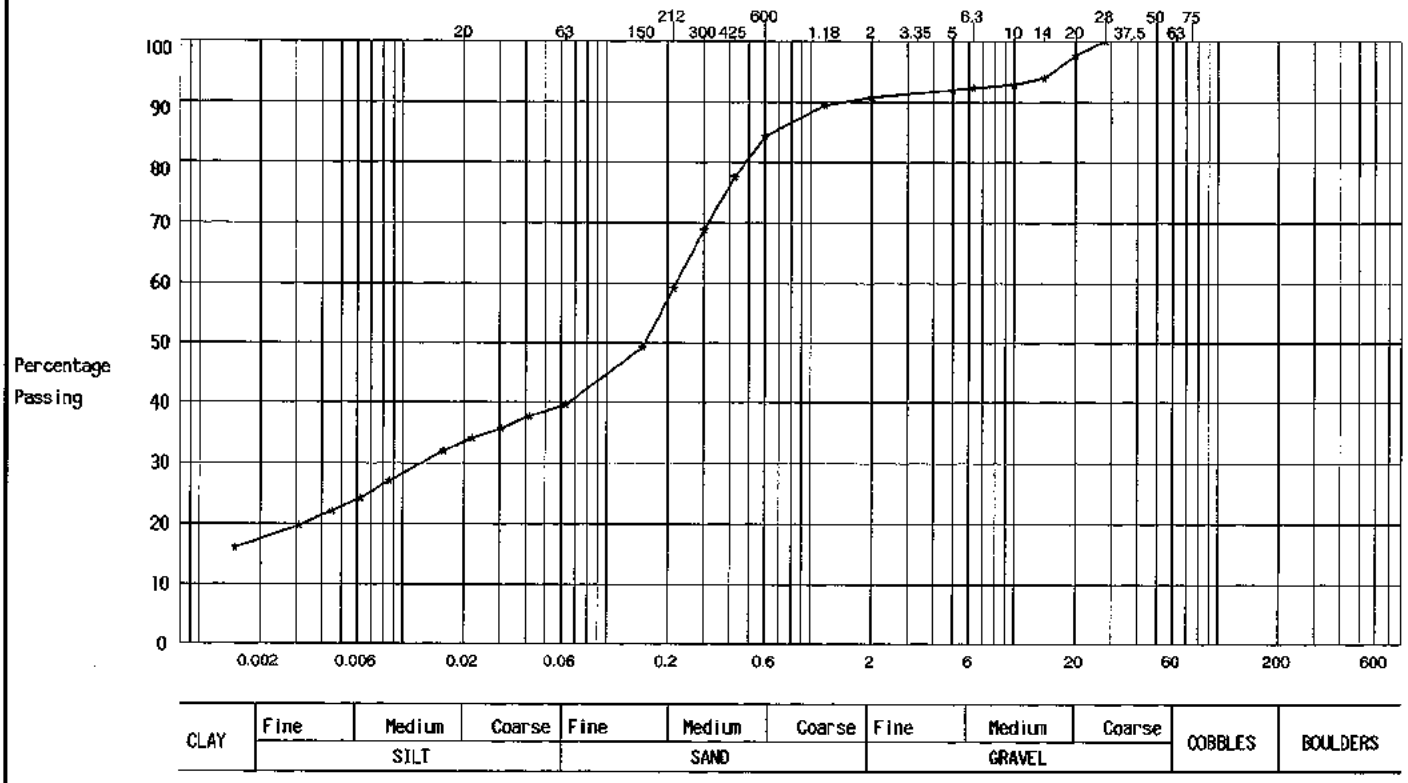
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC05	2.90	B5	Dark brown and brown slightly gravelly sandy silty CLAY. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

	Size (microns)																Size (mm)										
Sieve Size	1.5	3.1	4.5	6.2	8.6	15.8	21.9	30.4	42	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	16	20	22	24	27	32	34	36	38	40	49	59	69	78	84	89	91	92	92	93	94	98	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 24 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

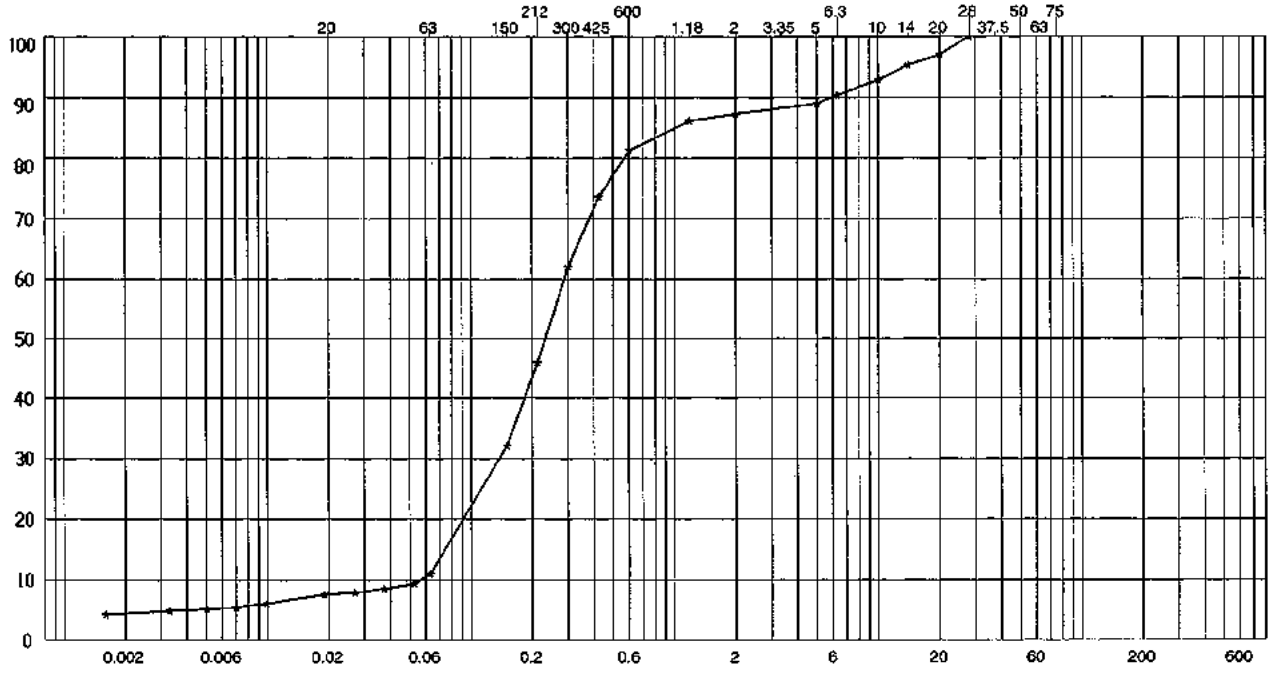
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC06	0.70	B1	Brown clayey silty gravelly SAND with rare ceramic fragments. Gravel is brown subangular flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

	Size (microns)																Size (mm)										
Sieve Size	1.6	3.3	5	7	9.9	18.9	26.7	37.4	52.5	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	4	5	5	5	6	8	8	8	9	11	32	46	62	74	81	86	87	89	90	93	95	97	100	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 25 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

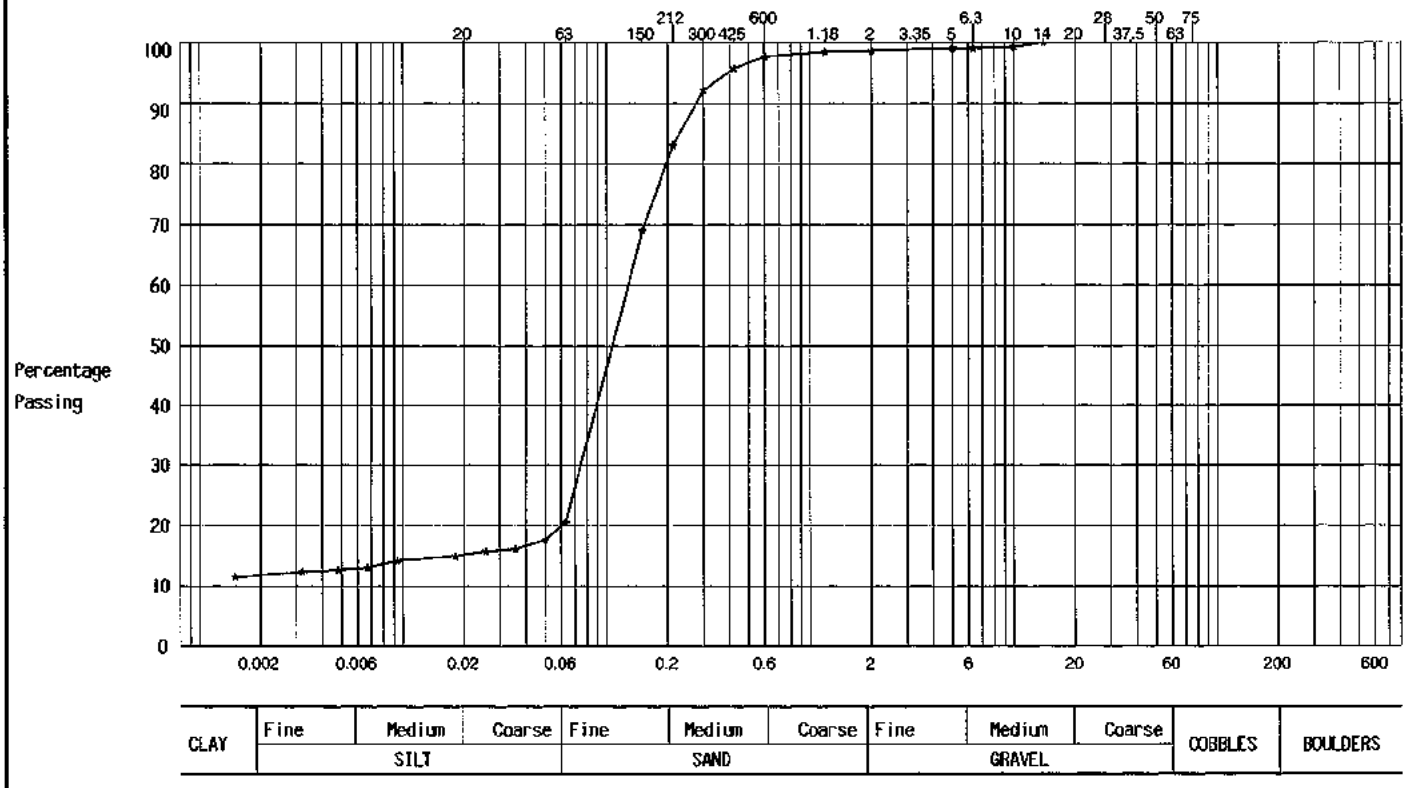
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC06	1.10	B2	Olive brown slightly gravelly silty clayey SAND with occasional brown clay pockets. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Not required

	Size (microns)																Size (mm)										
Sieve Size	1.5	3.2	4.8	6.7	9.4	18.1	25.5	35.8	50	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	11	12	13	13	14	15	16	16	18	20	69	83	92	96	98	98	99	99	99	99	100	-	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 26 of 61

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

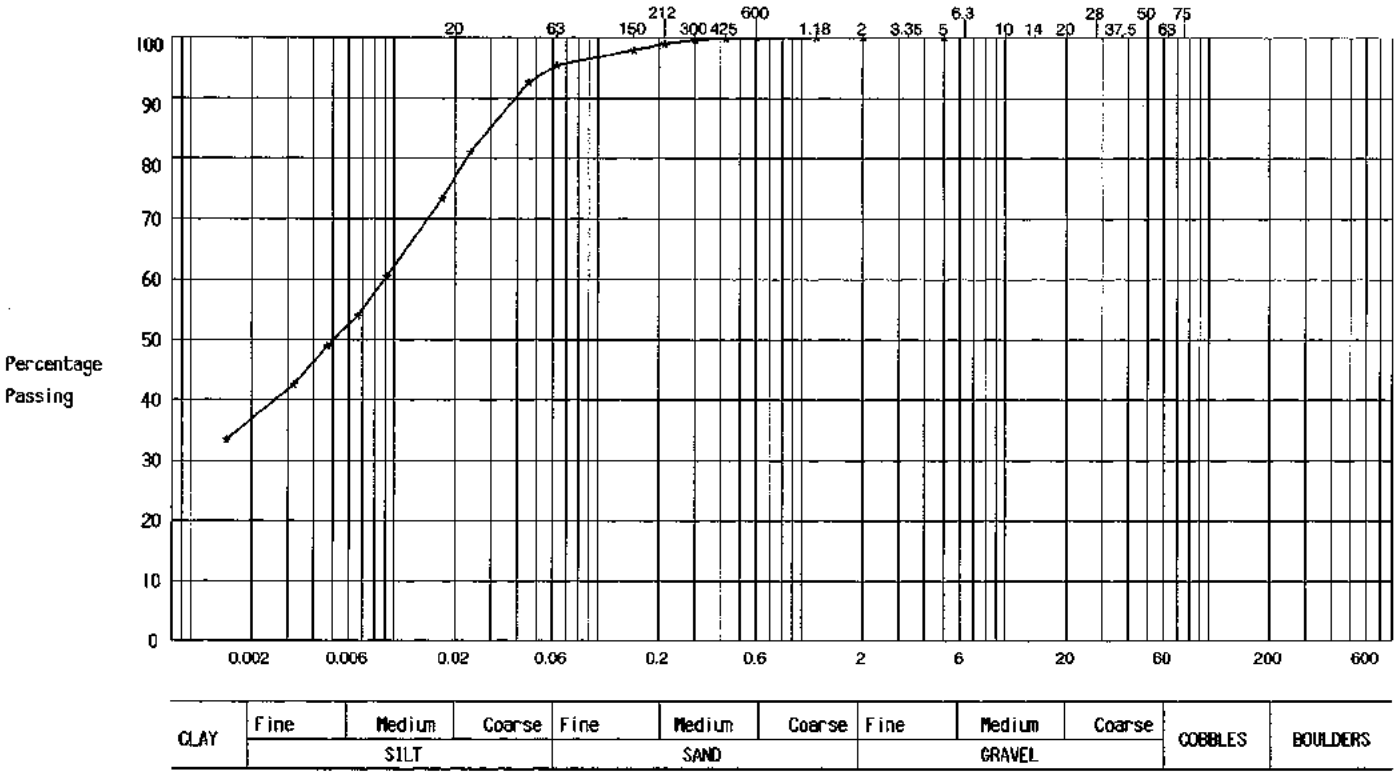
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC06	2.00	B3	Very soft very dark grey organic silty CLAY locally oxidised to brown	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Tested from natural - pretreatment for organics not carried out

Size (microns)																	Size (mm)										
Sieve Size					1.5	3.2	4.7	6.6	9.2	17.2	23.7	45.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					33	42	49	54	60	73	81	93	95	98	99	100	100	100	100	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 27 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

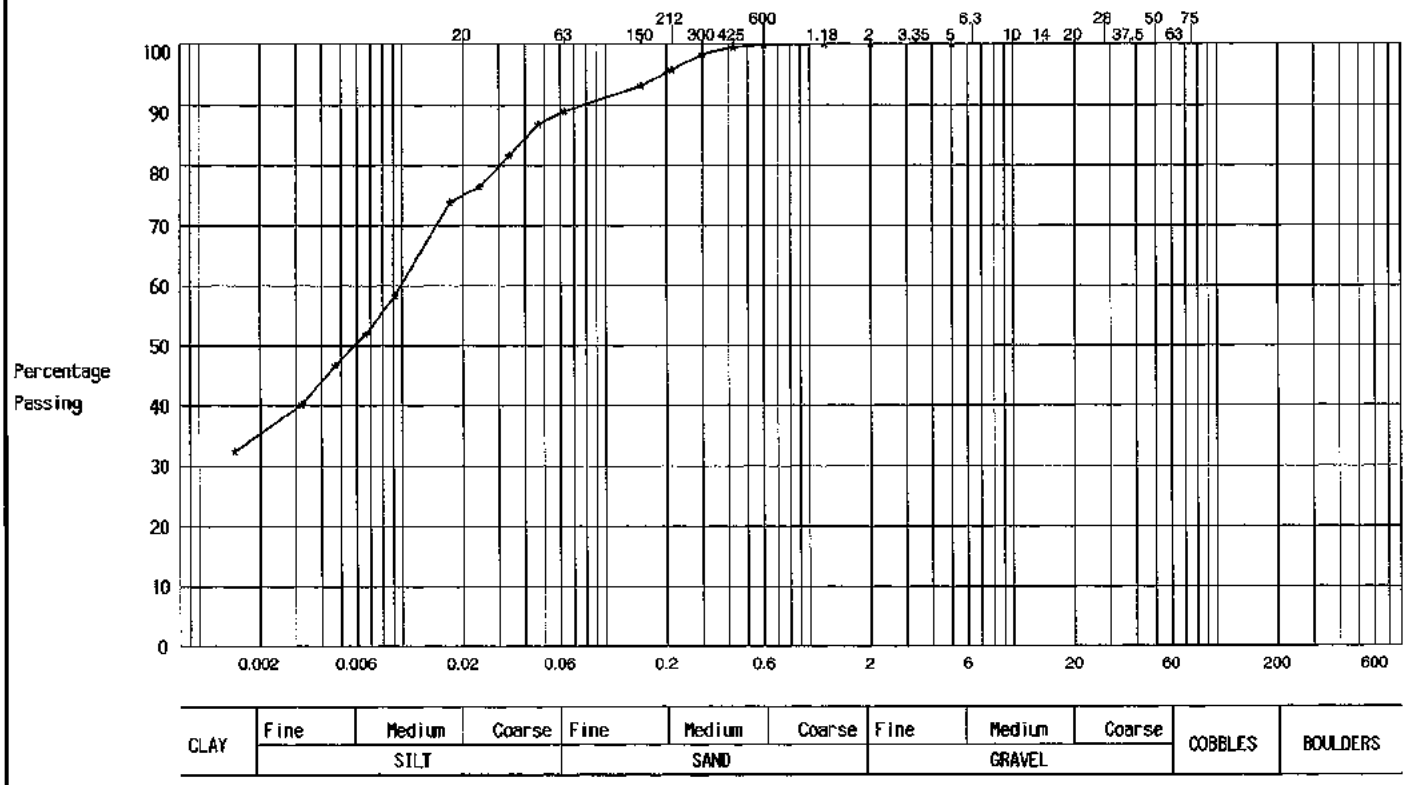
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC06	3.20	B4	Very soft very dark grey organic silty CLAY locally oxidised to brown	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: Tested from natural - pretreatment for organics not carried out

Size (microns)				1.5	3.2	4.7	6.6	9.2	17.2	24.1	33.6	46.8	63	150	212	300	425	600	Size (mm) 1.18	2	5	6.3	10	14	20	28	37.5	50	75
Sieve Size																												
Percentage by Mass passing Sieve				32	40	47	52	58	74	76	82	87	89	93	96	98	99	100	100	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 28 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

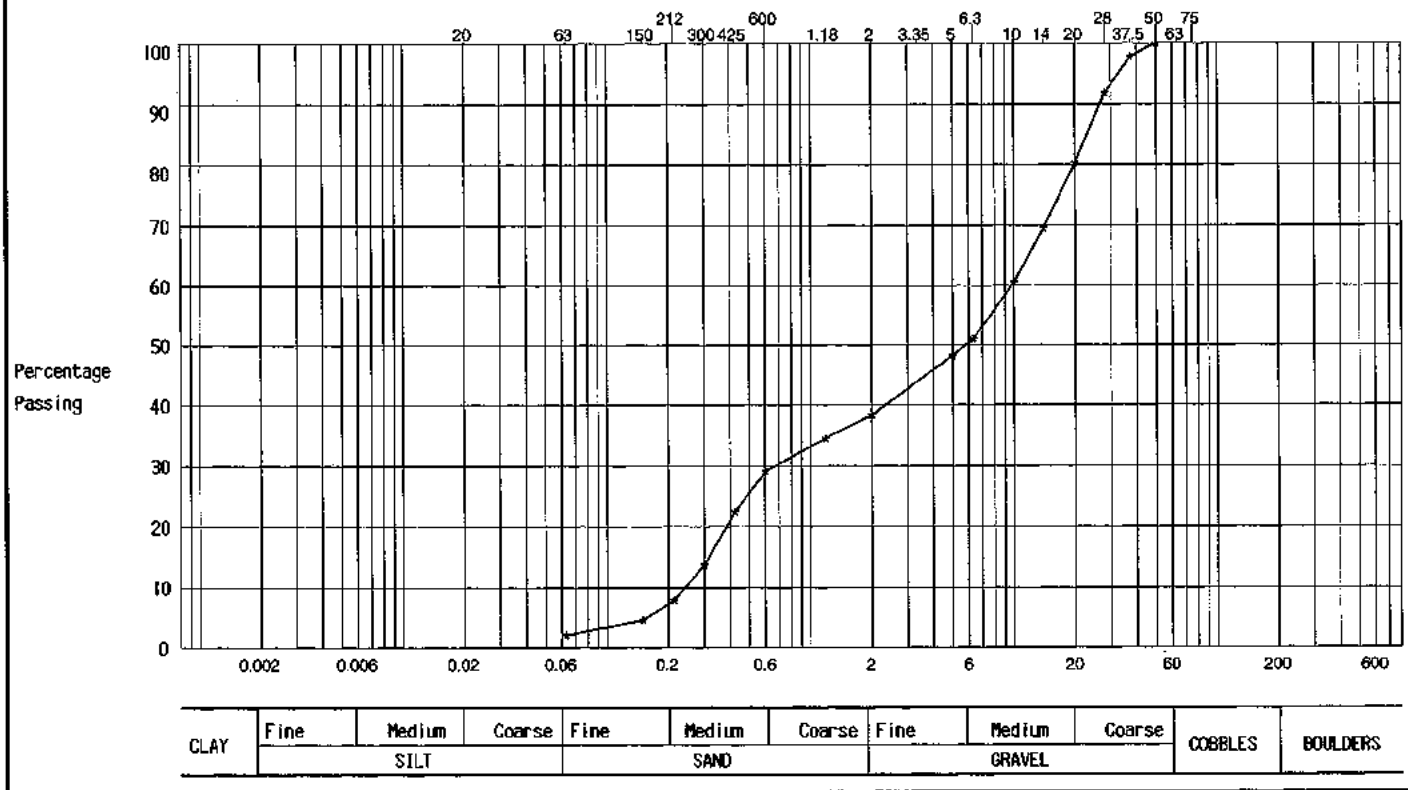
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC101	0.30	B1	Black, white and brown slightly silty very sandy subangular and subrounded flint GRAVEL with rare concrete fragments. Sand is dark orangish brown	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)																Size (mm)										
Sieve Size													63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve													2	5	8	14	22	29	34	38	48	51	60	70	80	92	98	100	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 27 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

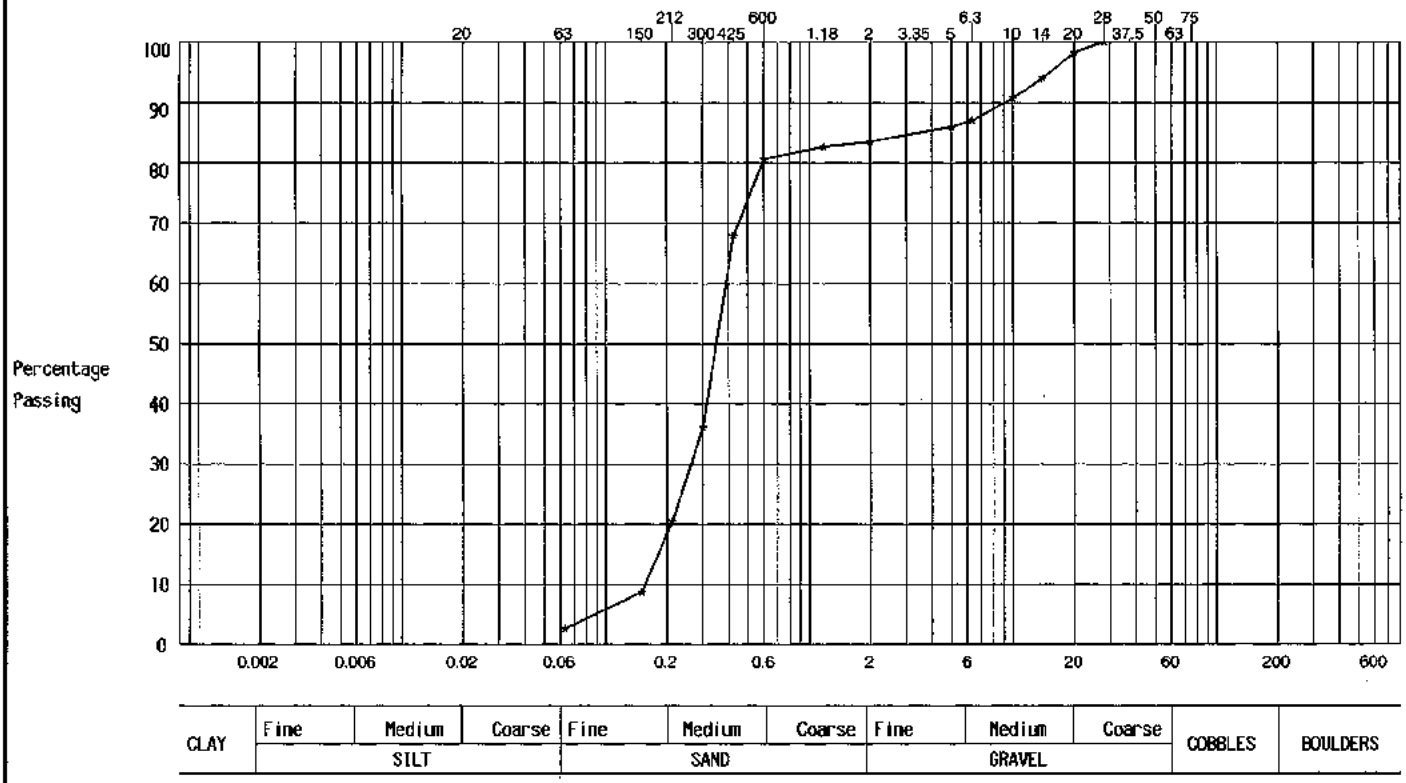
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC101	0.80	B2	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)													Size (mm)										
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	3	9	20	36	68	81	83	83	86	87	91	94	98	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 30 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC101	1.80	B3	Olive brown slightly silty slightly gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

| Size (microns) | | |

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 31 of 78

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

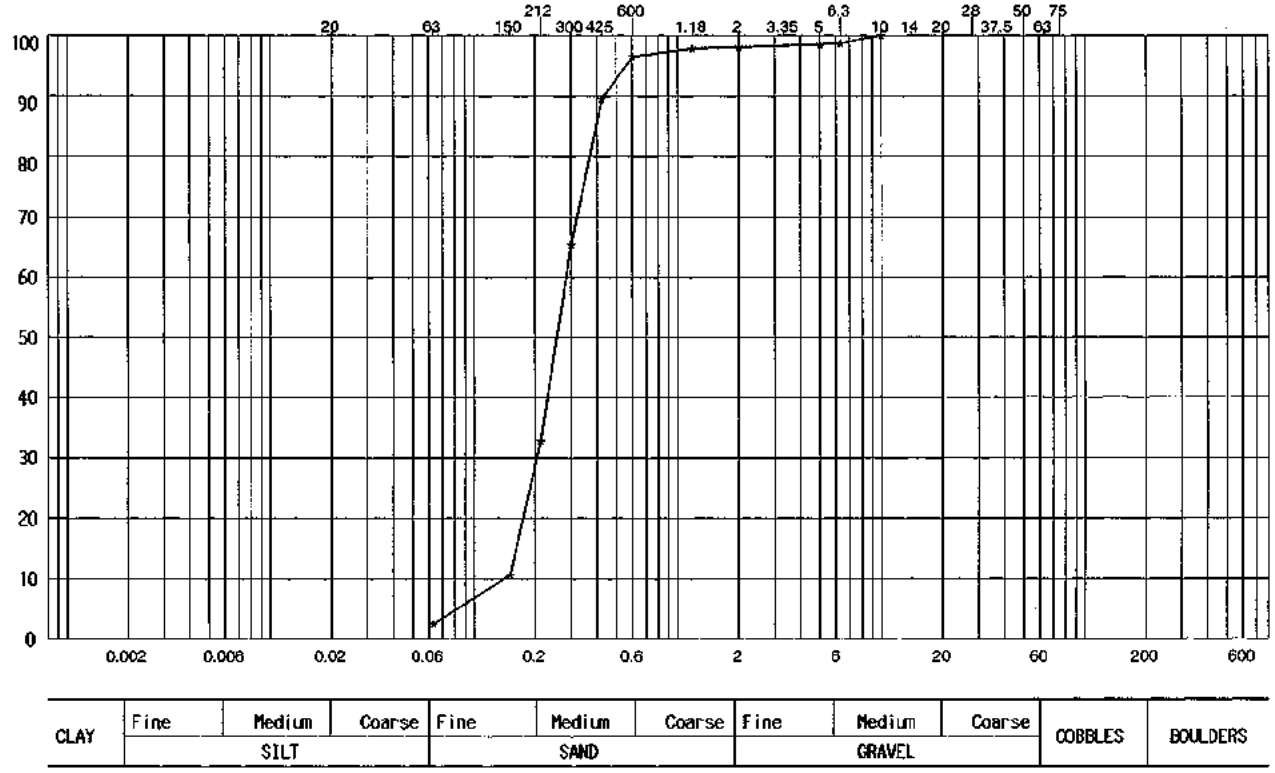
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC102	0.50	B1	Dark orangish brown slightly gravelly slightly silty SAND. Gravel is brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)																Size (mm)										
Sieve Size												63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve												2	11	33	65	89	96	98	98	98	99	100	-	-	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 32 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

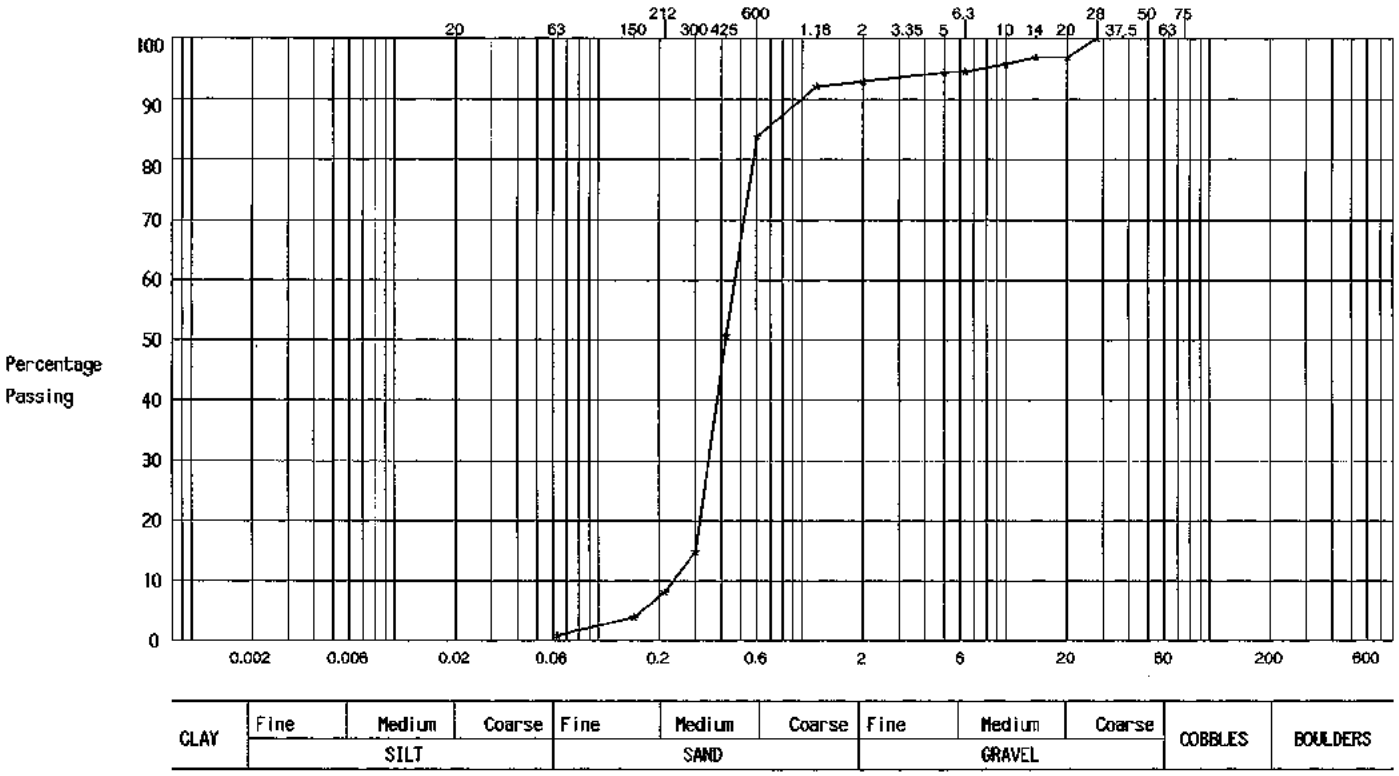
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC102	1.60	B2	Pale yellowish brown slightly silty gravelly SAND. Gravel is black and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)							Size (mm)									
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	1	4	8	15	51	84	92	93	94	94	96	97	97	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 33 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC103	0.50	B1	Very dark brown silty very gravelly SAND with rare soft very dark brown clay lumps and brick, glass, concrete and ceramic fragments. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

| Size (microns) | | |

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 34 of 68

Contract: Lake Lothing

Serial No.: S31644-1

UKAS TESTING 0998

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC103	1.50	B3	Dark brown slightly silty very gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

| Size (microns) | | |

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 35 of 64

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

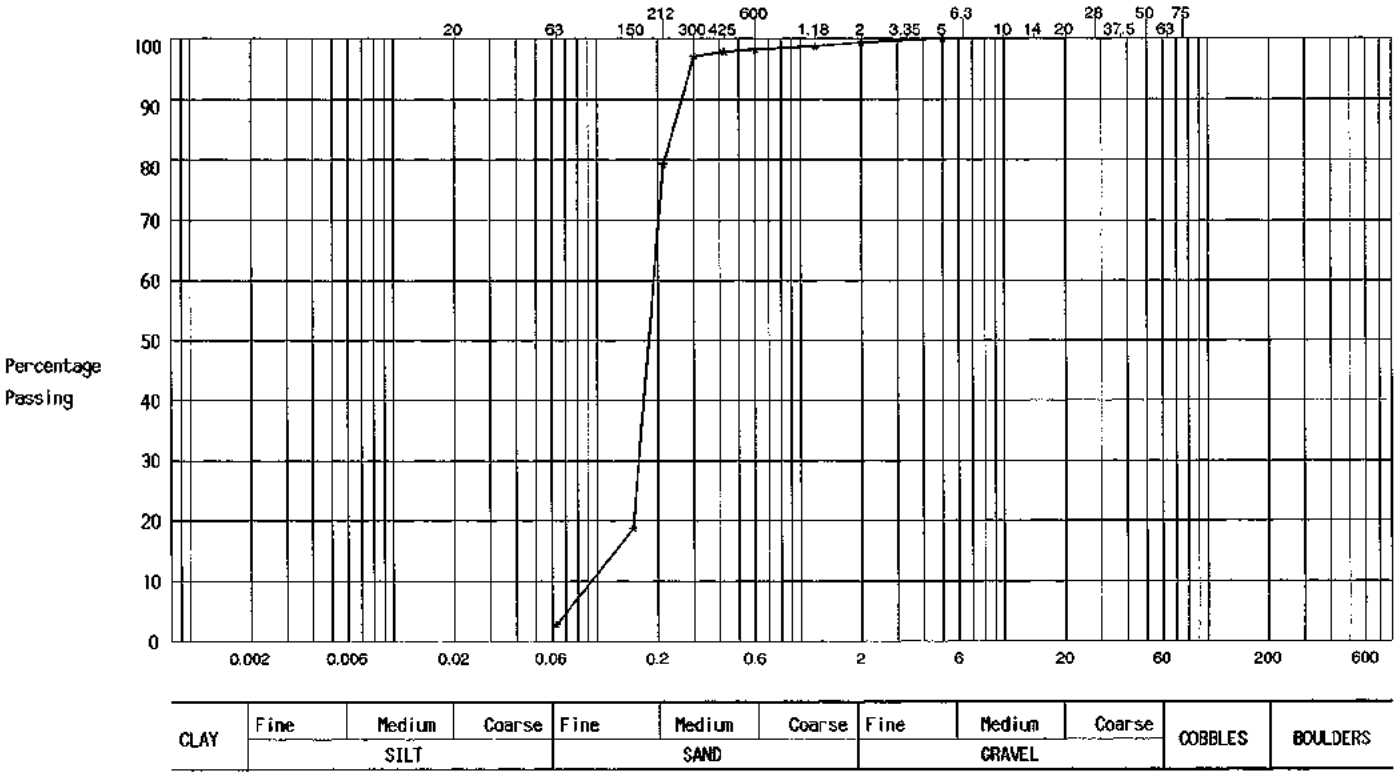
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC103	2.00	B4	Light brownish grey slightly silty SAND with rare flint gravel	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)													Size (mm)											
Sieve Size													63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve													3	19	79	97	98	98	99	99	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 36 of 61

Contract Lake Lothing

Serial No. S31644-1

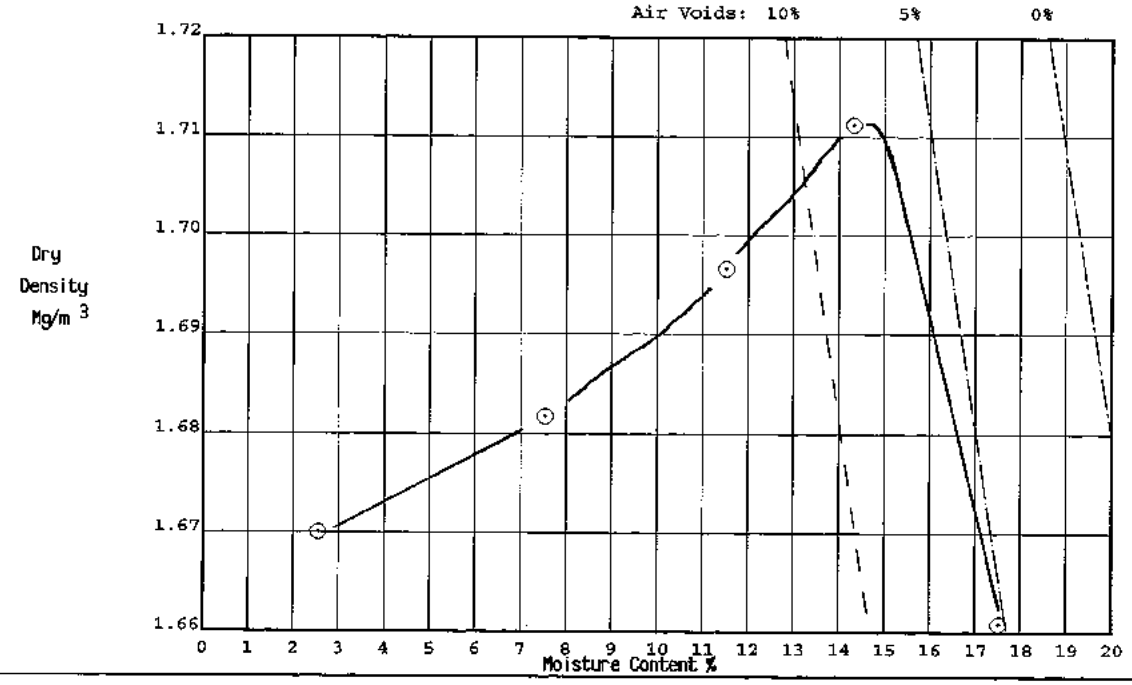
UKAS TESTING D998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC01	0.55	B1	2.6	Pale yellowish brown slightly gravelly slightly silty SAND. Gravel is black, brown and white subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	0.0 %	Single or separate samples	Single.
Grading Zone	1	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.3).

MAX DRY DENSITY 1.71 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 15 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 37 of 68

Contract Lake Lothing

Serial No. S31644-1

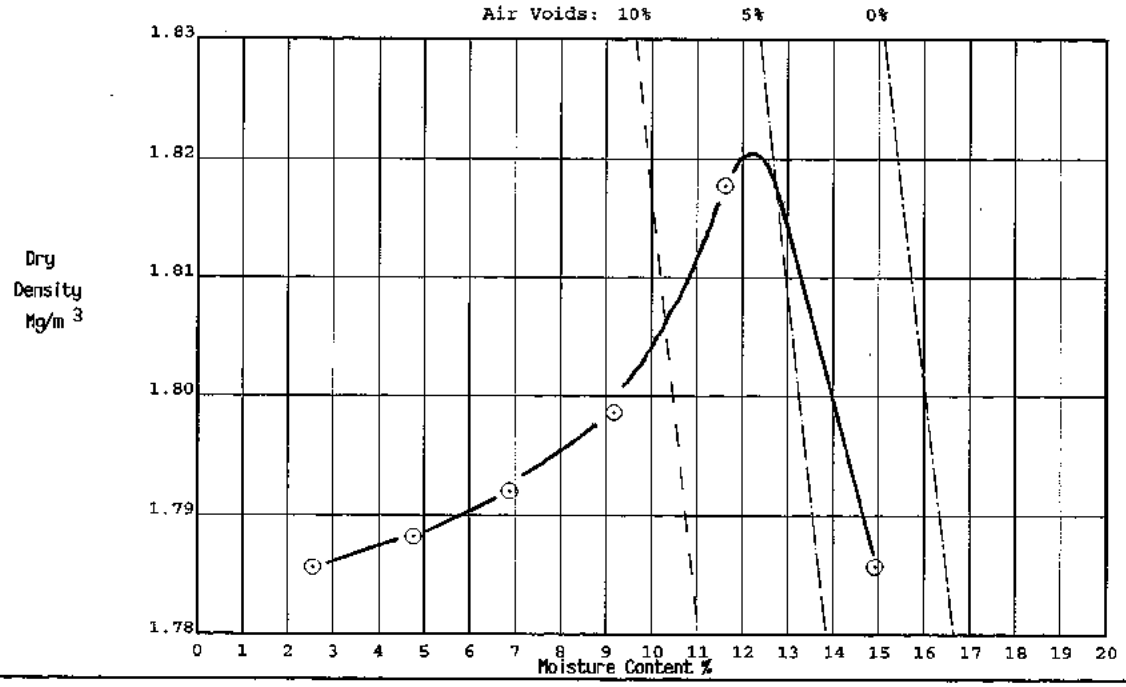
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC01	2.70	B3	2.6	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	2.0 %	Single or separate samples	Single.
Grading Zone	2	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 1.82 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 12 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 38 of 68

Contract: Lake Lothing

Serial No.: S31644-1

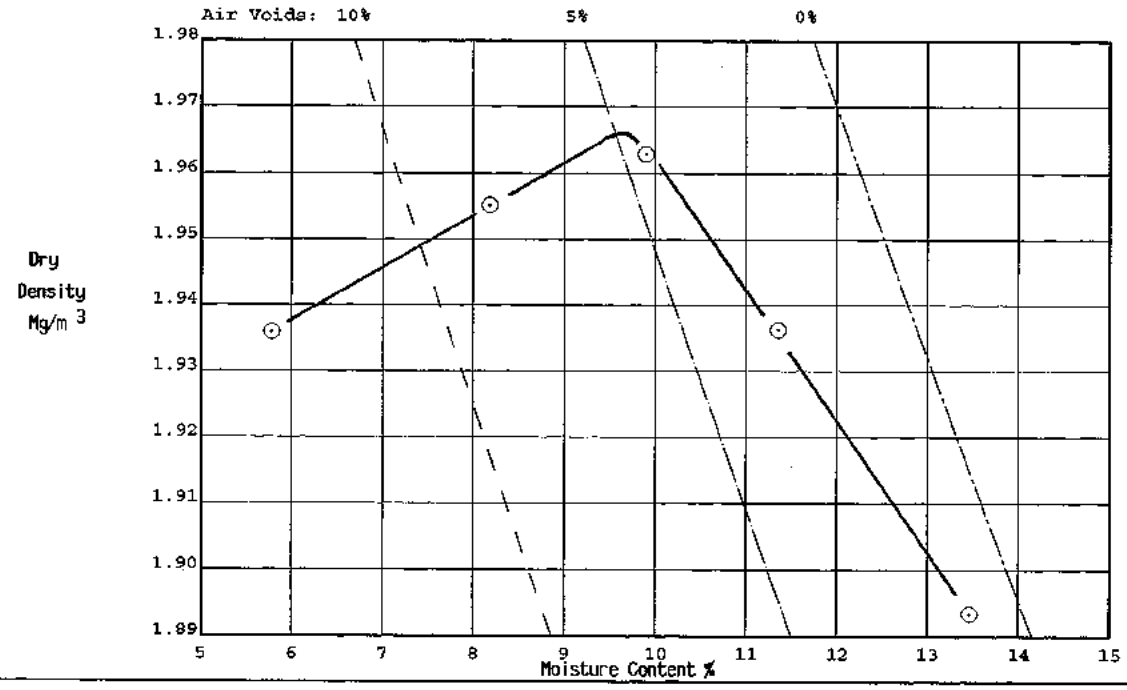
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC03	0.50	B1	5.8	Dark brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	3.0 %	Single or separate samples	Single.
Grading Zone	2	Particle density	2.58 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.3).

MAX DRY DENSITY 1.97 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 9.8 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 39 of 68

Contract: Lake Lothing

Serial No.: S31644-1

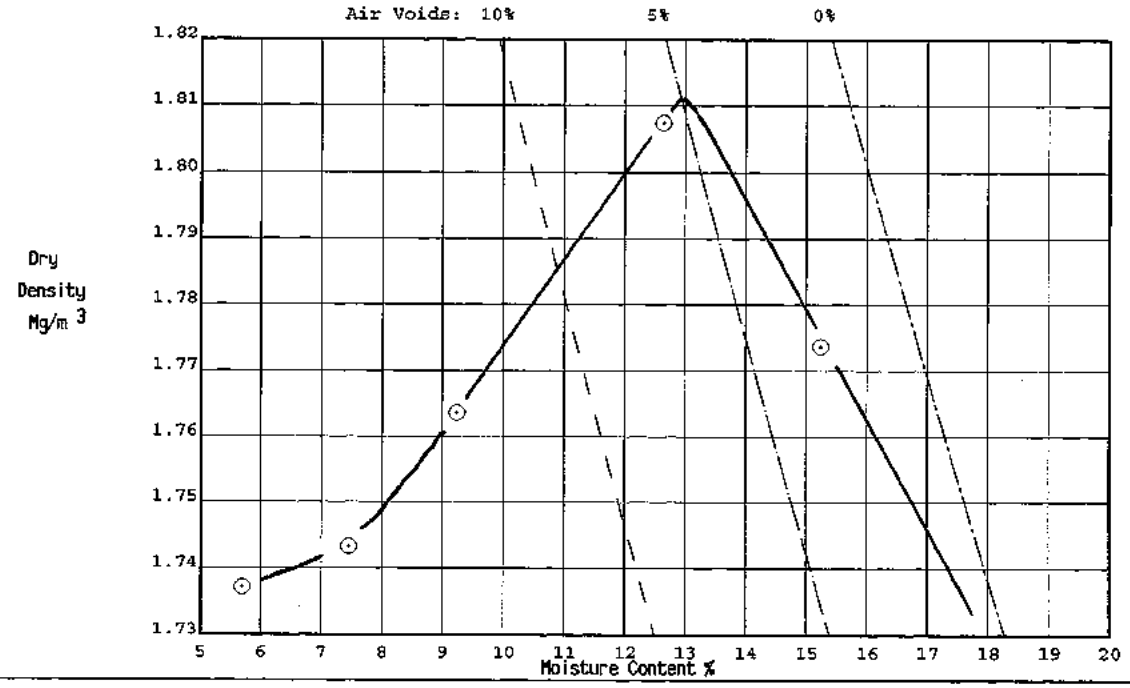
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC03	1.10	B2	12	Light brown slightly gravelly SAND. Gravel is fine to coarse flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	1.0 %	Single or separate samples	Single.
Grading Zone	2	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 1.81 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 13 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 40 of 68

Contract Lake Lothing

Serial No. S31644-1

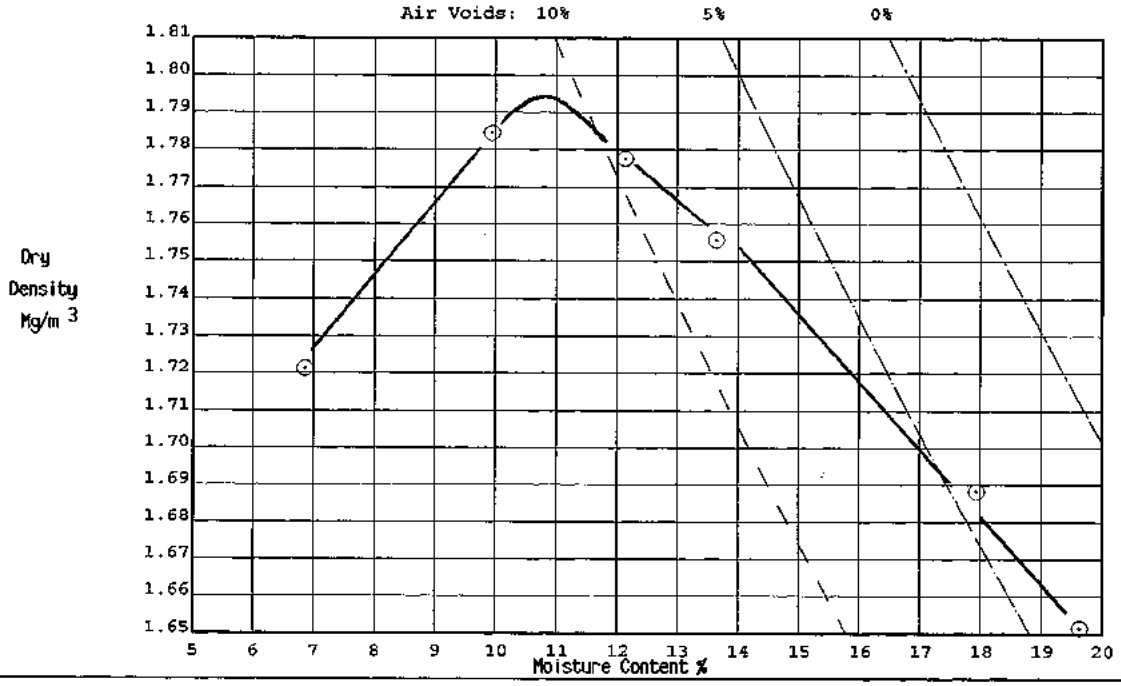
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC04	0.55	B1	18	Dark brown slightly clayey silty very gravelly SAND with occasional brick and concrete fragments. Gravel is black and brown subangular and subrounded flint	

Percentage retained 37.5mm	3.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	7.0 %	Single or separate samples	Single.
Grading Zone	4	Particle density	2.58 Assumed
Mould Type	CBR.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.4).

MAX DRY DENSITY 1.79 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 11 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 41 of 68

Contract Lake Lothing

Serial No. S31644-1

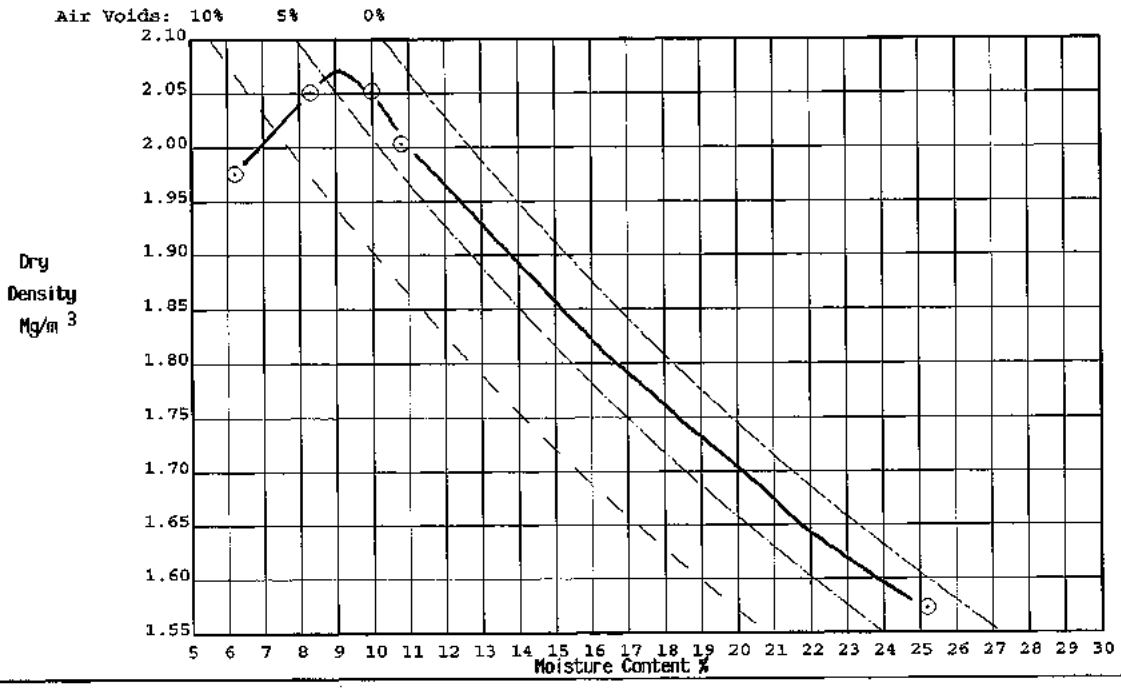
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC04	2.70	B4	25	Dark olive brown slightly gravelly clayey silty SAND with occasional pockets of dark brown clay (possibly organic). Gravel is black, white and brown subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	20 mm
Percentage retained 20.0mm	4.0 %	Single or separate samples	Single.
Grading Zone	2	Particle density	2.68 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 2.07 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 9.0 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 42 of 68

Contract Lake Lothing

Serial No. S31644-1

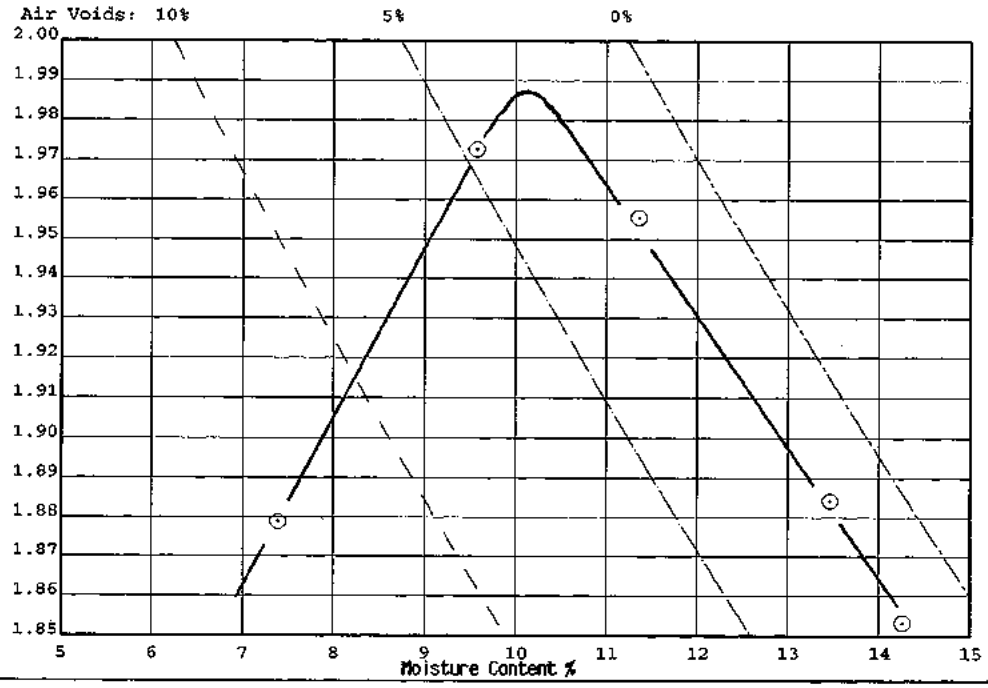
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC05	0.50	B1	9.6	MADE GROUND comprising dark brown slightly clayey slightly silty sand, concrete fragments, black, brown and white subangular and subrounded flint gravel, occasional soft dark brown clay lumps and rare metal and asphalt fragments	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	9.0 %	Single or separate samples	Single.
Grading Zone	3	Particle density	2.58 Assumed
Mould Type	CBR.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.4).

MAX DRY DENSITY 1.99 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 10 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 43 of 68

Contract Lake Lothing

Serial No. S31644-1

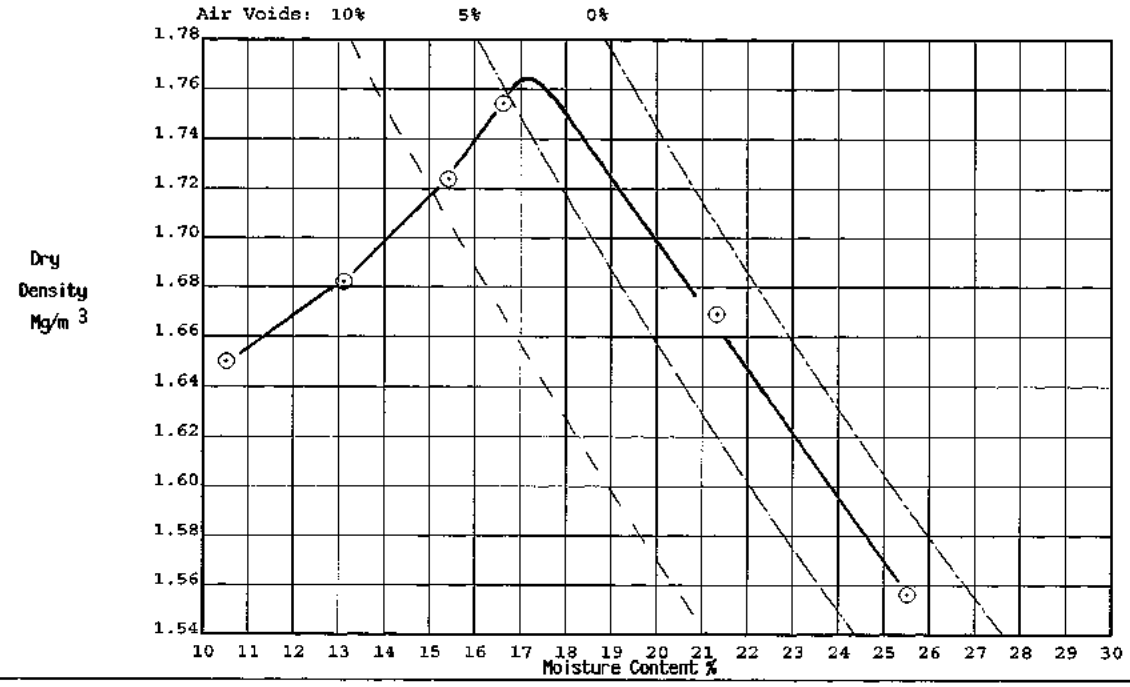
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC05	1.10	B3	26	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	20 mm
Percentage retained 20.0mm	0.0 %	Single or separate samples	Single.
Grading Zone	1	Particle density	2.68 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.3).

MAX DRY DENSITY 1.76 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 17 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 44 of 68

Contract Lake Lothing

Serial No. S31644-1

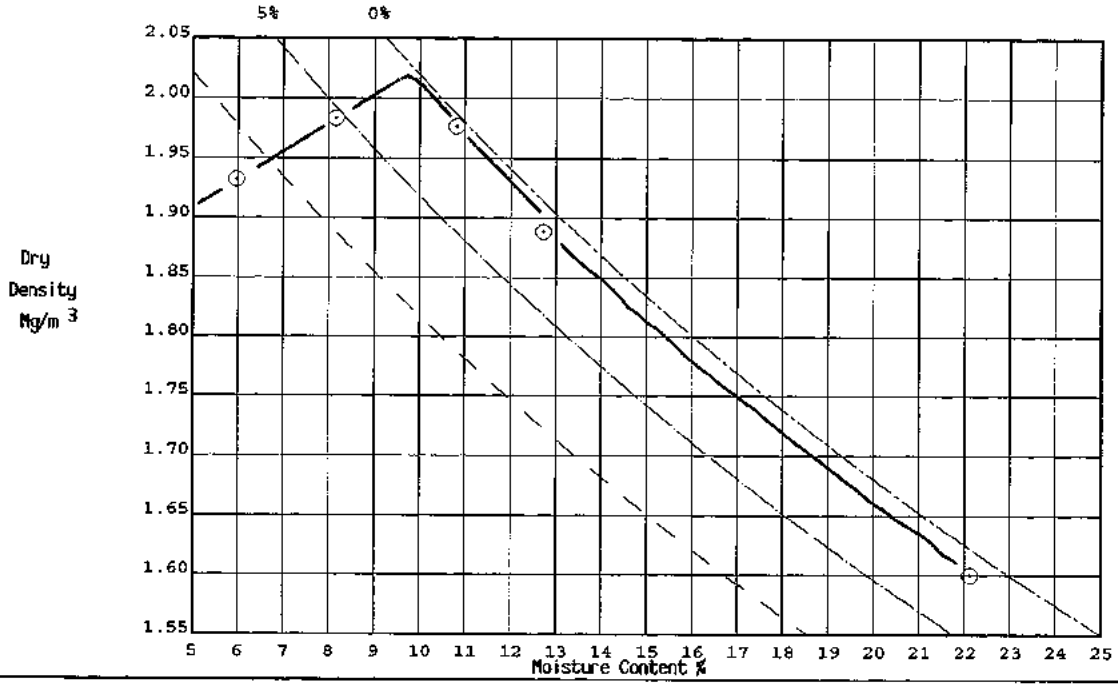
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC05	2.30	B4	22	Olive brown silty clayey SAND with rare fine and medium gravel	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	0.0 %	Single or separate samples	Single.
Grading Zone	1	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 2.02 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 9.7 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 45 of 68

Contract Lake Lothing

Serial No. S31644-1

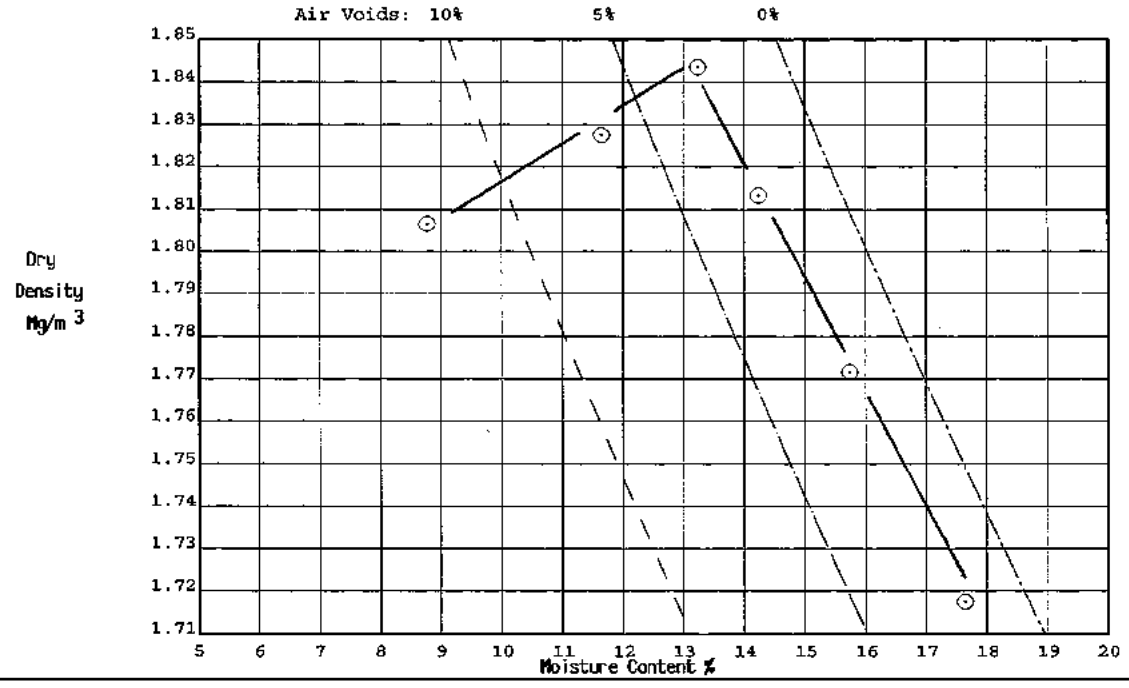
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC06	0.70	B1	14	Brown clayey silty gravelly SAND with rare ceramic fragments. Gravel is brown subangular flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	3.0 %	Single or separate samples	Single.
Grading Zone	2	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.3).

MAX DRY DENSITY 1.84 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 13 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 46 of 68

Contract Lake Lothing

Serial No. S31644-1

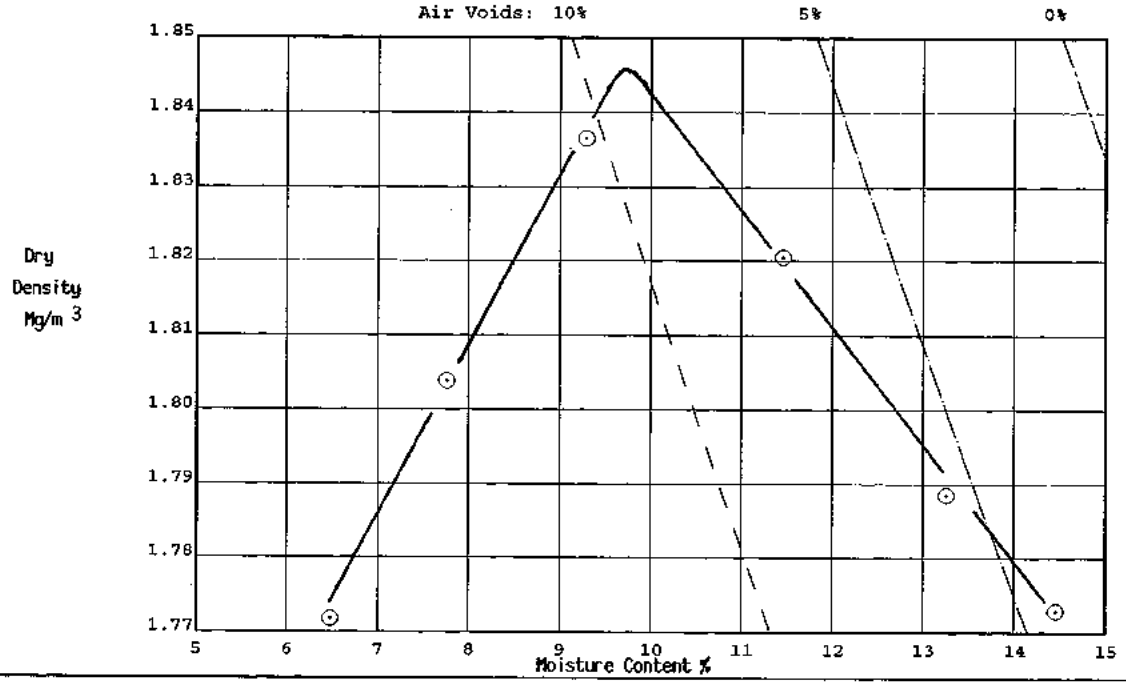
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC101	0.80	B2	6.5	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	2.0 %	Single or separate samples	Single.
Grading Zone	2	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.3).

MAX DRY DENSITY 1.85 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 10 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 47 of 68

Contract Lake Lothing

Serial No. S31644-1

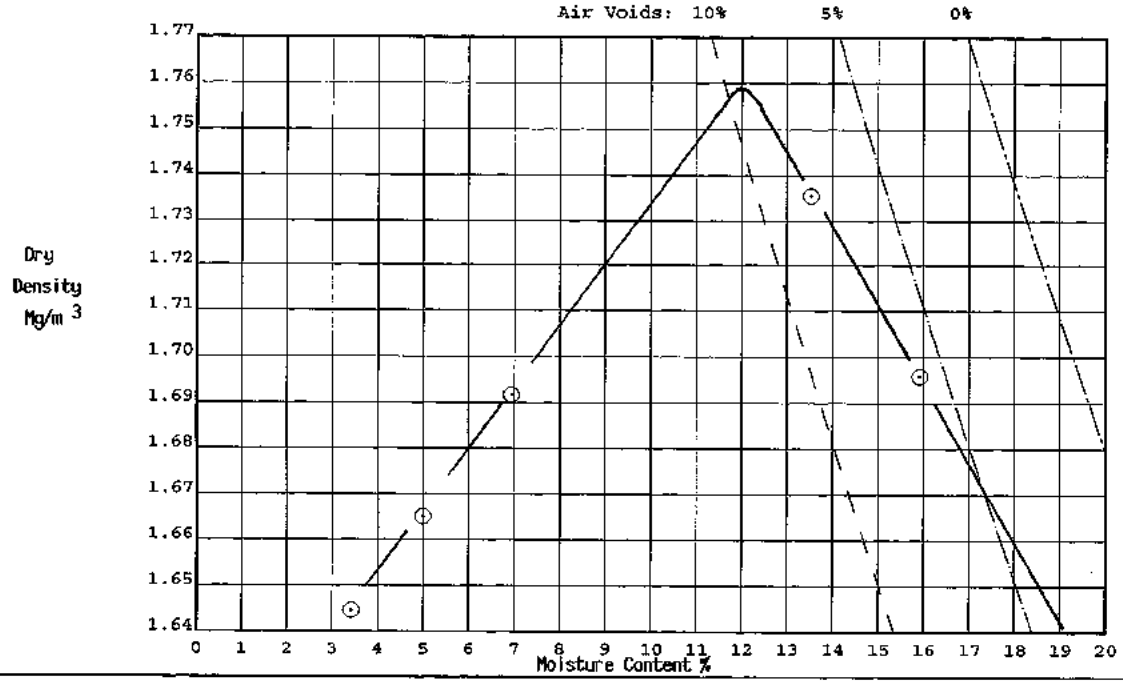
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC102	0.50	B1	3.5	Dark orangish brown slightly gravelly slightly silty SAND. Gravel is brown subangular and subrounded flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	0.0 %	Single or separate samples	Single.
Grading Zone	1	Particle density	2.53 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.3).

MAX DRY DENSITY 1.76 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 12 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 48 of 68

Contract Lake Lothing

Serial No. S31644-1

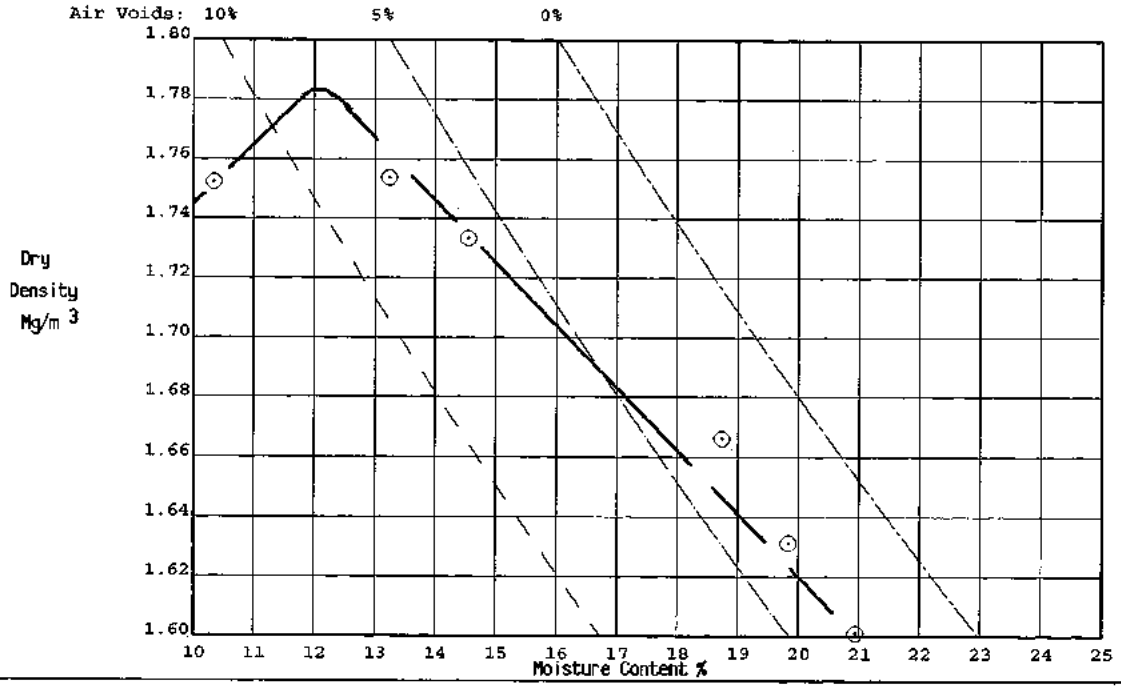
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC103	0.50	B1	19	Very dark brown silty very gravelly SAND with rare soft very dark brown clay lumps and brick, glass, concrete and ceramic fragments. Gravel is black, white and brown subangular and subrounded flint	

Percentage retained 37.5mm	2.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	6.0 %	Single or separate samples	Single.
Grading Zone	4	Particle density	2.53 Assumed
Mould Type	CBR.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.4).

MAX DRY DENSITY 1.78 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 12 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 49 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC01	0.55	B1	Pale yellowish brown slightly gravelly slightly silty SAND. Gravel is black, brown and white subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=18% Bottom=18%

Moisture Content % TOP: 14 BOTTOM: 14 Average: 14

Bulk Density Mg/m^3 1.87 Dry Density Mg/m^3 1.64

CBR VALUES

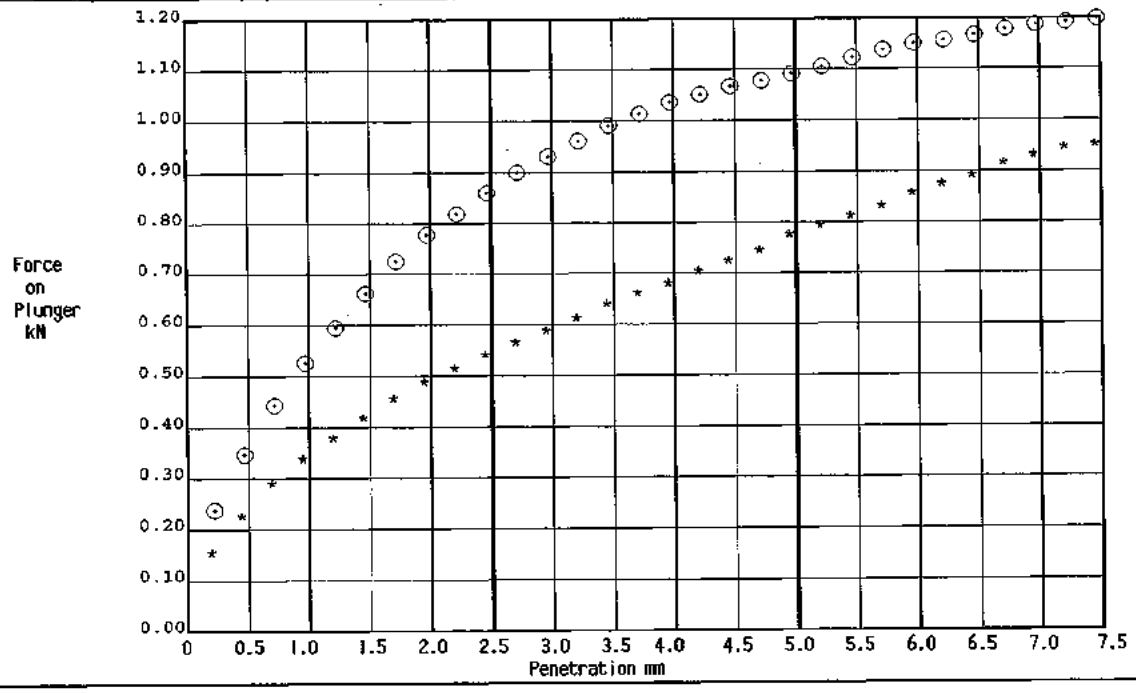
Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	0.53	4.0		4.0	
	5.0	0.77	3.8			
BOTTOM ⊙	2.5	0.86	6.5		6.5	
	5.0	1.09	5.5			

% material retained on 20mm sieve and removed before test : 0

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted to appoximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 50 OF 64 **Pages**

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

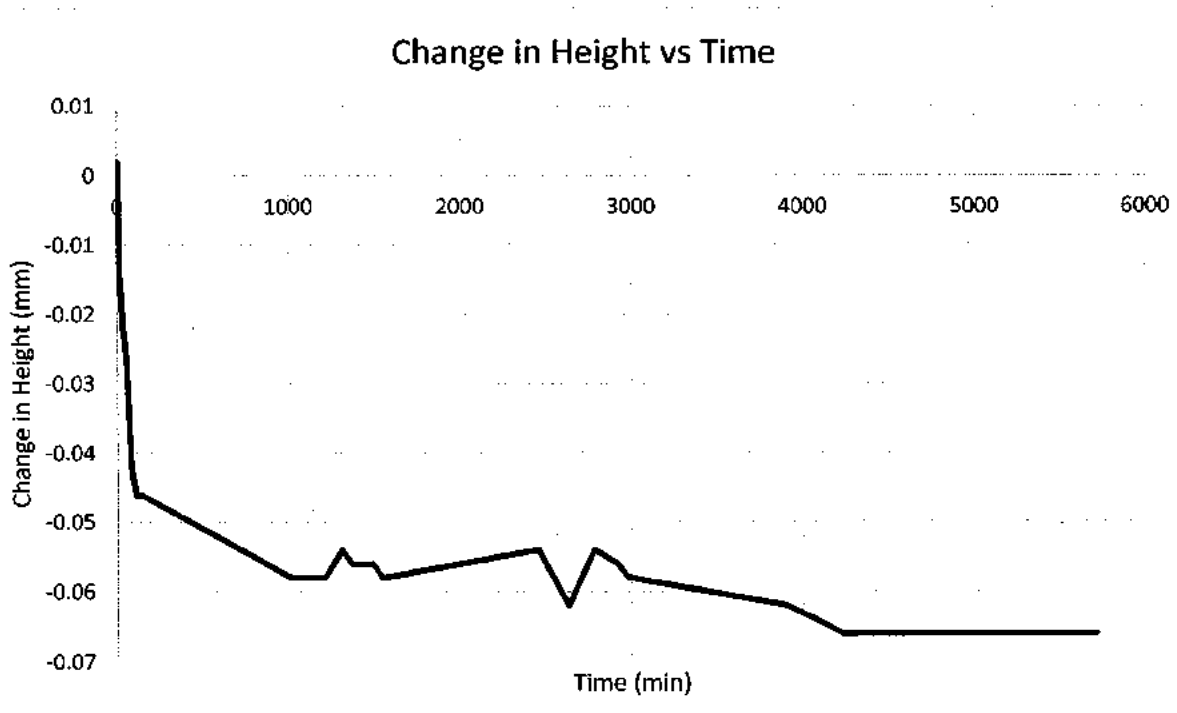
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC01	0.55	B1	Pale yellowish brown slightly gravelly slightly silty SAND. Gravel is black, brown and white subangular and subrounded flint	

After Soaking

Moisture Contents	Top 18%	Bottom 18%	Bulk Density 1.93Mg/m^3	Dry Density 1.64 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height -0.066mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 5 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC03	0.50	B1	Dark brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=14% Bottom=12%

Moisture Content % TOP: 9.5 BOTTOM: 9.5 Average: 9.6

Bulk Density Mg/m^3 2.06

Dry Density Mg/m^3 1.88

CBR VALUES

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	1.14	8.6		8.9	
	5.0	1.77	8.9			
BOTTOM ⊙	2.5	2.21	17		17	
	5.0	3.00	15			

% material retained on 20mm sieve and removed before test : 3

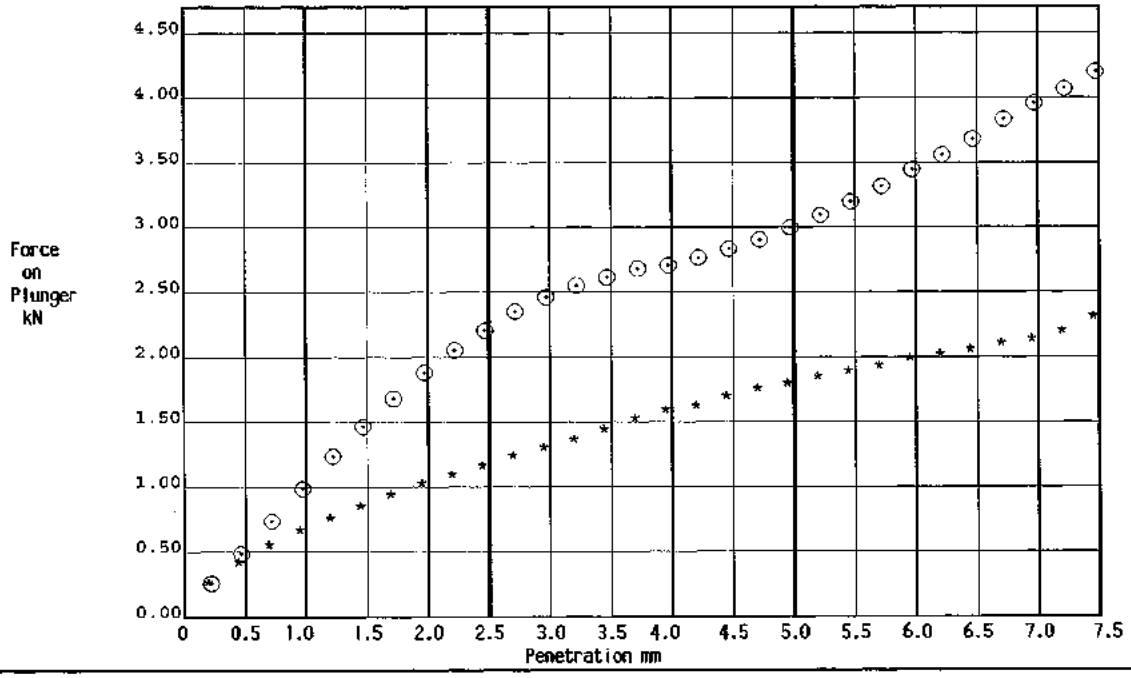
METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 18

Period of Soaking: 4 days

SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted at approximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 52 OF 68 **Pages**

Contract
Lake Lothing

Serial No.
S31644-1

0998

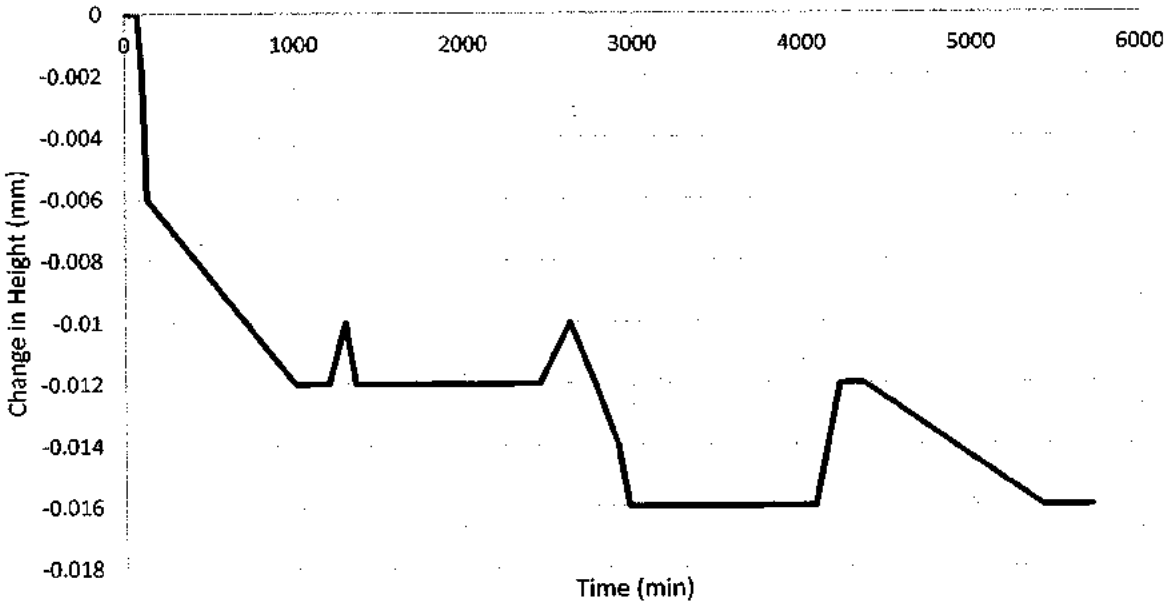
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC03	0.5	B1	Dark brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

After Soaking

Moisture Contents	Top 9.5%	Bottom 9.6%	Bulk Density 2.14Mg/m^3	Dry Density 1.95 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height -0.016mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 5 of 8

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC03	1.10	B2	Light brown slightly gravelly SAND. Gravel is fine to coarse flint	Reported densities and moisture content before soaking. After soaking Top=12% Bottom=12%

Moisture Content % TOP: 12 BOTTOM: 12 Average: 12

Bulk Density Mg/m^3 2.04 Dry Density Mg/m^3 1.82

CBR VALUES

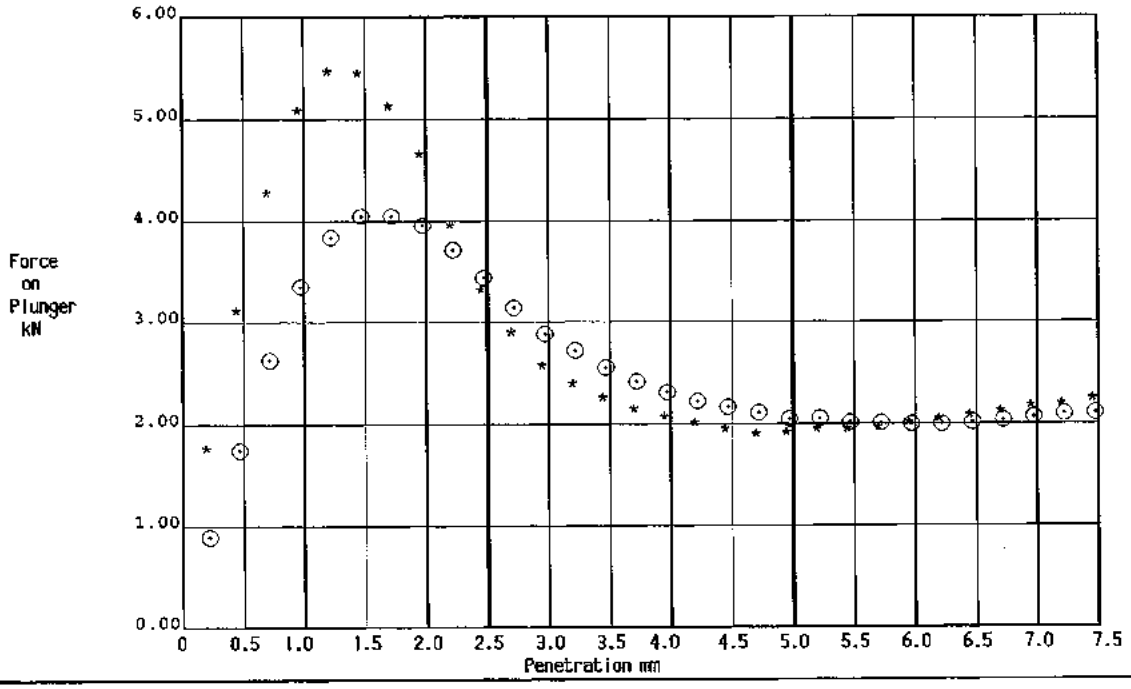
% material retained on 20mm sieve and removed before test : 1

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	3.28	25		25	26
	5.0	1.88	9.4			
BOTTOM ⊙	2.5	3.44	26		26	
	5.0	2.05	10			

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted to approximately 95% Maximum dry density (actually recompacted to 100% in error)

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 54 **OF** 68 **Pages**

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

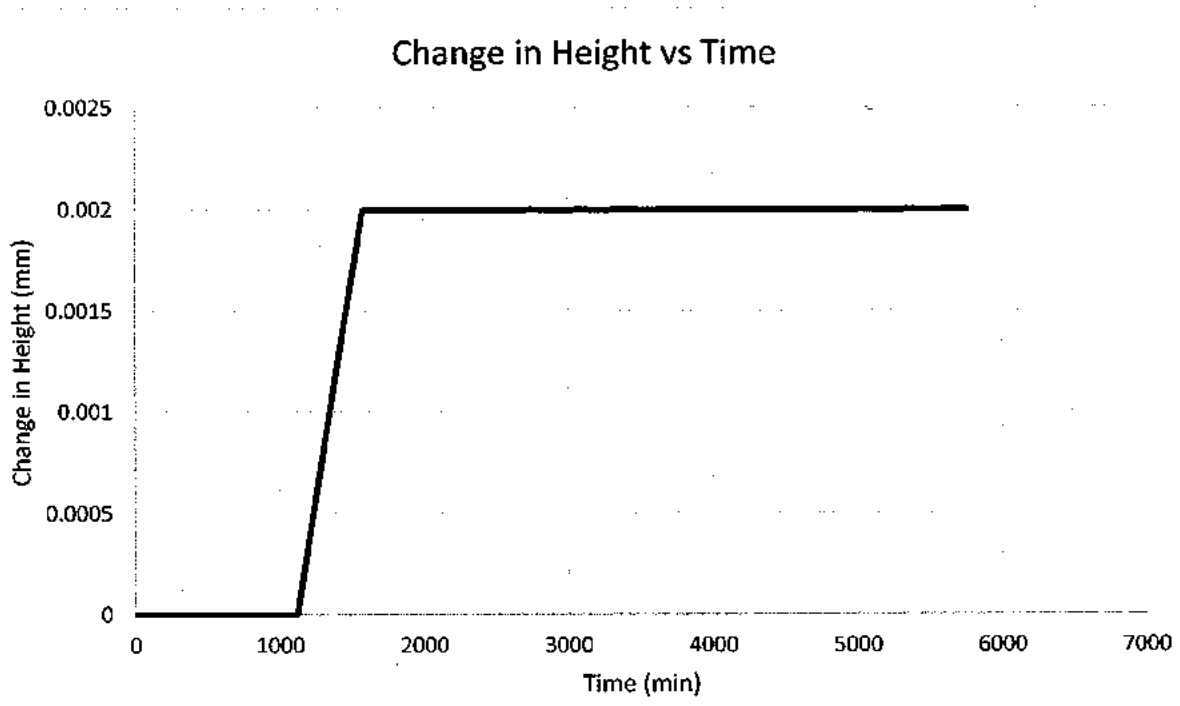
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC03	1.10	B2	Light brown slightly gravelly SAND. Gravel is fine to coarse flint	

After Soaking

Moisture Contents	Top 12%	Bottom 12%	Bulk Density 2.05Mg/m^3	Dry Density 1.83 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height +0.002 mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 55 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC04	0.55	B1	Dark brown slightly clayey silty very gravelly SAND with occasional brick and concrete fragments. Gravel is black and brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=15% Bottom=15%

Moisture Content % TOP: 11 BOTTOM: 11 Average: 11

Bulk Density Mg/m^3 1.91 Dry Density Mg/m^3 1.72

CBR VALUES

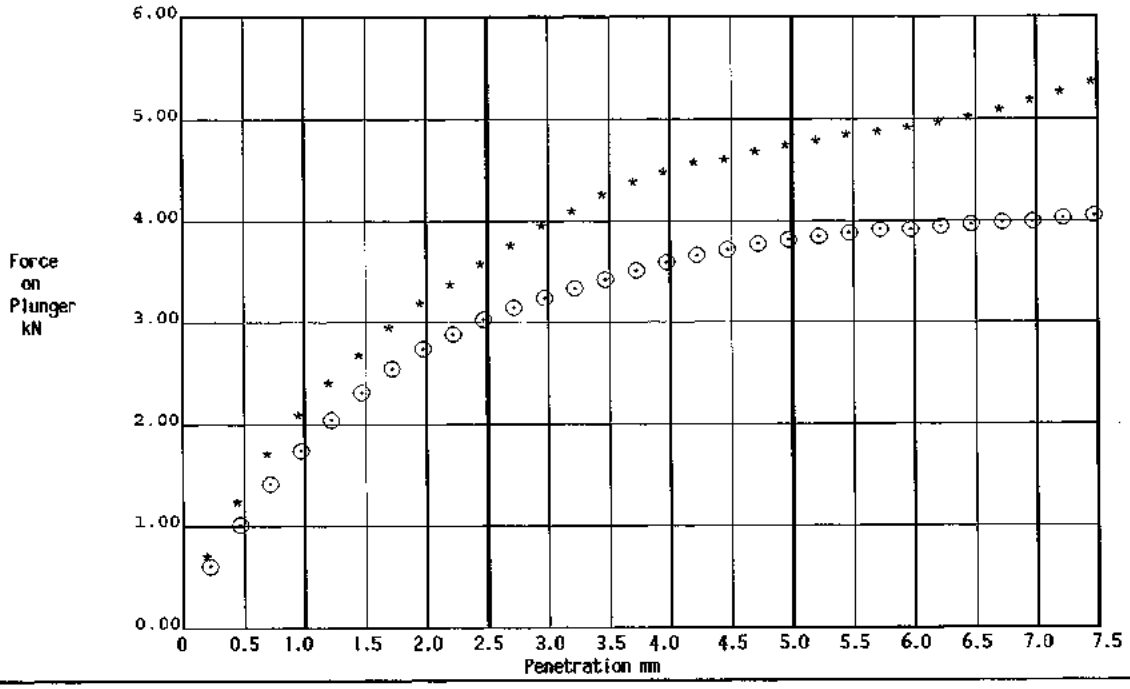
Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	3.53	27		27	25
	5.0	4.70	24			
BOTTOM ⊙	2.5	3.03	23		23	
	5.0	3.81	19			

% material retained on 20mm sieve and removed before test : 7

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted to approximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 56 **OF** 68 **Pages**

Contract
Lake Lothing

Serial No.
S31644-1

0998

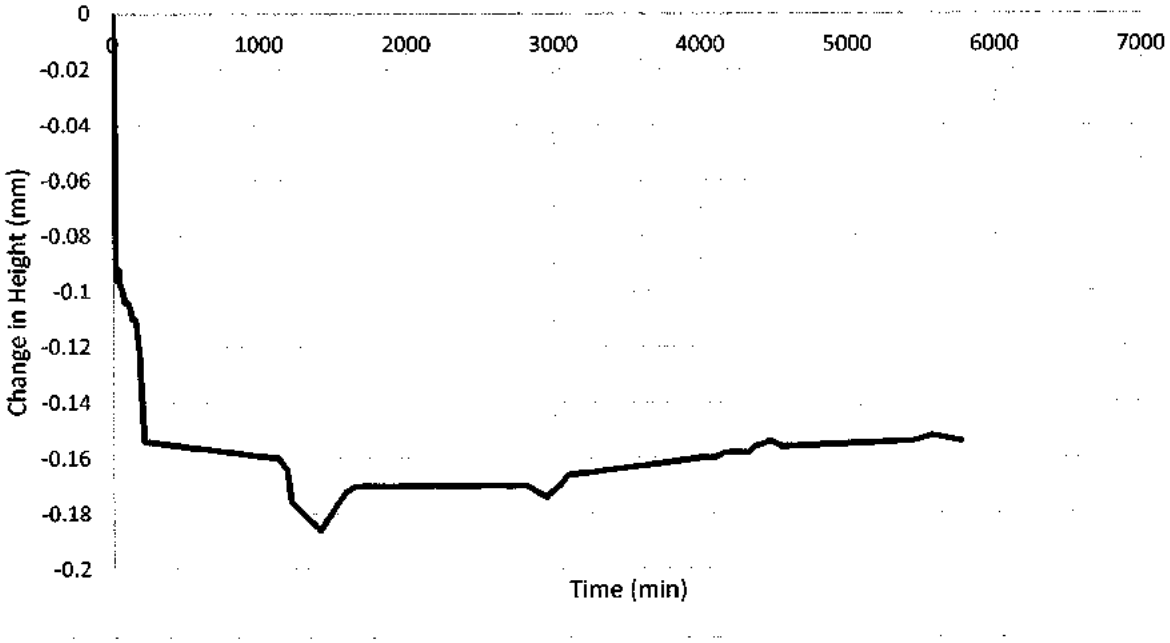
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC04	0.55	B1	Dark brown slightly clayey silty very gravelly SAND with occasional brick and concrete fragments. Gravel is black and brown subangular and subrounded flint	

After Soaking

Moisture Contents	Top 15%	Bottom 15%	Bulk Density 1.98Mg/m^3	Dry Density 1.72 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height -0.154mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 57 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC05	0.50	B1	MADE GROUND comprising dark brown slightly clayey slightly silty sand, concrete fragments, black, brown and white subangular and subrounded flint gravel, occasional soft dark brown clay lumps and rare metal and asphalt fragments	Reported densities and moisture content before soaking. After soaking Top=11% Bottom=12%

Moisture Content % TOP: 11 BOTTOM: 11 Average: 11

Bulk Density Mg/m^3 2.10 Dry Density Mg/m^3 1.90

% material retained on 20mm sieve and removed before test : 9

CBR VALUES

	Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	1.25	9.4		11	12
	5.0	2.14	11			
BOTTOM ⊙	2.5	1.48	11		12	
	5.0	2.41	12			

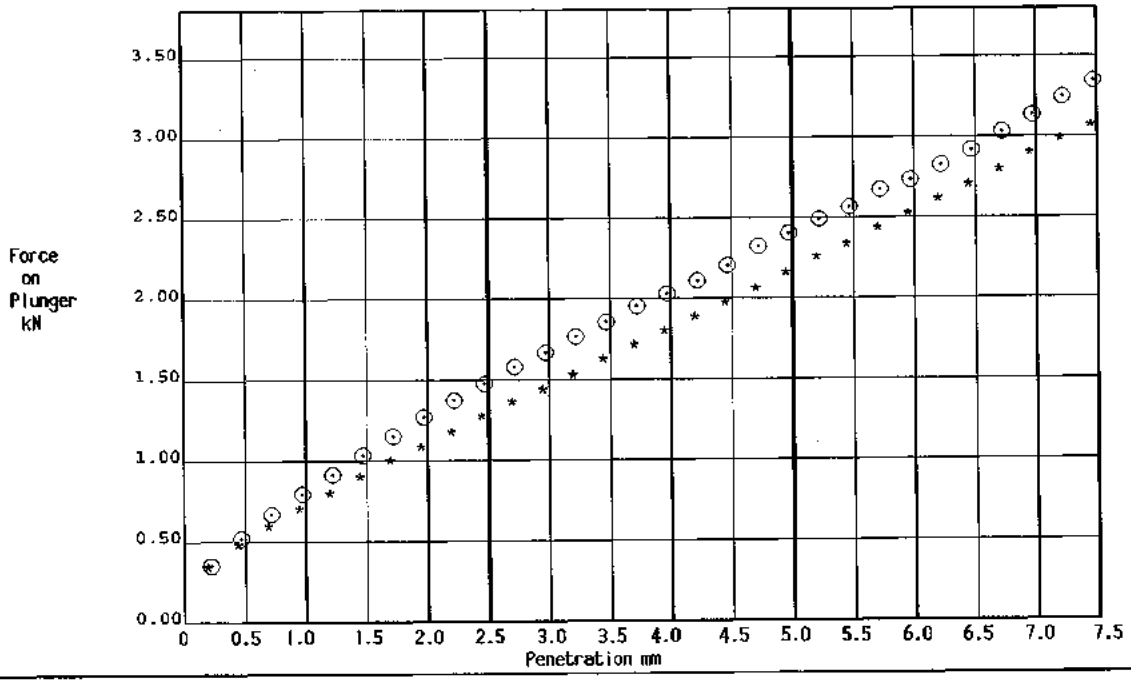
METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 18

Period of Soaking: 4 days

SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recomapcted at approximatley 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 58 **OF** 68 **Pages**

Contract Lake Lothing

Serial No. S31644-1

0998

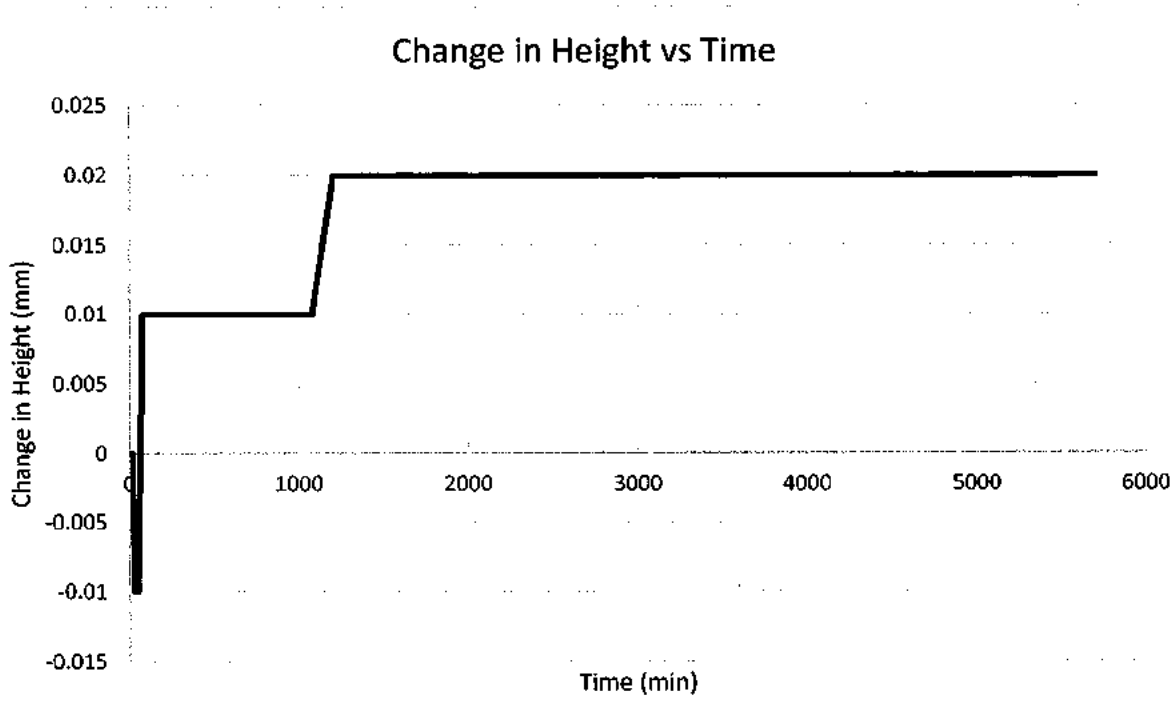
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC05	0.55	B1	MADE GROUND comprising dark brown slightly clayey slightly silty sand, concrete fragments, black, brown and white subangular and subrounded flint gravel, occasional soft dark brown clay lumps and rare metal and asphalt fragments	

After Soaking

Moisture Contents	Top 11%	Bottom 12%	Bulk Density 2.12Mg/m^3	Dry Density 1.91 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height +0.020 mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 59 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC05	1.10	B3	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=22% Bottom=20%

Moisture Content % TOP: 18 BOTTOM: 18 Average: 18

Bulk Density Mg/m^3 1.97 Dry Density Mg/m^3 1.68

CBR VALUES

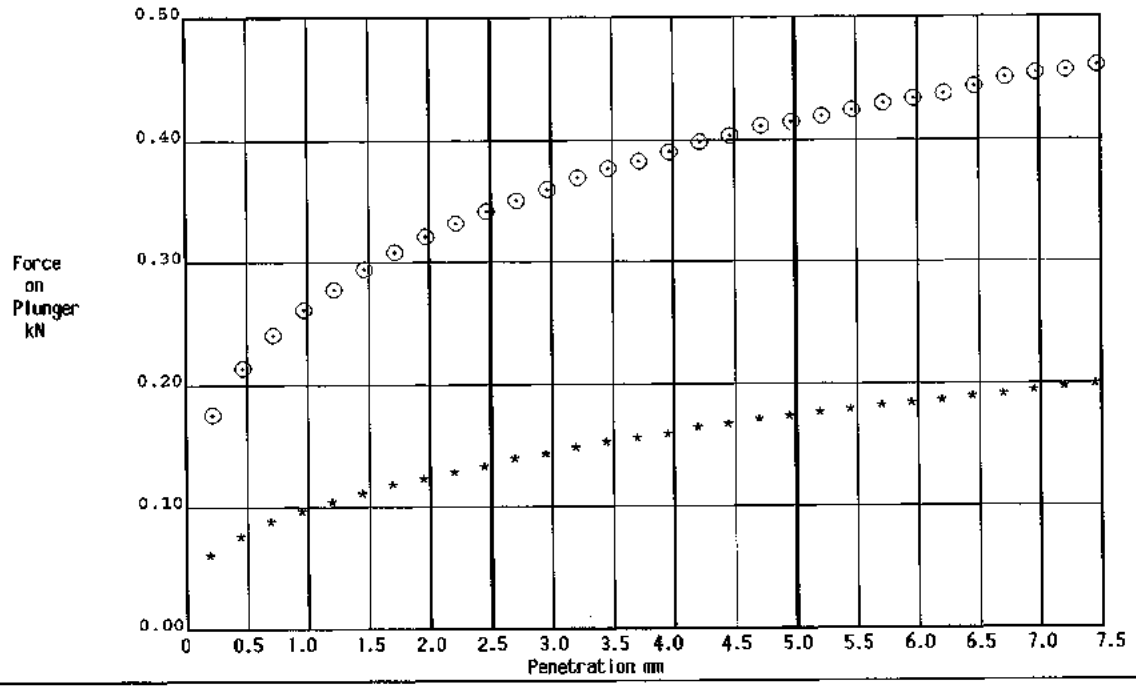
Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	0.13	1.0		1.0	
	5.0	0.17	0.9			
BOTTOM ⊙	2.5	0.34	2.6		2.6	
	5.0	0.42	2.1			

% material retained on 20mm sieve and removed before test : 0

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted at approximately 95% Maximum Dry Density UKAS Calibration from 0.2 to 50kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 60 **OF** 68 **Pages**

Contract Lake Lothing

Serial No. S31644-1

0998

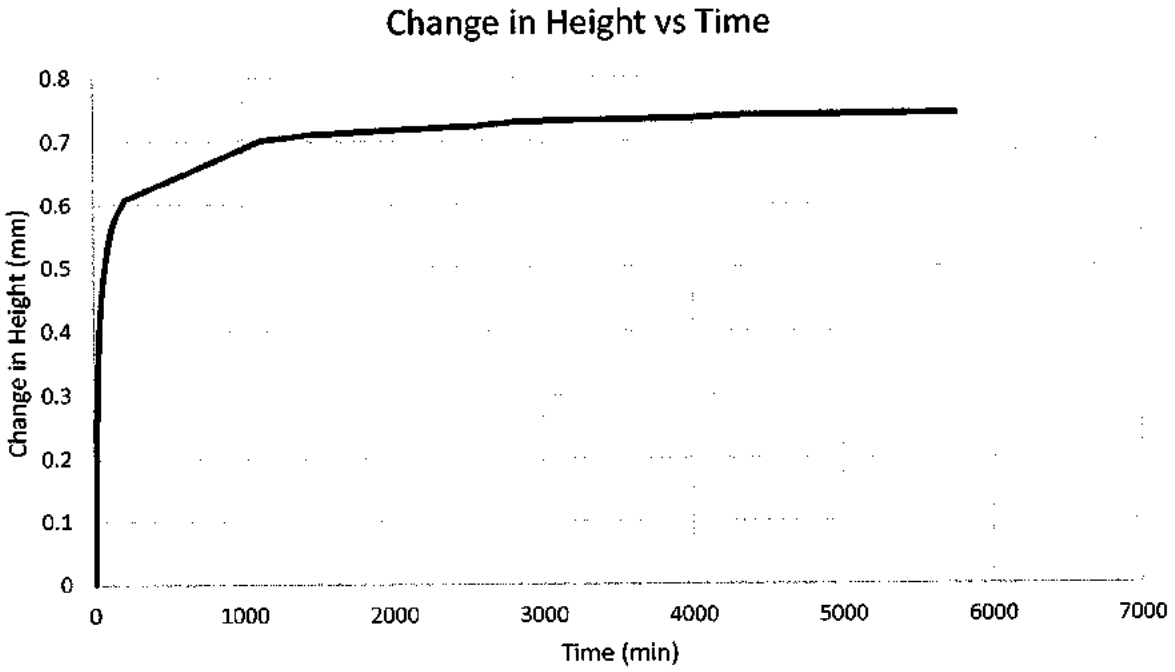
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC05	1.1	B3	Olive brown slightly gravelly sandy silty CLAY with dark brown sandy silty clay pockets. Gravel is white and brown subangular and subrounded flint	

After Soaking

Moisture Contents	Top 22%	Bottom 19%	Bulk Density 2.03Mg/m^3	Dry Density 1.68 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height +0.742 mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 61 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC06	0.70	B1	Brown clayey silty gravelly SAND with rare ceramic fragments. Gravel is brown subangular flint	Reported densities and moisture content before soaking. After soaking Top=16% Bottom=17%

Moisture Content % TOP: 13 BOTTOM: 13 Average: 13

Bulk Density Mg/m^3 1.98 Dry Density Mg/m^3 1.76

CBR VALUES

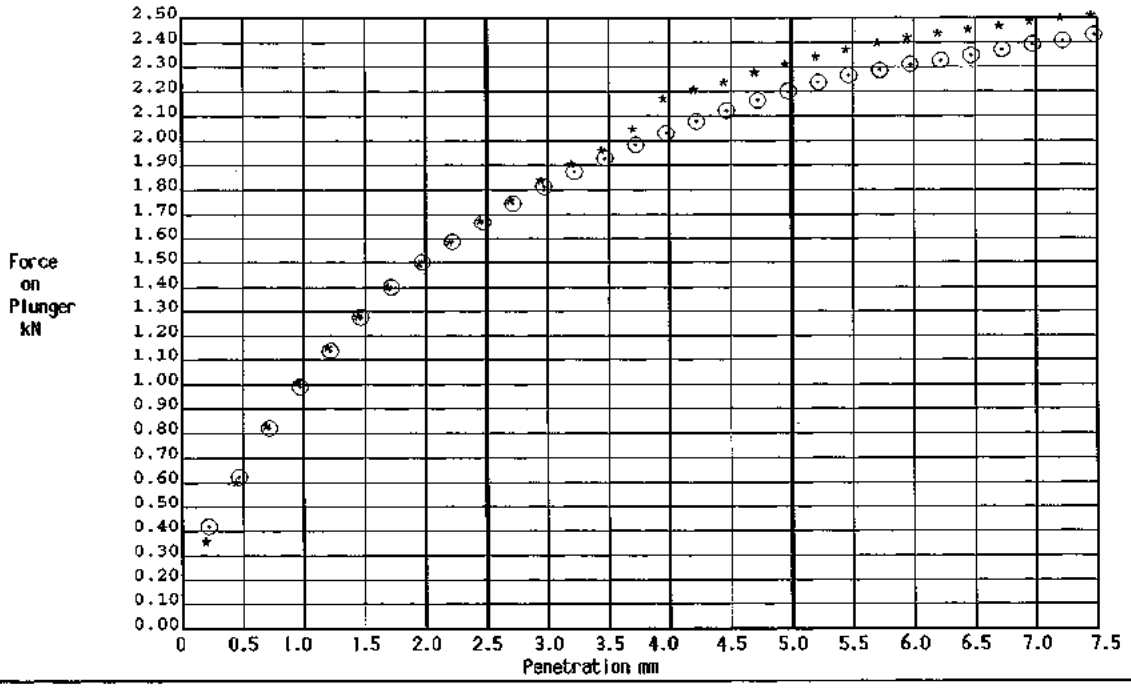
Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	1.66	13		13	13
	5.0	2.29	11			
BOTTOM ⊙	2.5	1.67	13		13	
	5.0	2.20	11			

% material retained on 20mm sieve and removed before test : 3

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted to approximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 62 **OF** 68 **Pages**

Contract Lake Lothing

Serial No. S31644-1

0998

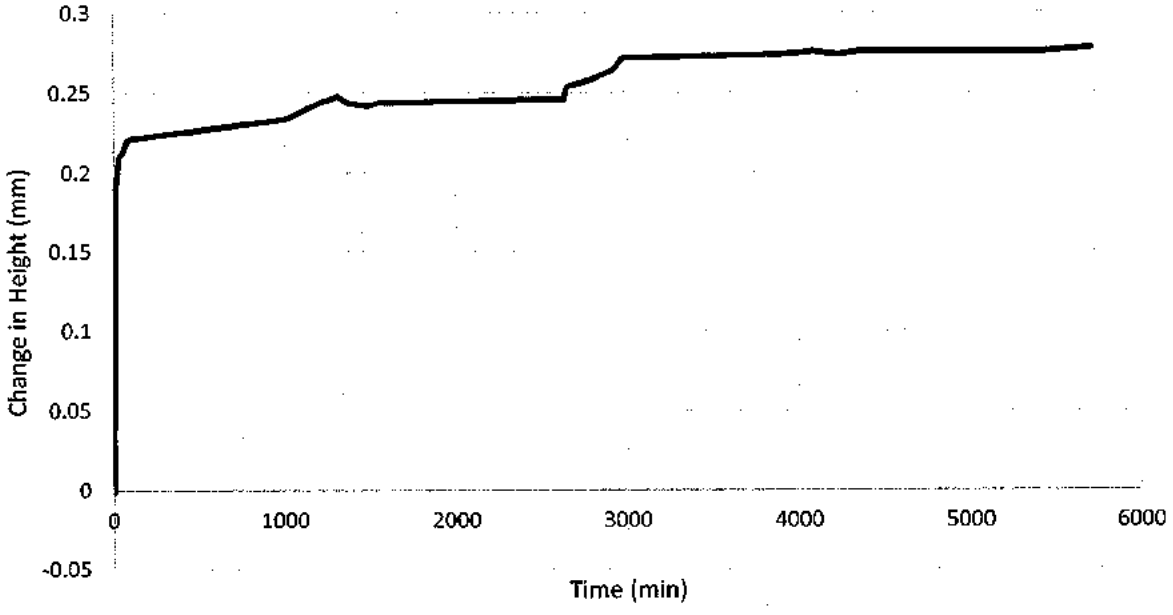
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC06	0.7	B1	Brown clayey silty gravelly SAND with rare ceramic fragments. Gravel is brown subangular flint	

After Soaking

Moisture Contents	Top 16%	Bottom 17%	Bulk Density 2.04Mg/m^3	Dry Density 1.75 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height +0.278 mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 63 of 64

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC101	0.80	B2	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=15% Bottom=14%

Moisture Content % TOP: 9.8 BOTTOM: 9.8 Average: 9.8

Bulk Density Mg/m^3 1.92 Dry Density Mg/m^3 1.75

CBR VALUES

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	2.04	15		15	
	5.0	2.64	13			
BOTTOM ⊙	2.5	3.48	26		26	
	5.0	4.37	22			

% material retained on 20mm sieve and removed before test : 2

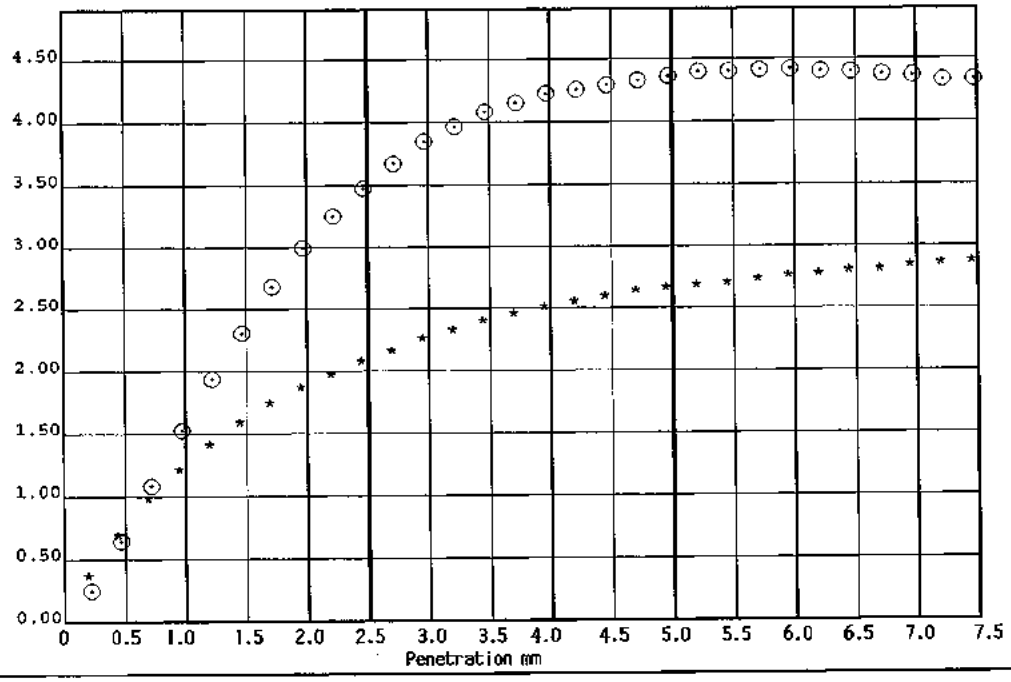
METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 18

Period of Soaking: 4 days

SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted at approximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 64 **OF** 68 **Pages**

Contract
Lake Lothing

Serial No.
S31644-1

0998

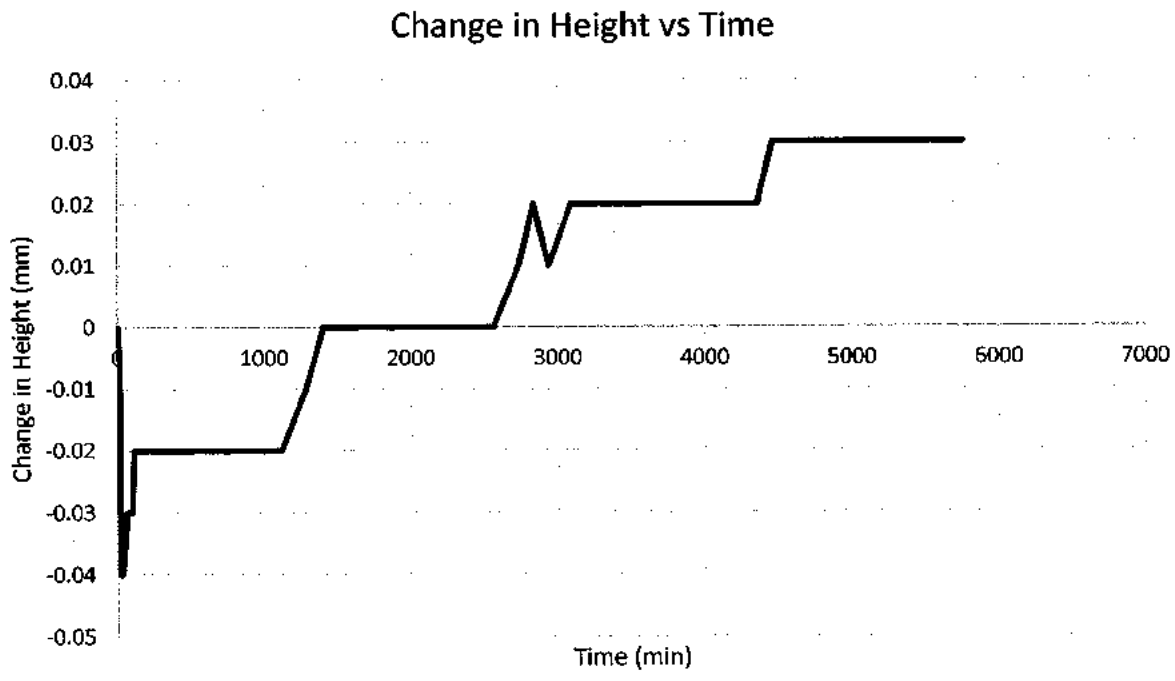
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC101	0.8	B2	Pale yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown subangular and subrounded flint	

After Soaking

Moisture Contents	Top 15%	Bottom 14%	Bulk Density 2.01 Mg/m^3	Dry Density 1.76 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height +0.030 mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 65 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC102	0.50	B1	Dark orangish brown slightly gravelly slightly silty SAND. Gravel is brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=19% Bottom=19%

Moisture Content % TOP: 12 BOTTOM: 12 Average: 12

Bulk Density Mg/m^3 1.87 Dry Density Mg/m^3 1.66

CBR VALUES

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	1.82	14		14	15
	5.0	2.70	14			
BOTTOM ⊙	2.5	2.13	16		16	
	5.0	3.15	16			

% material retained on 20mm sieve and removed before test : 0

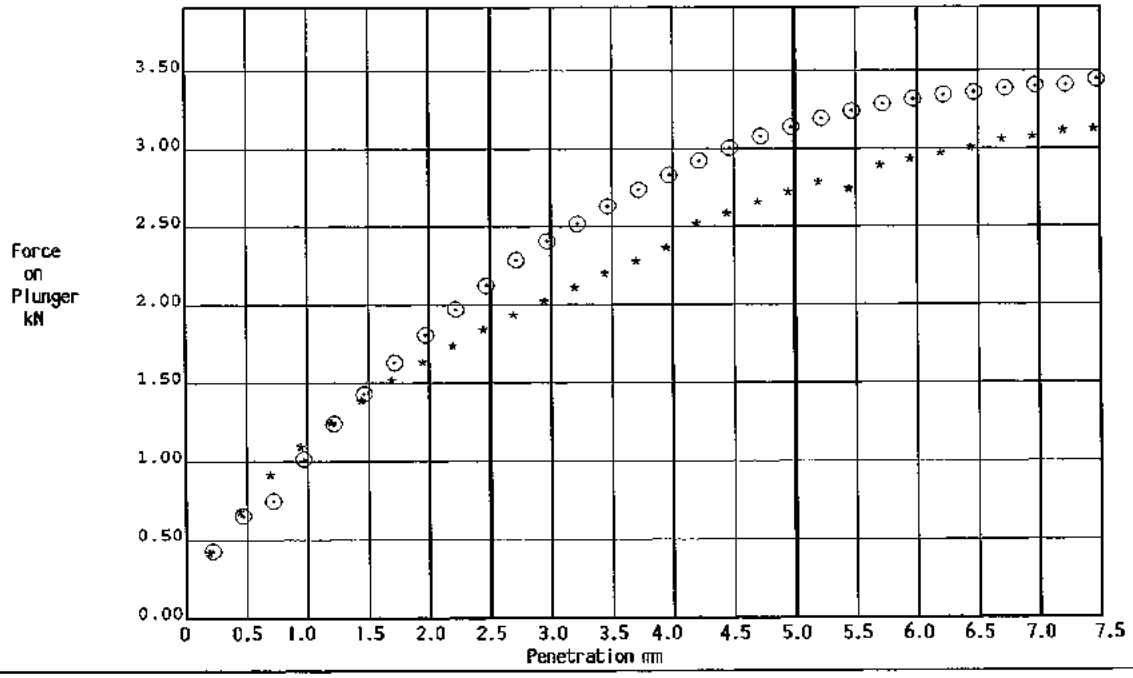
METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 18

Period of Soaking: 4 days

SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted at approximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 66 **OF** 68 **Pages**

Contract
Lake Lothing

Serial No.
S31644-1

0998

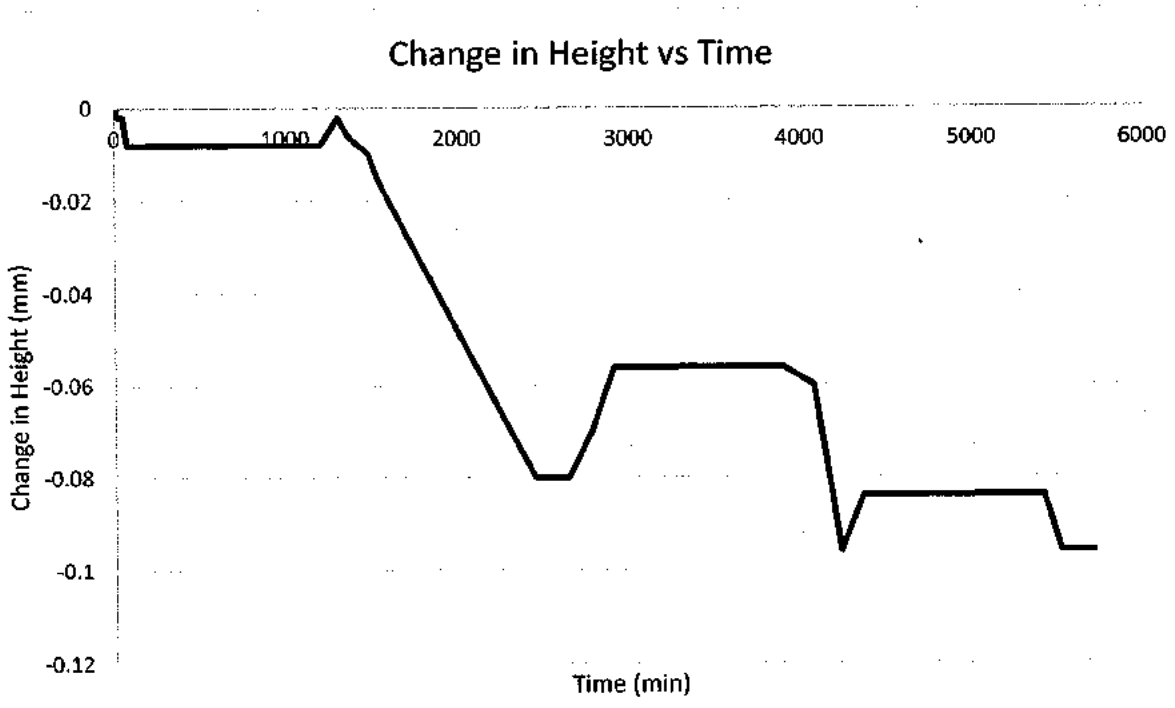
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC102	0.50	B1	Dark orangish brown slightly gravelly slightly silty SAND. Gravel is brown subangular and subrounded flint	

After Soaking

Moisture Contents	Top 19%	Bottom 19%	Bulk Density 2.00 Mg/m^3	Dry Density 1.68 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height -0.096 mm

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 67 of 68

Contract Lake Lothing

Serial No. S31644-1

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC103	0.50	B1	Very dark brown silty very gravelly SAND with rare soft very dark brown clay lumps and brick, glass, concrete and ceramic fragments. Gravel is black, white and brown subangular and subrounded flint	Reported densities and moisture content before soaking. After soaking Top=17% Bottom=16%

Moisture Content % TOP: 11 BOTTOM: 11 Average: 11

Bulk Density Mg/m^3 1.90 Dry Density Mg/m^3 1.71

CBR VALUES

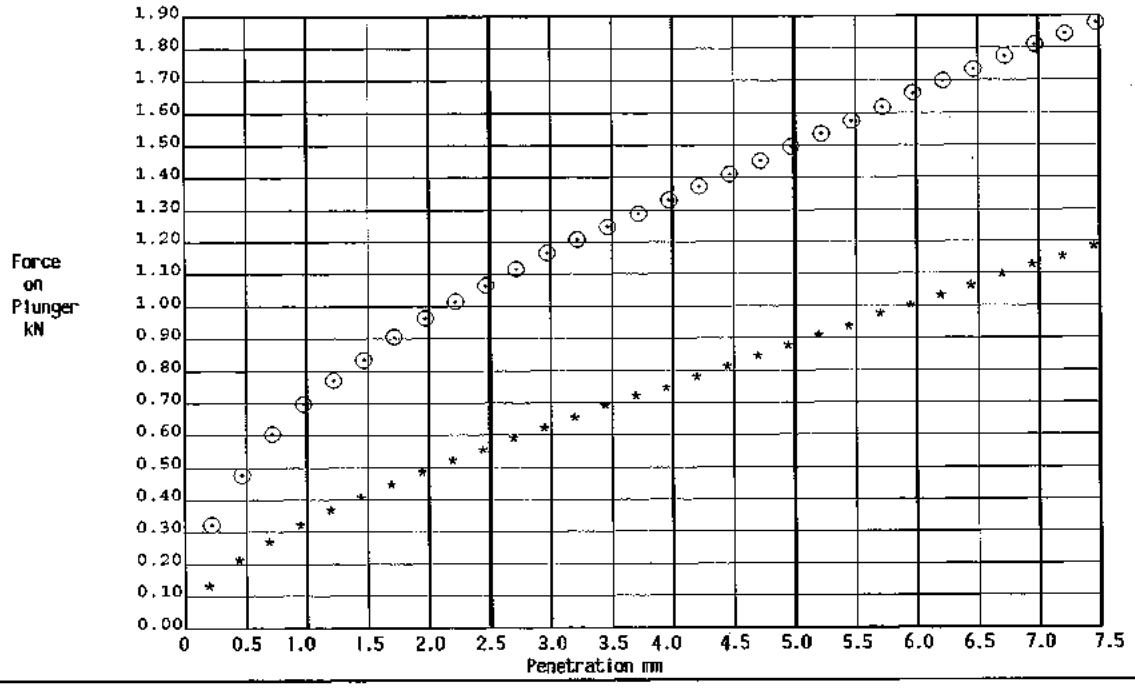
Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	0.54	4.1		4.3	
	5.0	0.87	4.3			
BOTTOM ⊙	2.5	1.07	8.1		8.1	
	5.0	1.50	7.5			

% material retained on 20mm sieve and removed before test : 6

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 18
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Specimen recompacted at approximately 95% Maximum Dry Density

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 68 **OF** 68 **Pages**

Contract Lake Lothing

Serial No. S31644-1

0998

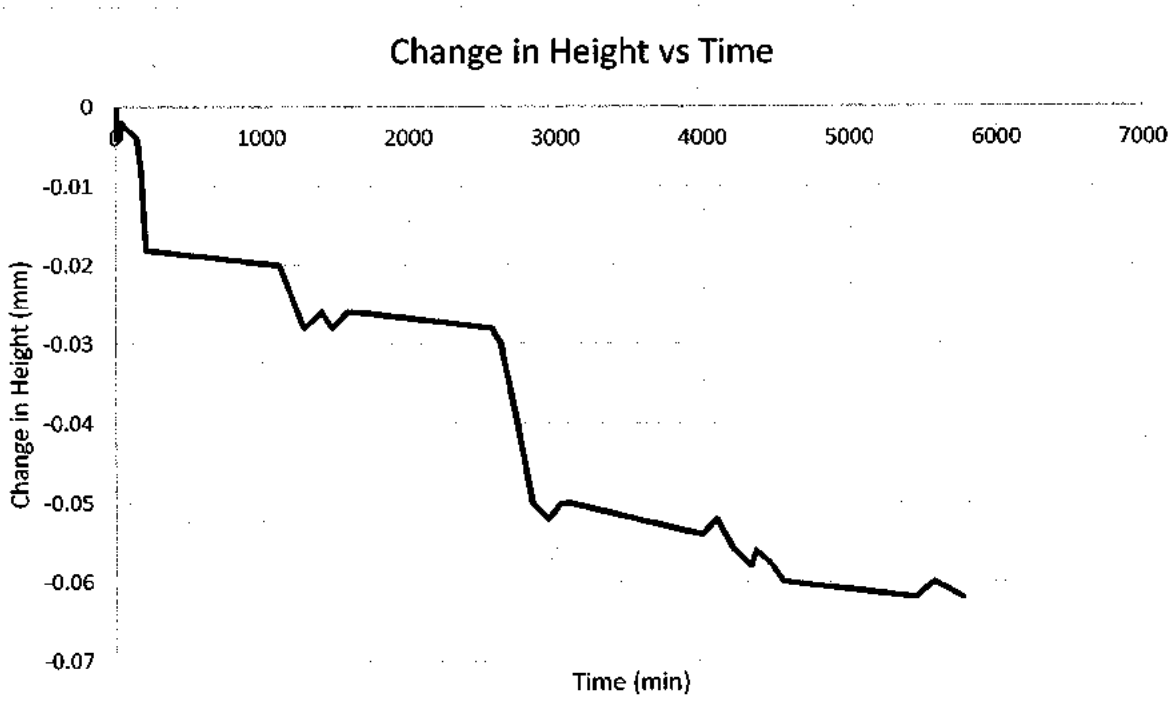
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC103	0.50	B1	Very dark brown silty very gravelly SAND with rare soft very dark brown clay lumps and brick, glass, concrete and ceramic fragments. Gravel is black, white and brown subangular and subrounded flint	

After Soaking

Moisture Contents	Top 17%	Bottom 16%	Bulk Density 2.12 Mg/m^3	Dry Density 1.82 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height -0.062 mm

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-23539-1		
Initial Date of Issue:	12-Sep-2017		
Client	Soil Property Testing		
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG		
Contact(s):	Jon Garner		
Project	S31644-1 Lake Lothing		
Quotation No.:	Q17-10468	**Date Received:**	06-Sep-2017
Order No.:	S31644-1	**Date Instructed:**	06-Sep-2017
No. of Samples:	16		
Turnaround (Wkdays):	5	**Results Due:**	12-Sep-2017
Date Approved:	12-Sep-2017		
Approved By:			
[redacted]			
Details:	Keith Jones, Technical Manager		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-1 Lake Lothing

Client: Soil Property Testing				Chemtest Job No.:	17-23539	17-23539	17-23539	17-23539	17-23539	17-23539	17-23539	17-23539	17-23539	17-23539	17-23539
Quotation No.: Q17-10468				Chemtest Sample ID.:	507786	507787	507788	507789	507790	507791	507792	507793	507794	507795	507796
Order No.: S31644-1				Client Sample Ref.:	TPC01	TPC01	TPC03	TPC03	TPC04	TPC04	TPC05	TPC05	TPC05	TPC06	TPC101
				Client Sample ID.:	B2	B3	B1	B2	B2	B4	B2	B3	B4	B3	B1
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.80	2.60	0.50	1.10	1.20	2.70	1.00	1.10	2.30	2.00	0.30
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020	2.2	2.3	5.3	9.4	15	22	13	11	23	37	8.4
pH (2.5:1)	N	2010		N/A		[A] 7.2	[A] 7.6				[A] 7.9				
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	< 0.010				0.22				
LOI	U	2610	%	0.10	0.34		1.2			3.2		2.3			2.4
Organic Matter BS1377	N	2930	%	0.10	[A] < 0.10			[A] < 0.10	[A] 0.20	[A] 0.40		[A] 0.40	[A] 0.40	[A] 1.5	

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-1 Lake Lothing

Client: Soil Property Testing				Chemtest Job No.:	17-23539	17-23539	17-23539	17-23539	17-23539
Quotation No.: Q17-10468				Chemtest Sample ID.:	507797	507798	507799	507800	507801
Order No.: S31644-1				Client Sample Ref.:	TPC101	TPC102	TPC103	TPC103	TPC103
				Client Sample ID.:	B2	B1	B1	B2	B3
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.80	1.60	0.50	1.10	1.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Moisture	N	2030	%	0.020	5.7	2.8	13	19	12
pH (2.5:1)	N	2010		N/A	[A] 10.1	[A] 8.9			[A] 7.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010			< 0.010
LOI	U	2610	%	0.10		0.17		11	
Organic Matter BS1377	N	2930	%	0.10	[A] < 0.10	[A] < 0.10	[A] 2.5		

Chemtest
The right chemistry to deliver results

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
507786	TPC01	B2		A	Plastic Tub 500g
507787	TPC01	B3		A	Plastic Tub 500g
507788	TPC03	B1		A	Plastic Tub 500g
507789	TPC03	B2		A	Plastic Tub 500g
507790	TPC04	B2		A	Plastic Tub 500g
507791	TPC04	B4		A	Plastic Tub 500g
507792	TPC05	B2		A	Plastic Tub 500g
507793	TPC05	B3		A	Plastic Tub 500g
507794	TPC05	B4		A	Plastic Tub 500g
507795	TPC06	B3		A	Plastic Tub 500g
507797	TPC101	B2		A	Plastic Bag
507797	TPC101	B2		A	Plastic Tub 500g
507798	TPC102	B1		A	Plastic Tub 500g
507799	TPC103	B1		A	Plastic Tub 500g
507801	TPC103	B3		A	Plastic Tub 500g

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Chemtest
The right chemistry to deliver results

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : 28/11/17 **PAGE 1 of 91 Pages**

Contract	**Serial No.**
Lake Lothing	S31644-2

UKAS TESTING 0998

CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing Ltd.

15,16 & 18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

☑ **J.C.GARNER B.Eng (Hons.) FGS**
Technical Director

☐ **S.P.TOWNEND FGS**
Quality Manager

☐ **W.JOHNSTONE**
Materials Lab Manager

[redacted]

SAMPLES LABELLED:

Lake Lothing

DATE RECEIVED: 04/10/17

SAMPLES TESTED BETWEEN 04/10/17 **and** 28/11/17

REMARKS: For the attention of Mr S Gilchrist
Your Reference 2543,GI
Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

NOTES:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. (a) UKAS - United Kingdom Accreditation Service.
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 2 of 91

Contract Lake Lothing

Serial No. S31644-2

SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	1:Moisture Content BS1377	7:PSD by Wet Sieve BS1377	703:Mass Lose on Ignition	29:Dry Deneity/MC 4.5Kg (Proctor)	4:Liquid/Plastic limit 1 point	5:Wet Sieve Preparation for Limit	11:Hydrometer	10:PSD by Hydr.inc pre-sieve	31:One Dimensional Consolidation	14:Triaxial Test multi-stage	710:BRE Brownfield suite	705:Organic content (Dichromate)	28:Dry Density/MC 2.5Kg (CBR)	19:California Bearing Ratio Test	20:CBR Compaction	35:CBR Soaking + Measurement	30:Dry Density/MC 4.5Kg (CBR)	Remarks
BH06	B1	0.50	*	*	*															
	B2	1.50				*														
	B3	2.70	*	*			*	*	*											
	B4	4.00	*	*			*	*	*											
	B6	5.50	*	*					*											
	B7	7.00	*				*	*		*										
	B9	8.50	*							*										
	B13	11.00								*										
	B16	14.00	*							*										
	B20	18.00	*							*										
	D7	19.00	*				*			*										
	UT2	19.00									*	*								
	B24	21.00	*				*			*										
	B27	24.00	*				*	*		*			*							
BHC02	B1	1.00	*		*					*										
	B2	2.00	*				*			*										
	P1	4.00	*				*			*	*	*								
	B4	5.00	*				*	*		*			*							
	B6	7.00	*				*	*		*										
	B9	10.00	*							*										
BHC03	B1	1.00			*					*										
	B3	2.00	*	*										*						
	B5	4.00								*										
	B7	6.00	*				*	*		*										
	B9	8.00	*							*										
	UT1	10.00									*	*								
	B14	13.00								*										
	B17	16.00	*	*																
	B19	18.00								*			*							
	UT3	20.00	*							*										

Scheduled by: Geosphere Environmental Ltd. **Target Date:** 30/11/17

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 3 of 91

Contract Lake Lothing

Serial No. S31644-2

SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	1:Moisture Content BS1377	7:PSD by Wet Sieve BS1377	703:Mass Loss on Ignition	29:Dry Density/MC 4.5Kg (Proctor)	4:Liquid/Plastic limit 1 point	5:Wet Sieve Preparation for Lim.	11:Hydrometer	10:PSD by Hydr.inc pre-sieve	31:One Dimensional Consolidation	14:Triaxial Test multi-stage	710:BRE Brownfield suite	705:Organic content (Dichromate)	28:Dry Density/MC 2.5Kg (CBR)	19:California Bearing Ratio Test	20:CBR Compaction	35:CBR Soaking + Measurement	30:Dry Density/MC 4.5Kg (CBR)	Remarks
BHC03	B22	22.00	*						*											
	UT4	24.00	*	*																
BHC06	B30	28.00	*						*											
	B33	31.00	*						*											
	B36	34.00	*				*		*			*								
	UT4	36.00	*						*											
	B40	38.00	*						*											
	B42	41.00	*				*	*	*											
	B45	44.00	*				*	*	*											
TPC21	B1	0.50	*	*	*									*	*	*	*			
	B2	1.20	*	*			*	*	*			*	*							
	B3	2.00	*			*	*			*										
TPC22	B2	1.50		*		*									*	*	*			
	B3	2.60	*	*																
TPC23	B1	0.50	*	*								*		*	*	*	*			
	B2	1.50	*	*	*				*						*	*	*	*		
	B4	3.00	*	*									*							
-	-	-	38	14	5	3	16	10	5	30	3	3	6	3	2	4	4	4	1	<— Total Number of Tests ——

Scheduled by: Geosphere Environmental Ltd.

Target Date: 30/11/17

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 4 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH06	0.50	B1	12	Brown slightly silty gravelly SAND with occasional dark grey organic clayey sand lumps. Gravel is black, white and brown angular to subrounded flint	
BH06	2.70 -3.70	B3	46	Very soft black slightly gravelly organic sandy silty CLAY locally oxidised to brown with occasional shells. Gravel is black, brown and white angular to subrounded flint	
BH06	4.00	B4	29	Black gravelly organic clayey silty SAND/ sandy CLAY. Gravel is black and brown angular and subangular flint	Possible engineering behaviour as a cohesive soil
BH06	5.50 -3.70	B6	26	Very soft dark greyish brown slightly gravelly organic sandy silty CLAY with frequent soft light olive grey clay pockets. Gravel is black and white angular to rounded flint	
BH06	7.00	B7	33	Very soft bluish grey and pale olive slightly gravelly slightly organic sandy silty CLAY. Gravel is fine and medium quartz and sandstone	
BH06	8.50	B9	23	Light olive brown slightly organic clayey silty SAND with bluish grey mottling	
BH06	14.00	B16	22	Dark grey slightly organic clayey silty SAND	
BH06	18.00	B20	26	Pale olive and dark grey slightly organic clayey silty fine and medium SAND with rare fine and medium gravel	
BH06	19.00	D7	29	Firm mottled bluish grey and brown slightly sandy silty CLAY with occasional sand partings	
BH06	21.00 -21.50	B24	19	Brownish grey slightly clayey silty gravelly SAND with occasional shell fragments. Gravel is black angular to subrounded flint	
BH06	24.00	B27	33	Very soft dark grey organic sandy silty CLAY with occasional shell fragments	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3

METHOD OF TEST : BS 1377:PART 2:1990:3.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 5 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC02	1.00	B1	7.6	Light brown slightly silty gravelly SAND with rare dark brown clayey sand lumps. Gravel is black, brown and white angular to subrounded flint	
BHC02	2.00	B2	22	Pale olive clayey silty SAND/ very sandy CLAY	Possible engineering behaviour as a cohesive soil
BHC02	4.00	P1	25	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining	
BHC02	5.00	B4	26	Brownish yellow clayey very silty SAND (very sandy CLAY) with rare fine gravel	Possible engineering behaviour as a cohesive soil
BHC02	7.00	B6	26	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	Possible engineering behavior as a cohesive soil
BHC02	10.00	B9	19	Very stiff light olive brown CLAY with occasional silty fine and medium sand partings	
BHC03	2.00	B3	21	Light olive brown slightly gravelly SAND with occasional soft light brownish grey clay lumps. Gravel is black angular to subrounded flint	
BHC03	6.00	B7	27	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	Possible engineering behaviour as a cohesive soil
BHC03	8.00	B9	22	Very soft brownish yellow sandy silty CLAY	
BHC03	16.00	B17	23	Dark olive grey slightly gravelly slightly silty slightly clayey SAND. Gravel is fine and medium flint and quartzite	
BHC03	20.00	UT3	20	Dark olive grey slightly organic clayey silty SAND	
BHC03	22.00	B22	42	Dark olive grey slightly organic very sandy silty CLAY/clayey SAND	
BHC03	24.00	UT4	19	Dark olive grey slightly silty SAND	
BHC06	28.00	B30	27	Very soft dark olive grey slightly organic sandy silty CLAY	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3

METHOD OF TEST : BS 1377:PART 2:1990:3.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 6 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC06	31.00	B33	22	Dark olive grey slightly gravelly slightly organic clayey silty SAND with occasional shell fragments. Gravel is quartzite	
BHC06	34.00	B36	28	Very soft dark grey organic sandy silty CLAY with rare very stiff clay/extremely weak claystone lumps	
BHC06	36.00	UT4	20	Dark grey slightly organic clayey silty SAND with occasional shell fragments	
BHC06	38.00	B40	24	Dark olive grey slightly organic clayey silty SAND with occasional shell fragments	
BHC06	41.00	B42	26	Dark grey slightly organic silty clayey SAND / very sandy CLAY with occasional shell debris	Possible engineering behaviour as a cohesive soil
BHC06	44.00	B45	23	Dark grey slightly organic clayey silty SAND with rare shell debris	
TPC21	0.50	B1	6.7	Brown, black and white silty very sandy angular to rounded flint GRAVEL. Sand is orangish brown	
TPC21	1.20	B2	15	Brown, dark brown and dark greyish brown slightly gravelly organic clayey silty SAND / sandy CLAY with occasional concrete and rare asphalt and mortar fragments. Gravel is brown, black and white angular to rounded flint	Possible engineering behaviour as a cohesive soil
TPC21	2.00	B3	33	Soft light olive brown slightly sandy silty CLAY	
TPC22	2.60	B3	7.8	Yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown angular to rounded flint	
TPC23	0.50	B1	3.2	Brown and light brown silty very gravelly SAND with occasional brick fragments and flint cobbles. Gravel is black, white and brown angular to rounded flint	
TPC23	1.50	B2	18	MADE GROUND comprising very dark brown slightly clayey silty cindery SAND with glass, cinder, occasional brick, clinker and rare flint, coal and lightweight block	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3

METHOD OF TEST : BS 1377:PART 2:1990:3.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 7 **of** 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC23	3.00	B4	14	Yellowish brown SAND with frequent dark greyish brown slightly clayey sand pockets and occasional lightweight block, concrete and rare glass fragments	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3

METHOD OF TEST : BS 1377:PART 2:1990:3.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 8 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
BH06	2.70 -3.70	B3	46	54	27	27		S	32(M)		24	Very soft black slightly gravelly organic sandy silty CLAY locally oxidised to brown with occasional shells. Gravel is black, brown and white angular to subrounded flint	CHO
BH06	4.00	B4	29	30	21	9.0		S	42(M)		24	Black gravelly organic clayey silty SAND/ sandy CLAY. Gravel is black and brown angular and subangular flint	CLO
BH06	7.00	B7	33	30	17	13		S	6(M)		26	Very soft bluish grey and pale olive slightly gravelly slightly organic sandy silty CLAY. Gravel is fine and medium quartz and sandstone	CLO
BH06	19.00	D7	28	47	19	28	0.32	N	0(A)		70	Firm mottled bluish grey and brown slightly sandy silty CLAY with occasional sand partings	CI
BH06	24.00	B27	33	27	16	11		S	4(M)		25	Very soft dark grey organic sandy silty CLAY with occasional shell fragments	CLO
BHC02	2.00	B2	22	25	16	9.0	0.67	N	0(A)		25	Pale olive clayey silty SAND/ very sandy CLAY	CL
BHC02	4.00	P1	25	25	17	8.0	1.00	N	0(A)		25	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining	CL
BHC02	5.00	B4	26	25	17	8.0		S	2(M)		75	Brownish yellow clayey very silty SAND (very sandy CLAY) with rare fine gravel	CL
BHC02	7.00	B6	26	27	19	8.0		S	1(M)		26	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	CL

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 9 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
BHC03	6.00	B7	27	24	16	8.0		S	2(M)		74	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	CL
BHC06	34.00	B36	28	31	13	18	0.83	N	0(A)		75	Very soft dark grey organic sandy silty CLAY with rare very stiff clay/extremely weak claystone lumps	CLO
BHC06	41.00	B42	26	23	14	9.0		S	6(M)		75	Dark grey slightly organic silty clayey SAND / very sandy CLAY with occasional shell debris	CLO
BHC06	44.00	B45	23	22	17	5.0		S	2(M)		26	Dark grey slightly organic clayey silty SAND with rare shell debris	MLO
TPC21	1.20	B2	15	23	13	10	0.70*	S	24(M)	20	24	Brown, dark brown and dark greyish brown slightly gravelly organic clayey silty SAND / sandy CLAY with occasional concrete and rare asphalt and mortar fragments. Gravel is brown, black and white angular to rounded flint	CL
TPC21	2.00	B3	33	65	20	45	0.29	N	0(A)		67	Soft light olive brown slightly sandy silty CLAY	CH

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE: As page 1

CONTRACT
Lake Lothing

Serial No.
S31644-2

UKAS TESTING No.0998

DETERMINATION OF THE PLASTIC LIMIT

TP / BH	DEPTH (m)	SAMPLE	MOISTURE CONTENT (%)	DESCRIPTION	REMARKS
BH06	21.00	B24	19	Brownish grey slightly clayey silty gravelly SAND with occasional shell fragments. Gravel is black angular to subrounded flint	

PREPARATION:

~~NATURAL /~~ WET SIEVED (0.425mm) and AIR DRIED ~~/ OVEN DRIED and DRY SIEVED~~

Percentage of mass passing 0.425mm sieve.....71%

TEST CONDITIONS

	YES	NO
1. Can a 20g ball be formed and dried between the palms of the hands?	√	○
2. Do slight cracks appear on its surface as it is being hand dried?	○	√
3. Is it possible to form 5g sub samples into a thread of approximately 6mm diameter?	○	√
4. Is it possible to reduce 6mm threads to 3mm diameter in between 5-10 complete rolls (10-15 for heavy clays)?	○	√
5. After alternately forming into threads and rolling out is it possible to shear the thread both longitudinally and transversely when it is rolled to about 3mm?	○	√

NOTE:

DIFFICULT
○

Soils that are marginally plastic it is often difficult to obtain the correct crumbling conditions (if "difficult" define as non-plastic)

NON-PLASTIC BY BS1377:Part1:1990:2.2.11 – A soil with a plasticity index of zero, or one on which the plastic limit cannot be determined

All conditions 1-5 must be achievable for material to be deemed plastic, if achieved measure moisture content.

PLASTIC LIMIT	%
NON-PLASTIC	YES

If plastic limit is obtainable, does the liquid limit – plastic limit = zero – if so material is defined as non-plastic

LIQUID LIMIT	%
LIQUID LIMIT – PLASTIC LIMIT	%
FINES MATERIAL IS DEEMED NON-PLASTIC	

METHOD OF PREPARATION	:	BS1377:Part1:1990:7.4.3 & BS1377:Part2:1990:4.2
METHOD OF TEST	:	BS1377:Part2:1990:5.3
TYPE OF SAMPLE KEY	:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
COMMENTS	:	
REMARKS TO INCLUDE	:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105 – 110 deg C.

TEST REPORT.

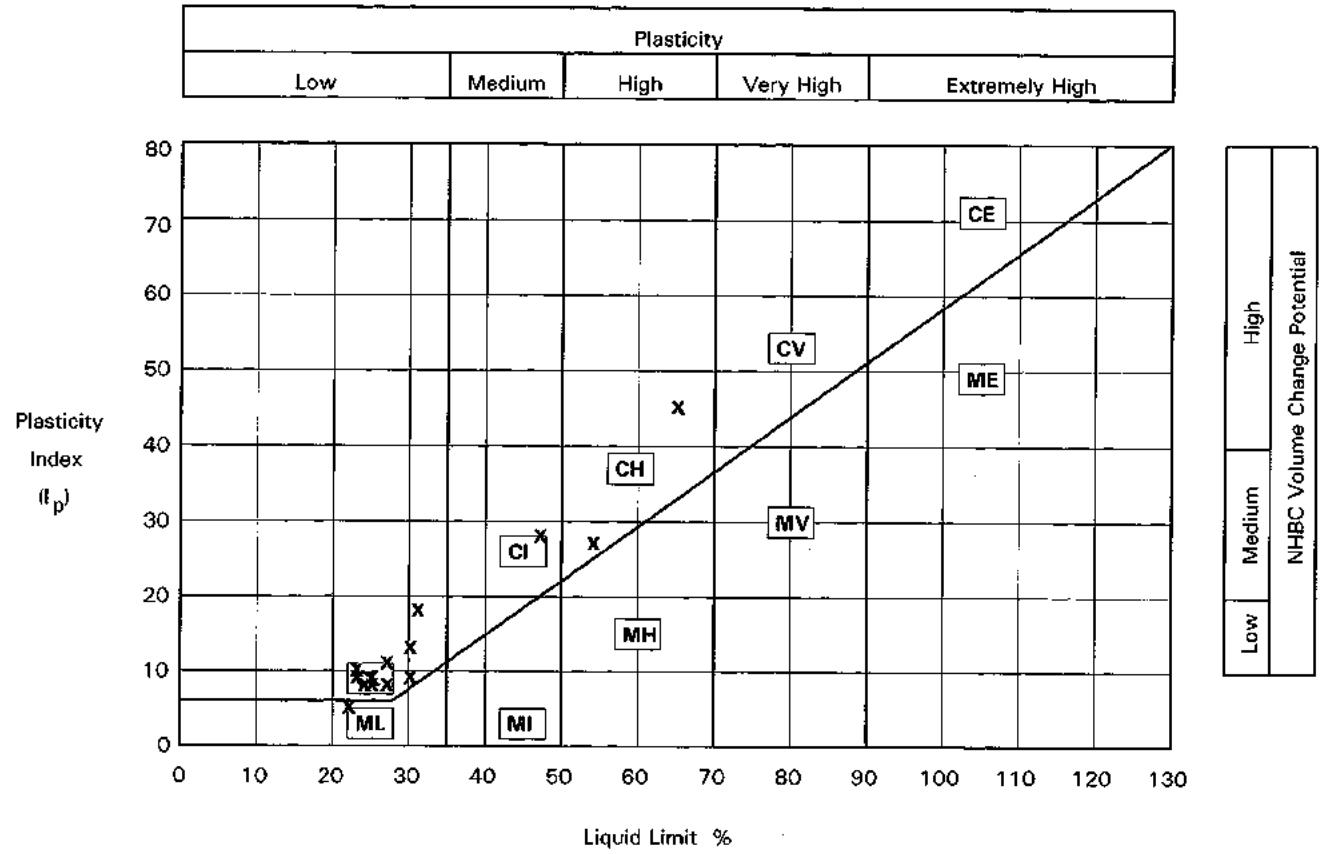
ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 11 of 91

Contract
Lake Lothing

Serial No.
S31644-2

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 12 of 91

Contract Lake Lothing

Serial No. S31644-2

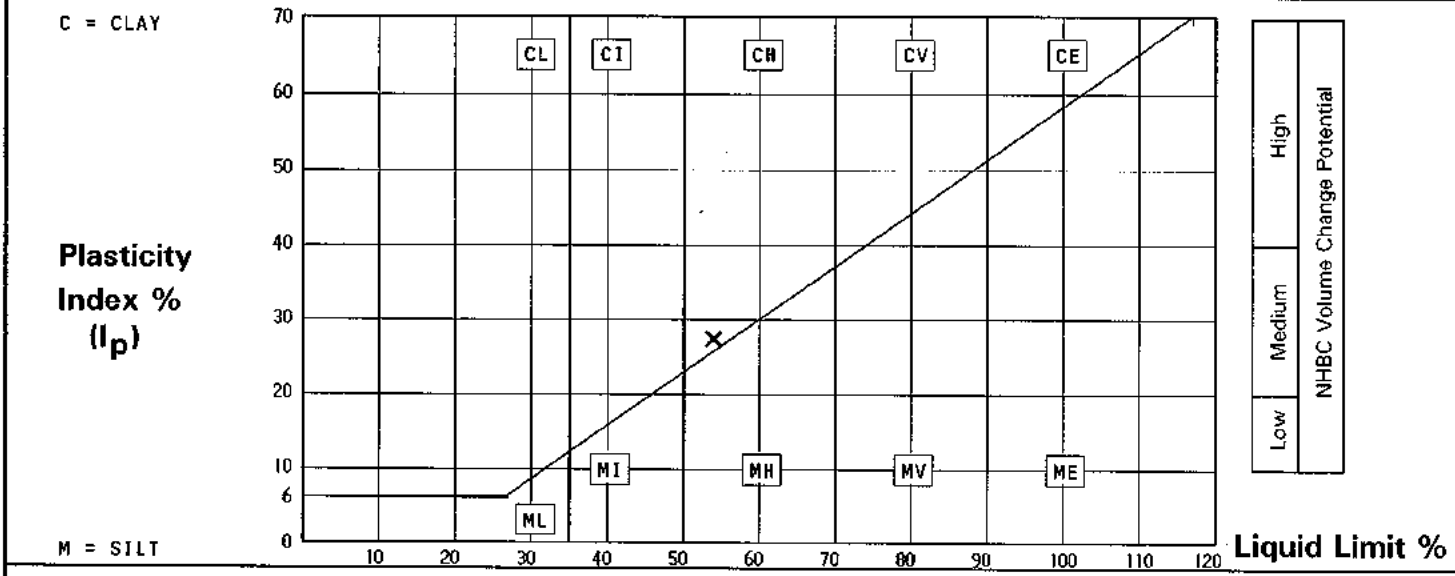
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m,	Sample	Moisture Content %	Description	Remarks
BH06	2.70 -3.70	B3	46	Very soft black slightly gravelly organic sandy silty CLAY locally oxidised to brown with occasional shells. Gravel is black, brown and white angular to subrounded flint	

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	54 %
Sample retained 0.425 sieve	(Measured) 32 %	Plastic Limit	27 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	27 %
Curing Time	24 Hours	Liquidity Index	
		Clay Content	20 %
		Derived Activity (PI/CC)	1.35



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 13 of 91

Contract Lake Lothing

Serial No. S31644-2

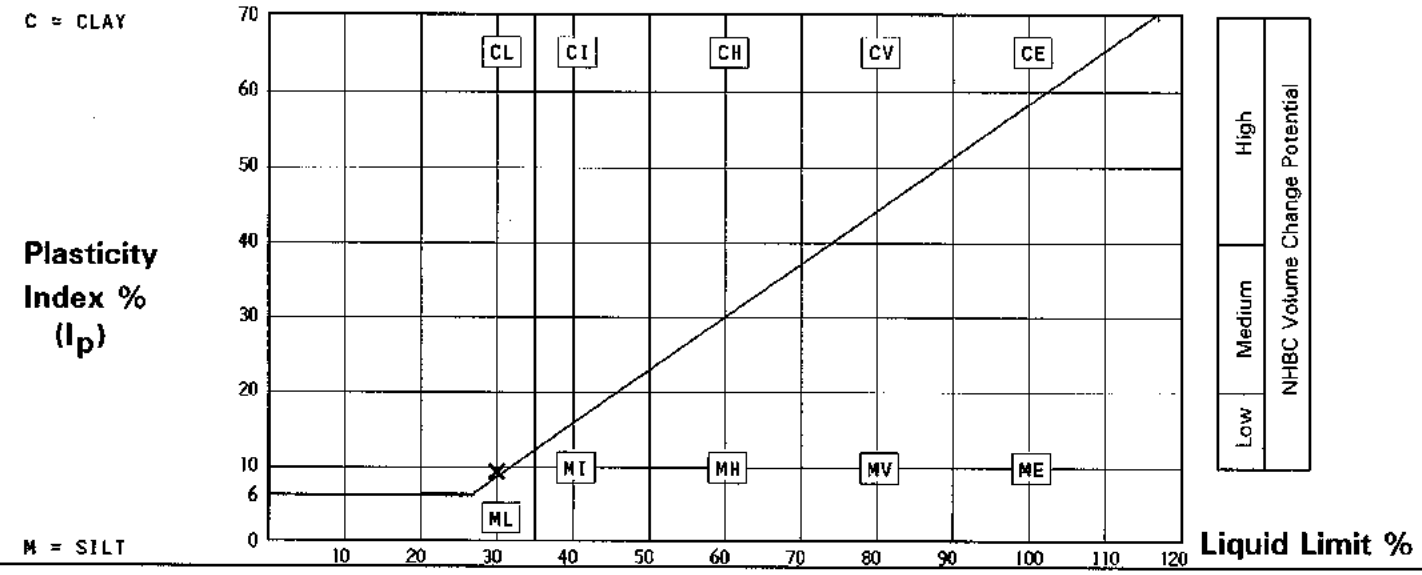
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH06	4.00	B4	29	Black gravelly organic clayey silty SAND/ sandy CLAY. Gravel is black and brown angular and subangular flint	Possible engineering behaviour as a cohesive soil

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	30 %
Sample retained 0.425 sieve	(Measured) 42 %	Plastic Limit	21 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	9.0 %
Curing Time	24 Hours	Liquidity Index	
		Clay Content	6.0 %
		Derived Activity (PI/CC)	1.50



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 14 of 91

Contract: Lake Lothing

Serial No.: S31644-2

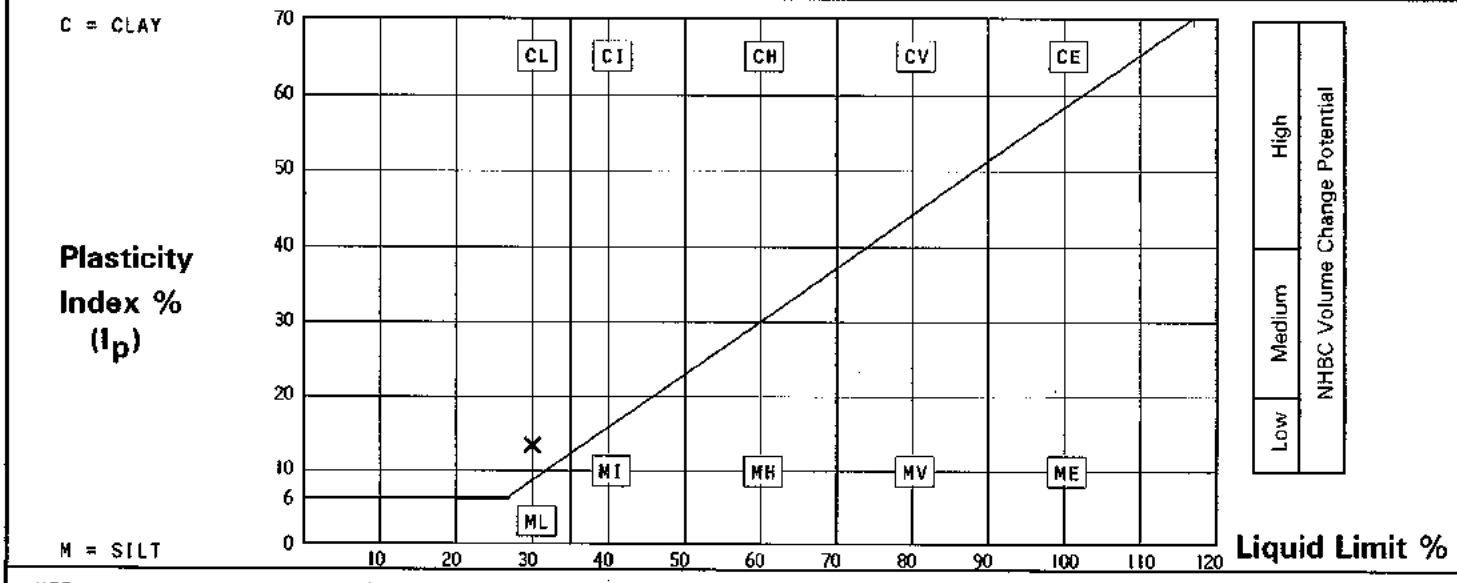
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH06	7.00	B7	33	Very soft bluish grey and pale olive slightly gravelly slightly organic sandy silty CLAY. Gravel is fine and medium quartz and sandstone	

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	30 %
Sample retained 0.425 sieve	(Measured) 6 %	Plastic Limit	17 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	13 %
Curing Time	26 Hours	Liquidity Index	
		Clay Content	20 %
		Derived Activity (PI/CC)	0.65



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4 , 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 15 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

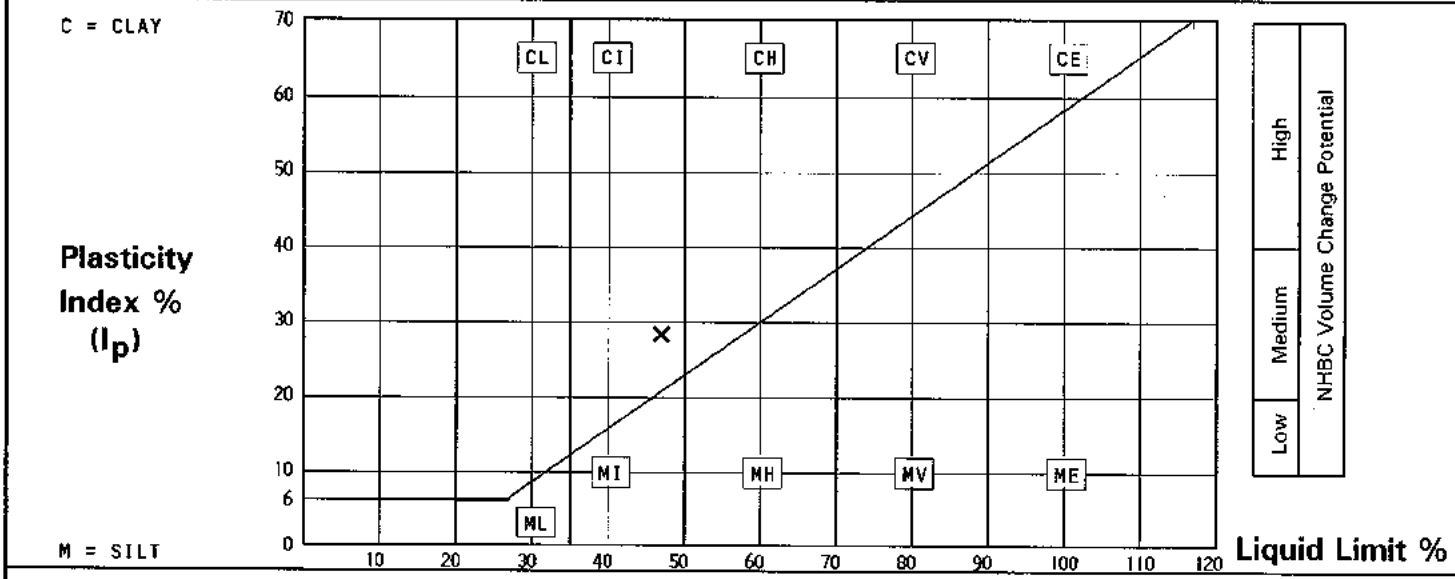
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH06	19.00	D7	28	Firm mottled bluish grey and brown slightly sandy silty CLAY with occasional sand partings	

PREPARATION

Method of Preparation	Specimen from Natural Soil		
Sample retained 0.425 sieve	(Assumed)	0	%
Corrected moisture content for material passing 0.425mm			%
Curing Time		70	Hours

Liquid Limit	47	%
Plastic Limit	19	%
Plasticity Index	28	%
Liquidity Index	0.32	
Clay Content	42	%
Derived Activity (PI/CC)	0.67	



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4 , 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 16 of 91

Contract Lake Lothing

Serial No. S31644-2

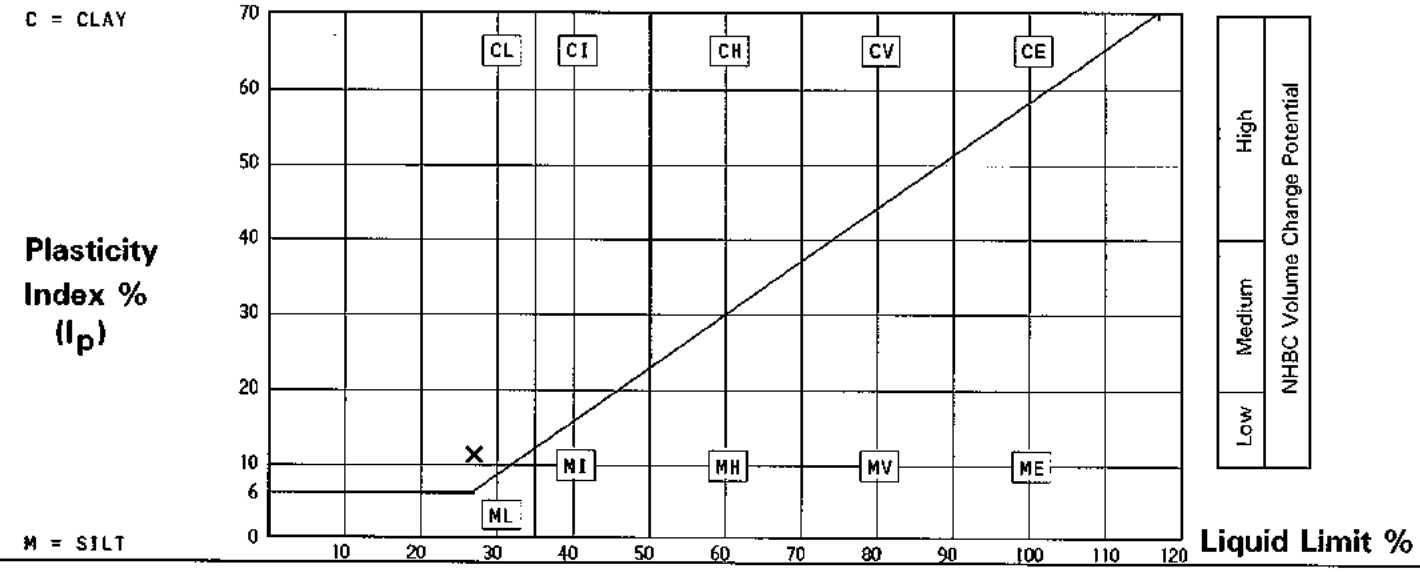
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH06	24.00	B27	33	Very soft dark grey organic sandy silty CLAY with occasional shell fragments	

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	27 %
Sample retained 0.425 sieve	(Measured) 4 %	Plastic Limit	16 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	11 %
Curing Time	25 Hours	Liquidity Index	
		Clay Content	19 %
		Derived Activity (PI/CC)	0.58



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 17 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

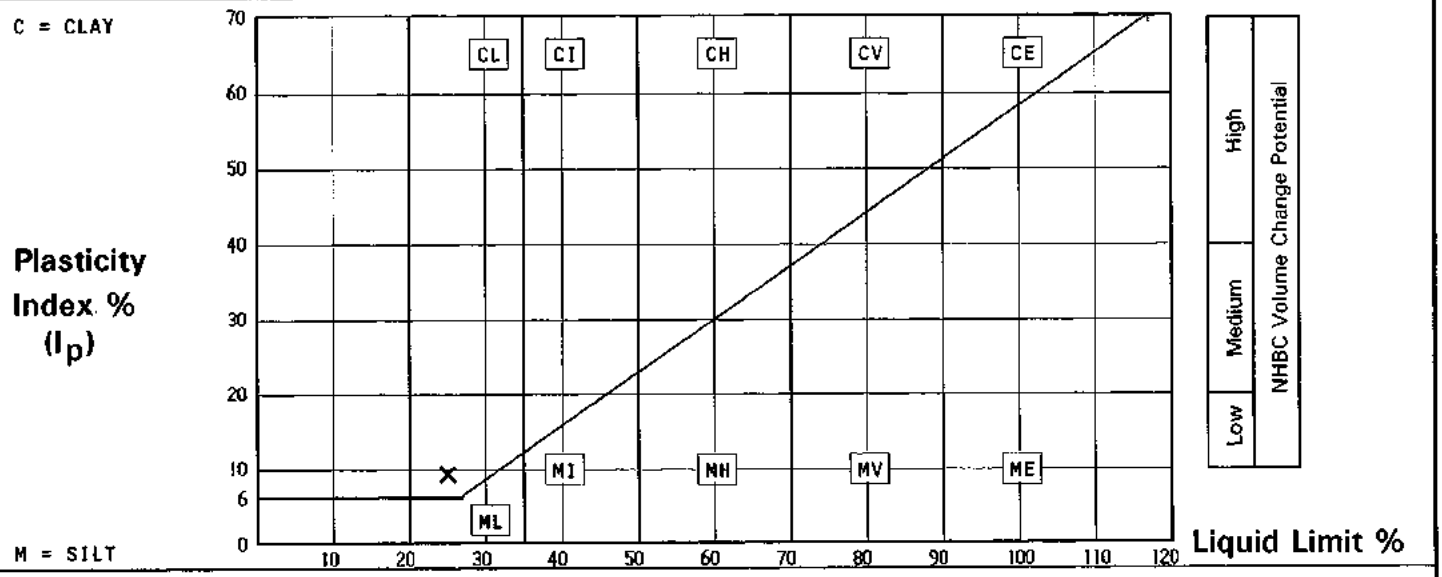
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC02	2.00	B2	22	Pale olive clayey silty SAND/ very sandy CLAY	Possible engineering behaviour as a cohesive soil

PREPARATION

Method of Preparation	Specimen from Natural Soil
Sample retained 0.425 sieve (Assumed)	0 %
Corrected moisture content for material passing 0.425mm	%
Curing Time	25 Hours

Liquid Limit	25 %
Plastic Limit	16 %
Plasticity Index	9.0 %
Liquidity Index	0.67
Clay Content	15 %
Derived Activity (PI/CC)	0.60



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4 , 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 18 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

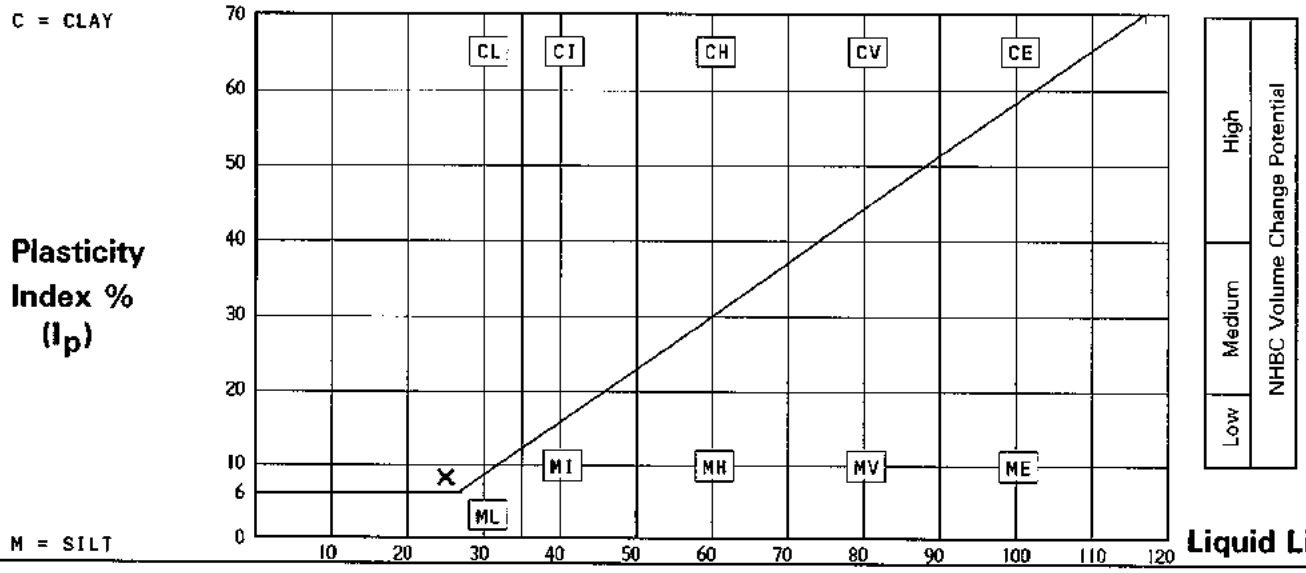
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC02	4.00	P1	25	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining	

PREPARATION

Method of Preparation	Specimen from Natural Soil
Sample retained 0.425 sieve (Assumed)	0 %
Corrected moisture content for material passing 0.425mm	%
Curing Time	25 Hours

Liquid Limit	25 %
Plastic Limit	17 %
Plasticity Index	8.0 %
Liquidity Index	1.00
Clay Content	14 %
Derived Activity (PI/CC)	0.57



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 19 of 91

Contract: Lake Lothing

Serial No.: S31644-2

UKAS TESTING 0998

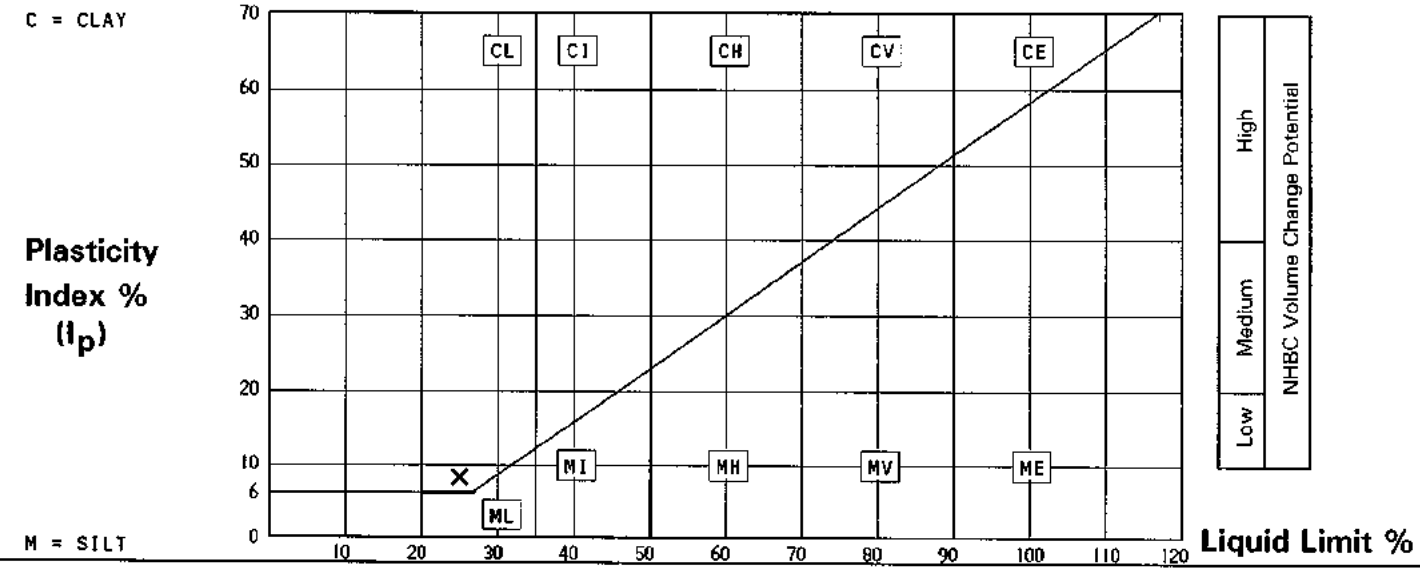
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC02	5.00	B4	26	Brownish yellow clayey very silty SAND (very sandy CLAY) with rare fine gravel	Possible engineering behaviour as a cohesive soil

PREPARATION

Method of Preparation	Sieved Specimen		
Sample retained 0.425 sieve	(Measured) 2 %		
Corrected moisture content for material passing 0.425mm	%		
Curing Time	75 Hours		

Liquid Limit	25 %
Plastic Limit	17 %
Plasticity Index	8.0 %
Liquidity Index	
Clay Content	12 %
Derived Activity (PI/CC)	0.67



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 10 of 11

Contract Lake Lothing

Serial No. S31644-2

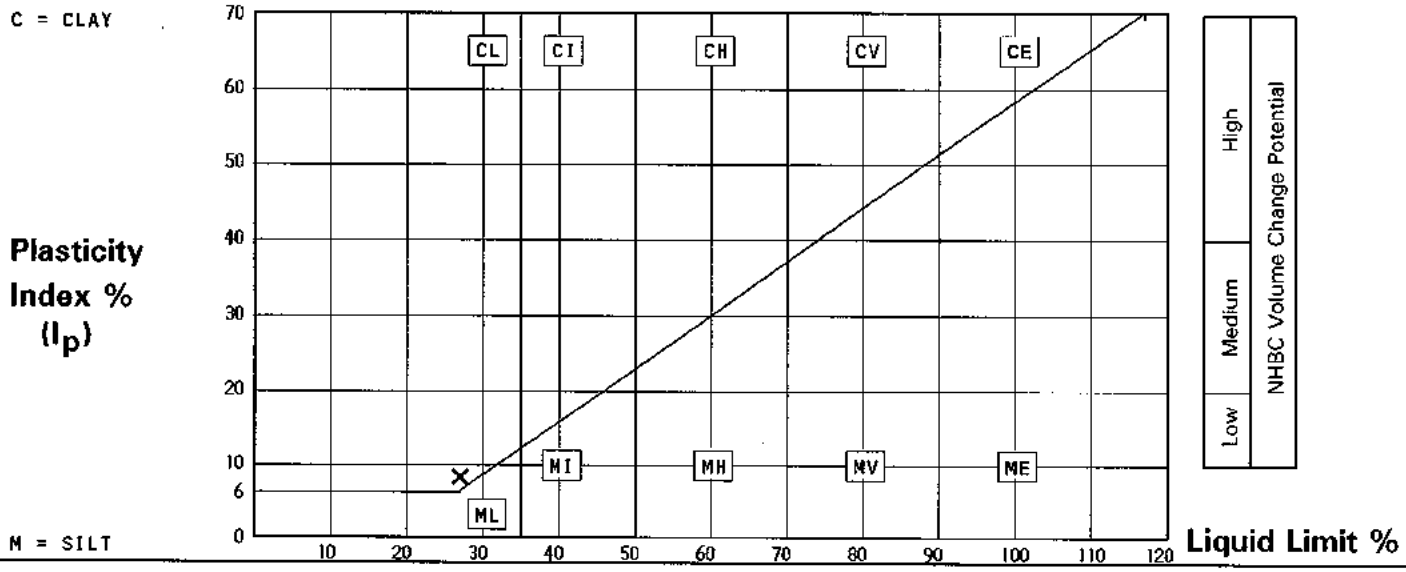
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC02	7.00	B6	26	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	Possible engineering behavior as a cohesive soil

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	27 %
Sample retained 0.425 sieve (Measured)	1 %	Plastic Limit	19 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	8.0 %
Curing Time	26 Hours	Liquidity Index	
		Clay Content	12 %
		Derived Activity (PI/CC)	0.67



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 21 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

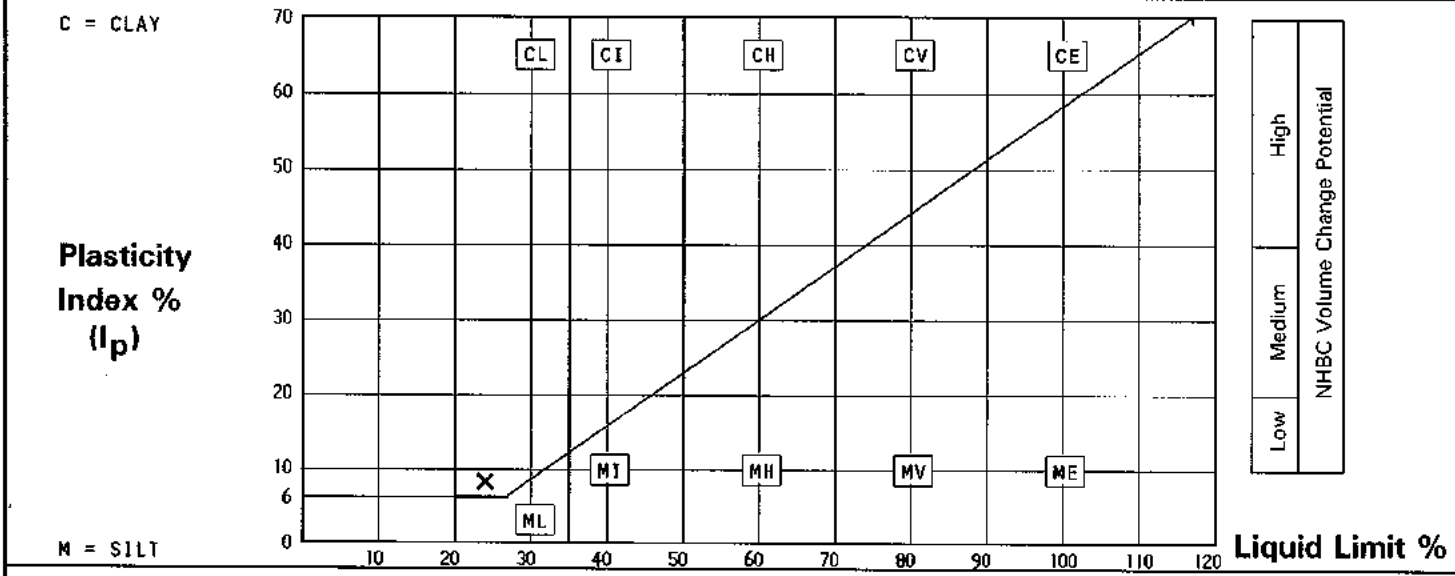
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC03	6.00	B7	27	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	Possible engineering behaviour as a cohesive soil

PREPARATION

Method of Preparation	Sieved Specimen		
Sample retained 0.425 sieve	(Measured) 2 %		
Corrected moisture content for material passing 0.425mm	%		
Curing Time	74 Hours		

Liquid Limit	24 %
Plastic Limit	16 %
Plasticity Index	8.0 %
Liquidity Index	
Clay Content	11 %
Derived Activity (PI/CC)	0.73



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 22 of 91

Contract: Lake Lothing

Serial No.: S31644-2

UKAS TESTING 0998

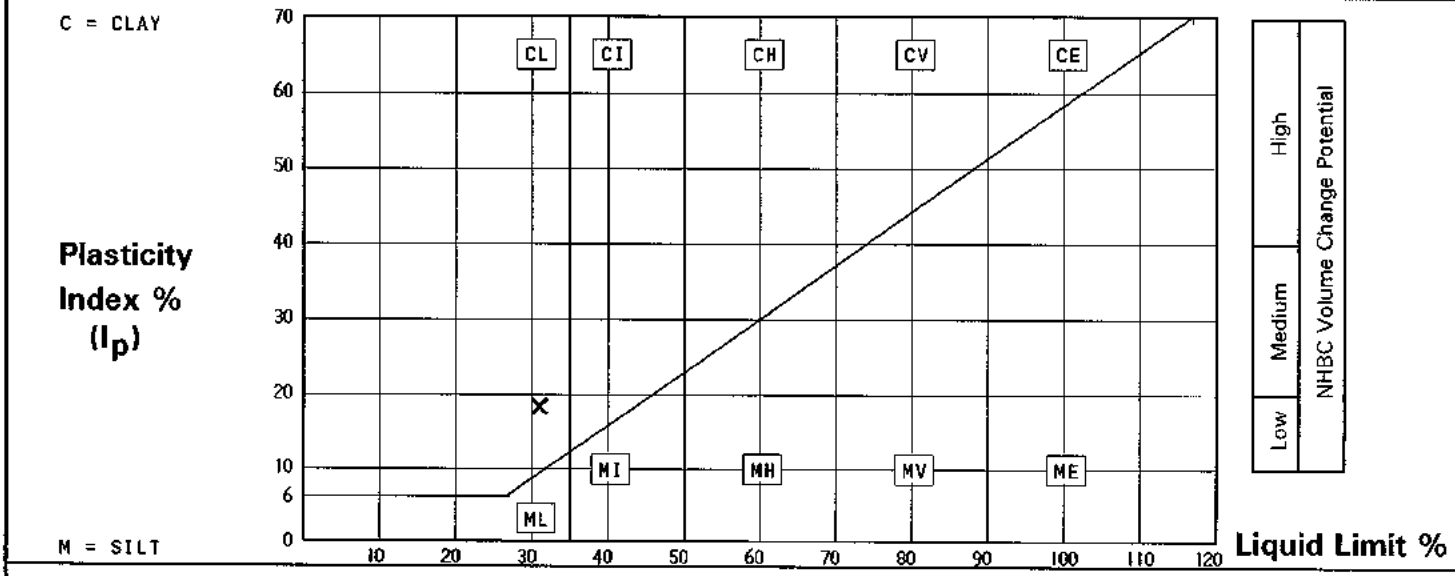
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC06	34.00	B36	28	Very soft dark grey organic sandy silty CLAY with rare very stiff clay/extremely weak claystone lumps	

PREPARATION

Method of Preparation	Specimen from Natural Soil		
Sample retained 0.425 sieve	(Assumed)	0	%
Corrected moisture content for material passing 0.425mm			%
Curing Time		75	Hours

Liquid Limit	31	%
Plastic Limit	13	%
Plasticity Index	18	%
Liquidity Index	0.83	
Clay Content	25	%
Derived Activity (PI/CC)	0.72	



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 23 of 91

Contract Lake Lothing

Serial No. S31644-2

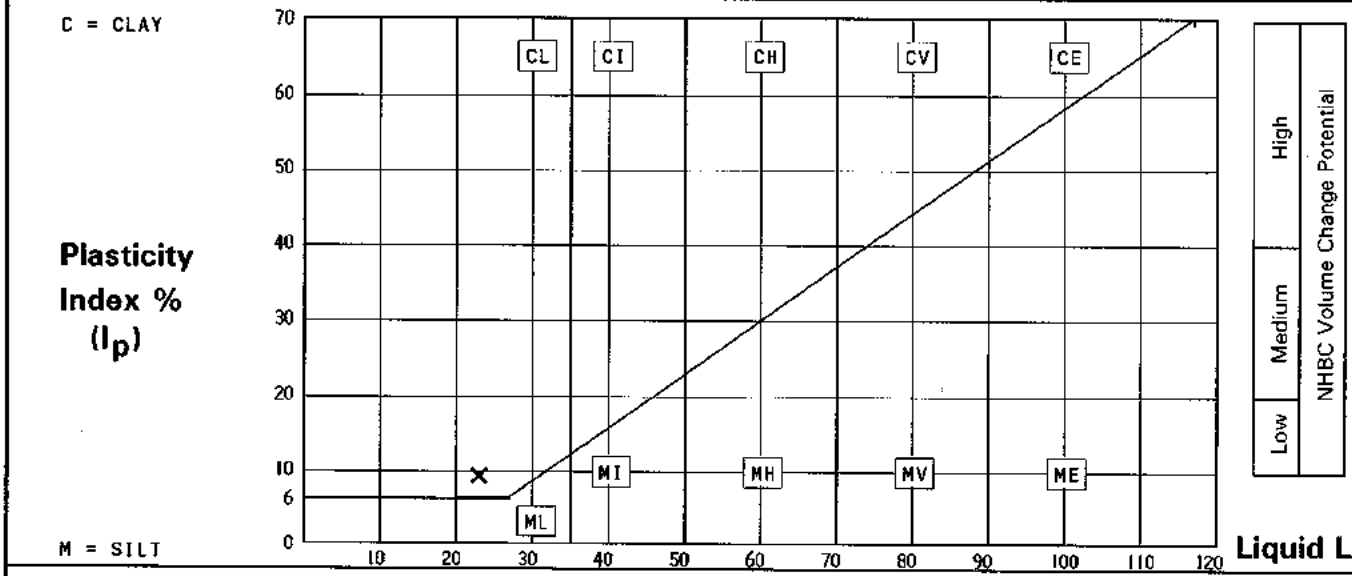
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC06	41.00	B42	26	Dark grey slightly organic silty clayey SAND / very sandy CLAY with occasional shell debris	Possible engineering behaviour as a cohesive soil

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	23 %
Sample retained 0.425 sieve	(Measured) 6 %	Plastic Limit	14 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	9.0 %
Curing Time	75 Hours	Liquidity Index	
		Clay Content	16 %
		Derived Activity (PI/CC)	0.56



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 24 of 71

Contract Lake Lothing

Serial No. S31644-2

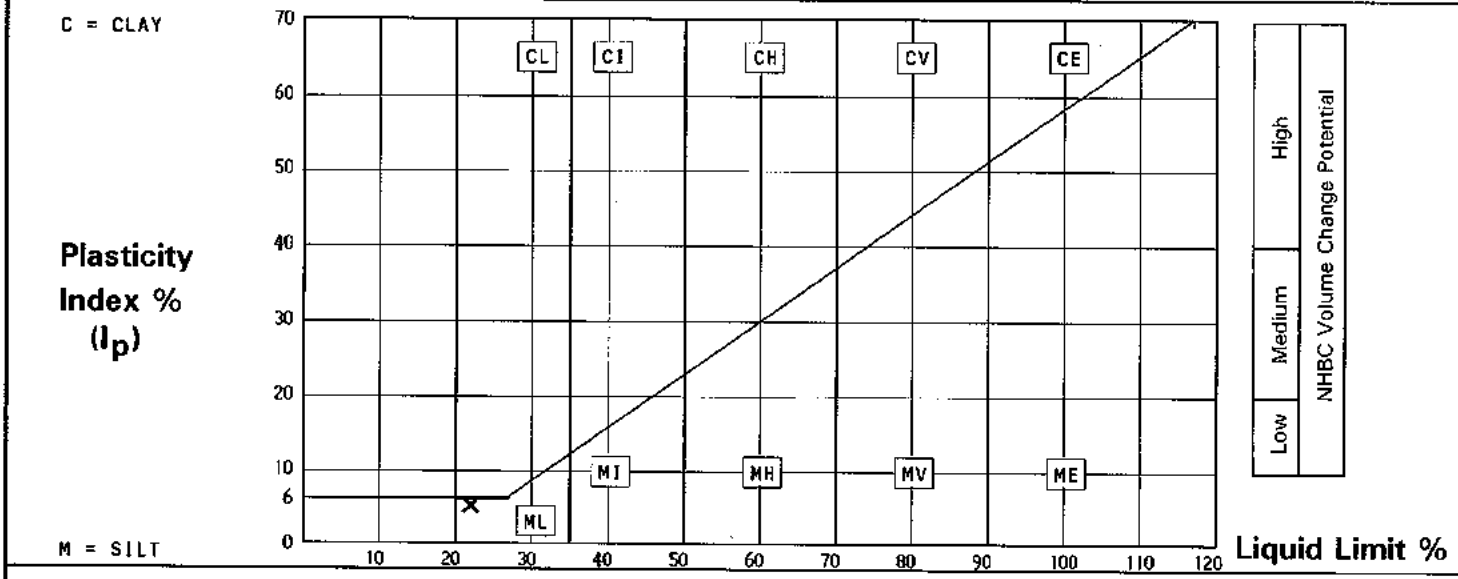
UKAS TESTING 0998

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BHC06	44.00	B45	23	Dark grey slightly organic clayey silty SAND with rare shell debris	

PREPARATION

Method of Preparation	Sieved Specimen	Liquid Limit	22 %
Sample retained 0.425 sieve	(Measured) 2 %	Plastic Limit	17 %
Corrected moisture content for material passing 0.425mm	%	Plasticity Index	5.0 %
Curing Time	26 Hours	Liquidity Index	
		Clay Content	13 %
		Derived Activity (PI/CC)	0.38



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4 , 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 25 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

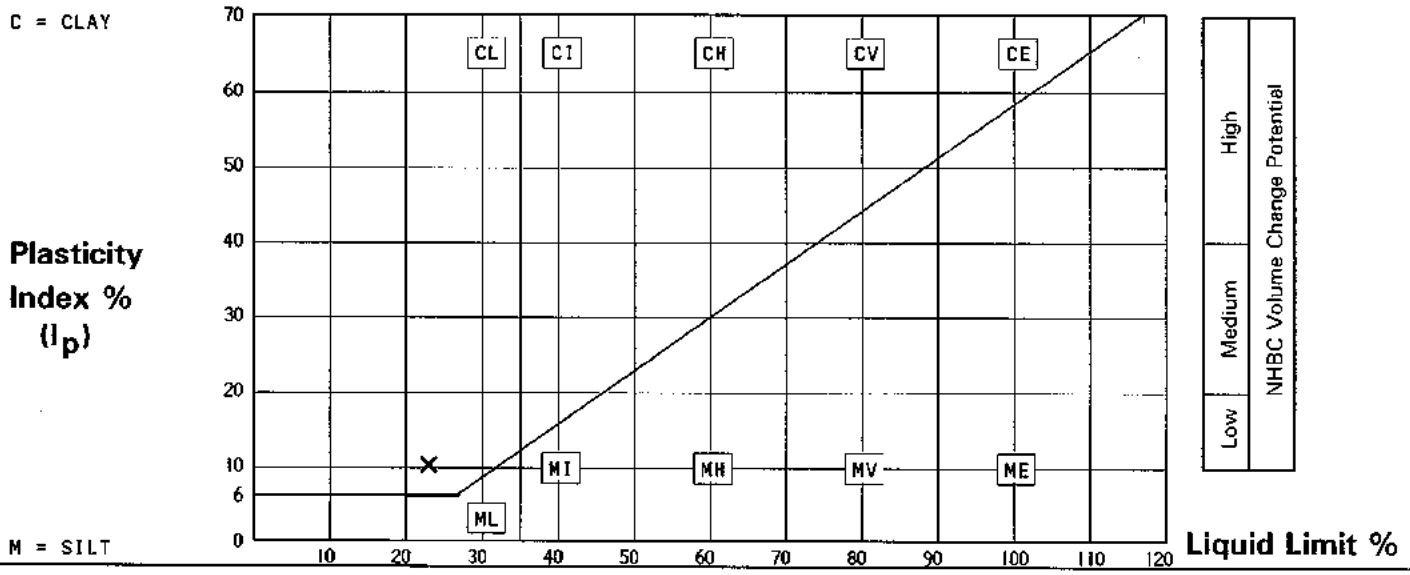
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC21	1.20	B2	15	Brown, dark brown and dark greyish brown slightly gravelly organic clayey silty SAND / sandy CLAY with occasional concrete and rare asphalt and mortar fragments. Gravel is brown, black and white angular to rounded flint	Possible engineering behaviour as a cohesive soil

PREPARATION

Method of Preparation	Sieved Specimen
Sample retained 0.425 sieve (Measured)	24 %
Corrected moisture content for material passing 0.425mm	20 %
Curing Time	24 Hours

Liquid Limit	23 %
Plastic Limit	13 %
Plasticity Index	10 %
Liquidity Index	0.70
Clay Content	10 %
Derived Activity (PI/CC)	1.00



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
Corrected moisture content and liquidity index not reported due to material type
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 26 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

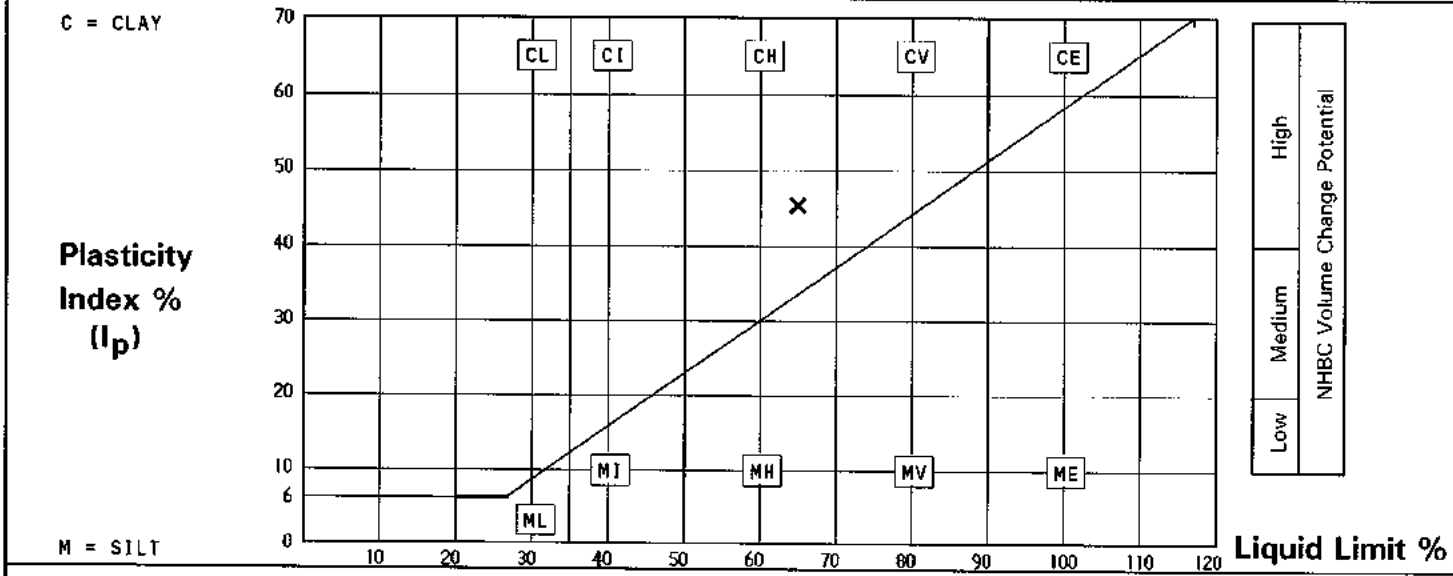
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC21	2.00	B3	33	Soft light olive brown slightly sandy silty CLAY	

PREPARATION

Method of Preparation	Specimen from Natural Soil
Sample retained 0.425 sieve (Assumed)	0 %
Corrected moisture content for material passing 0.425mm	%
Curing Time	67 Hours

Liquid Limit	65 %
Plastic Limit	20 %
Plasticity Index	45 %
Liquidity Index	0.29
Clay Content	Not analysed. %
Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4 , 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 27 **of** 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

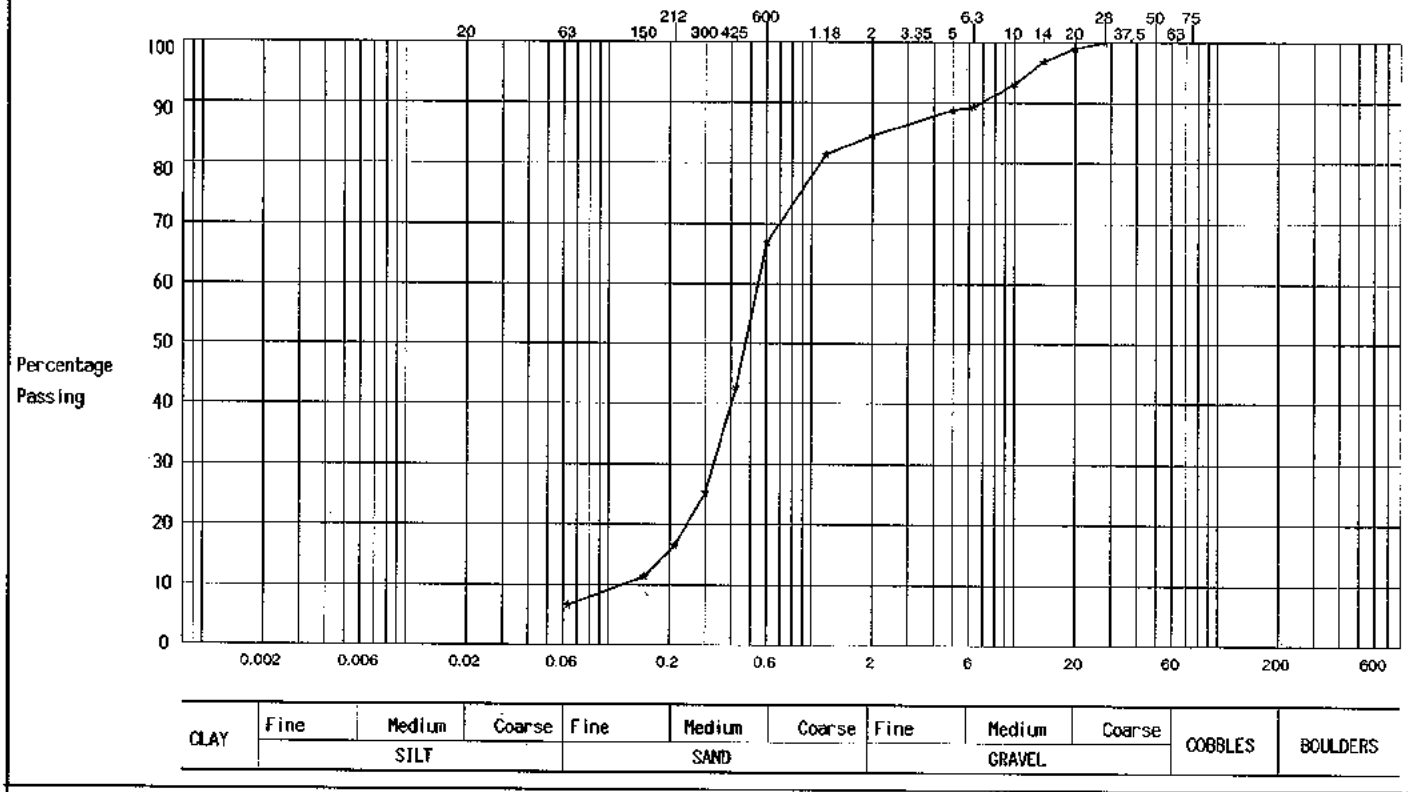
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	0.50	B1	Brown slightly silty gravelly SAND with occasional dark grey organic clayey sand lumps. Gravel is black, white and brown angular to subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment:

Size (microns)														Size (mm)												
Sieve Size												63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve												7	11	16	25	43	67	81	84	89	89	93	97	99	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 28 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

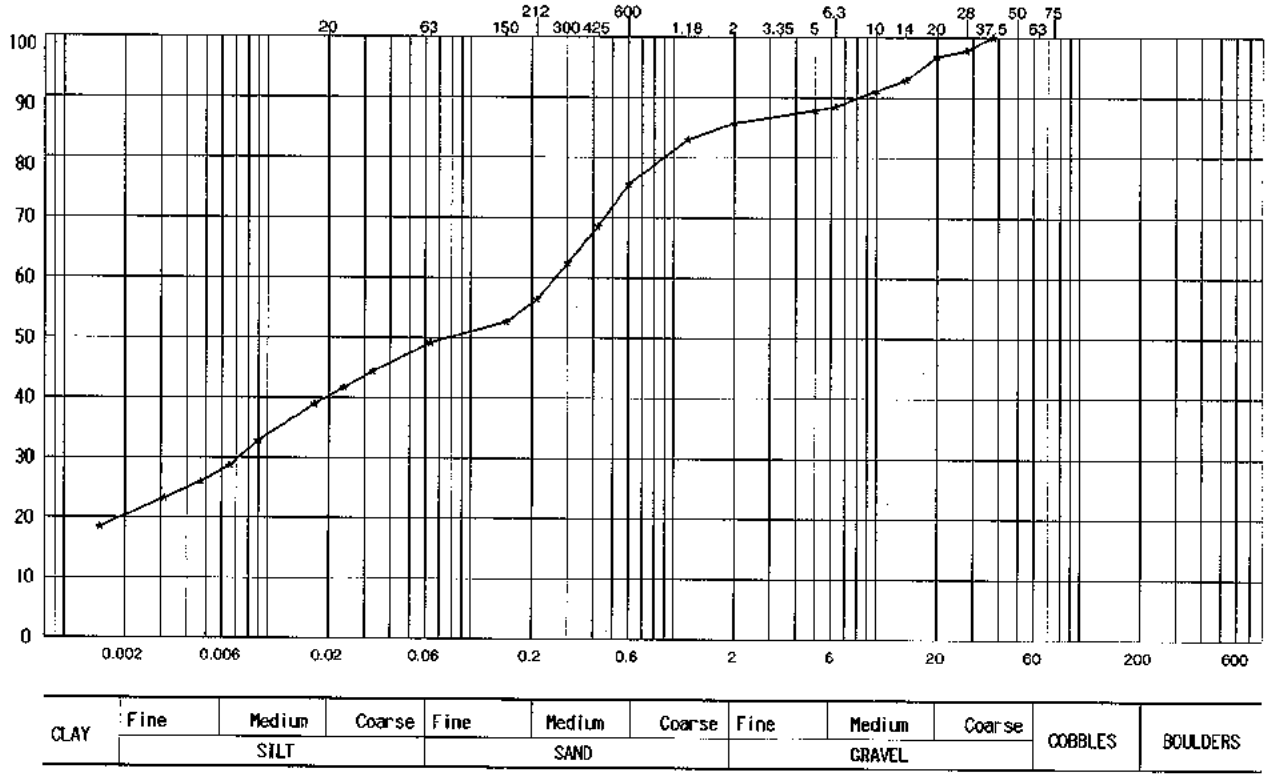
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	2.70 -3.70	B3	Very soft black slightly gravelly organic sandy silty CLAY locally oxidised to brown with occasional shells. Gravel is black, brown and white angular to subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)														Size (mm)										
Sieve Size	1.5	3.1	4.7	6.5	9	17	23.7	33	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	18	23	26	29	33	39	42	44	49	53	56	62	68	75	83	86	88	88	91	93	97	98	100	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 29 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

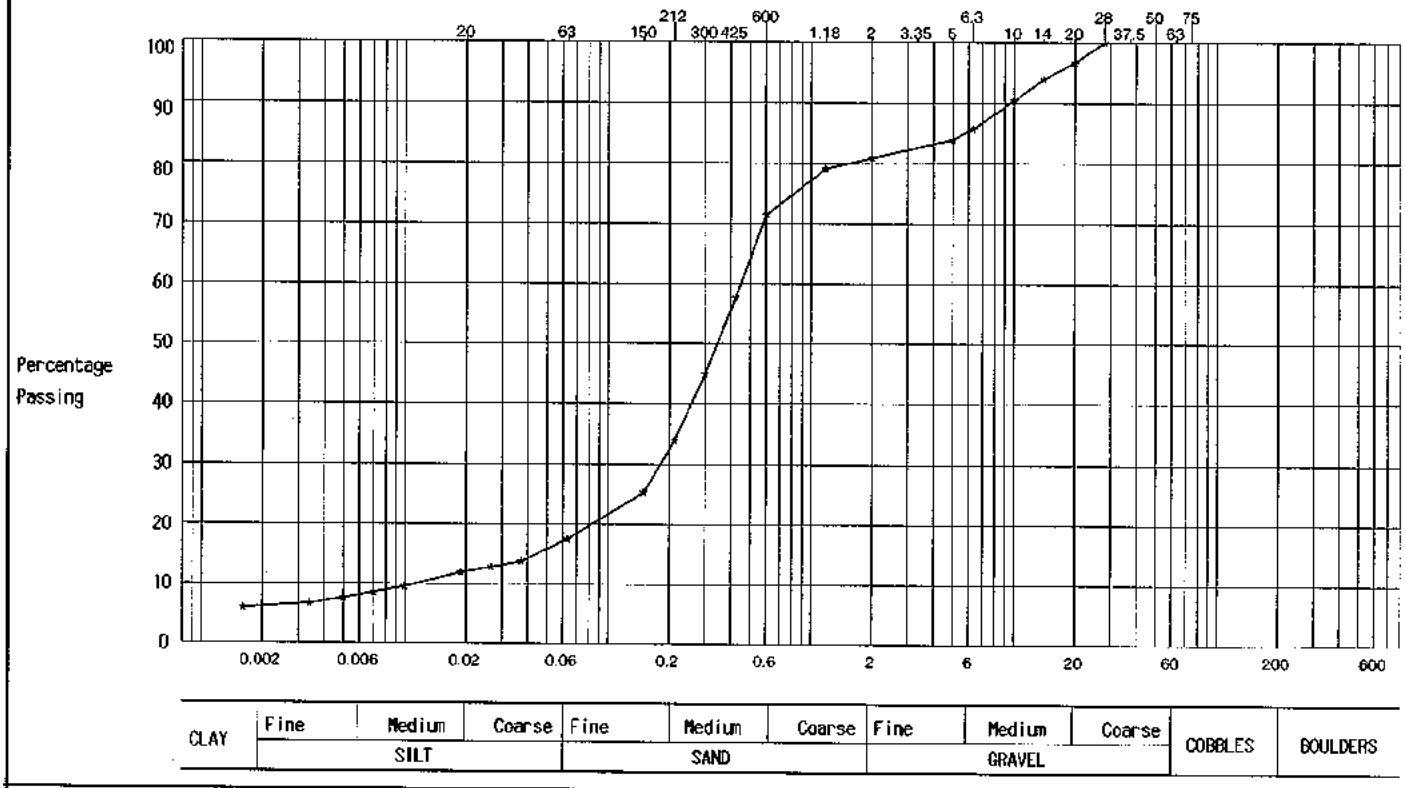
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	4.00	B4	Black gravelly organic clayey silty SAND/ sandy CLAY. Gravel is black and brown angular and subangular flint	Possible engineering behaviour as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED

	Size (microns)															Size (mm)										
Sieve Size	1.6	3.4	5	7	9.9	18.8	26.5	37.2	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	6	7	8	9	9	12	13	14	17	25	34	45	58	71	79	81	84	86	90	94	97	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 30 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

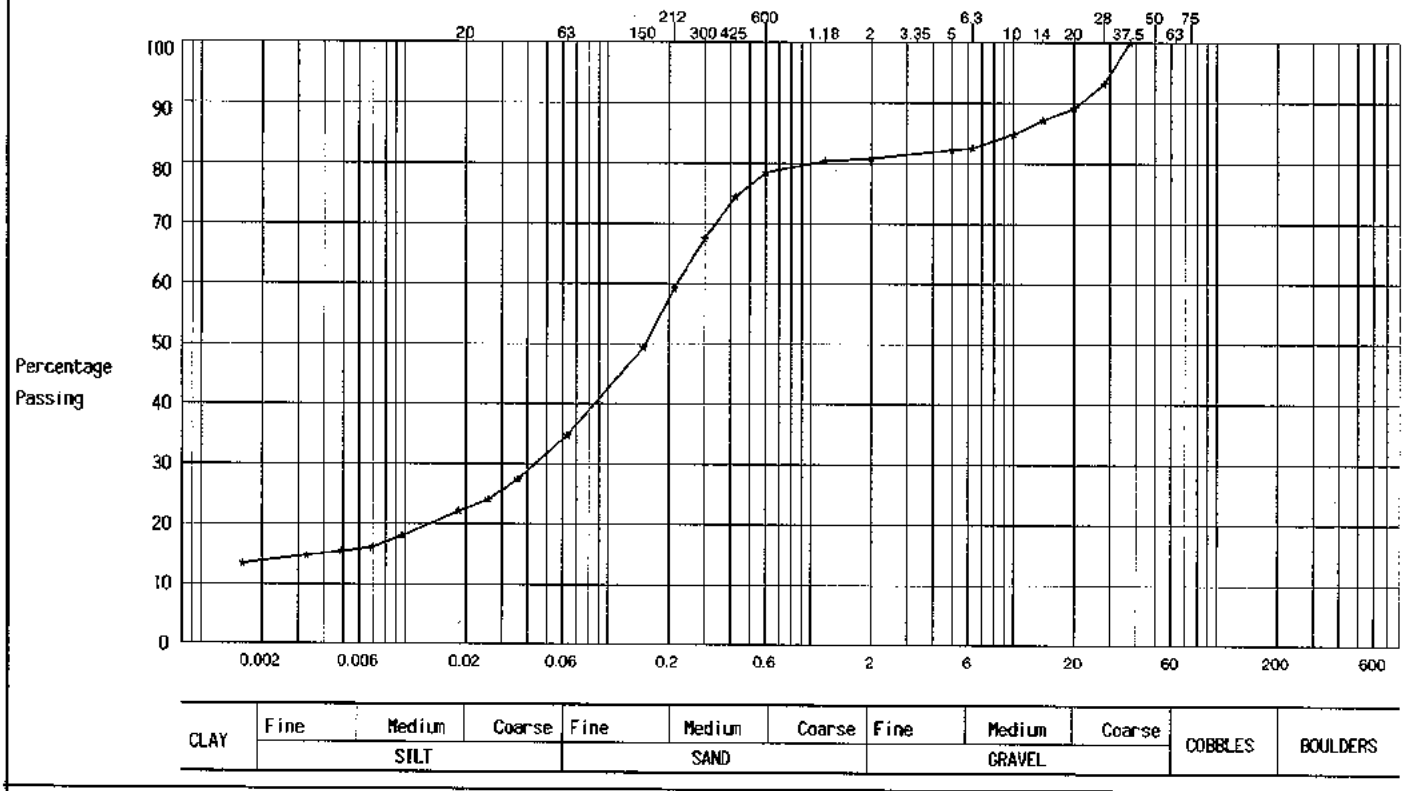
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	5.50 -3.70	B6	Very soft dark greyish brown slightly gravelly organic sandy silty CLAY with frequent soft light olive grey clay pockets. Gravel is black and white angular to rounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED

Size (microns)																		Size (mm)										
Sieve Size					1.6	3.3	4.9	6.9	9.7	18.4	25.8	35.9	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					13	15	15	16	18	22	24	27	35	49	59	67	74	78	80	81	82	83	85	87	89	93	100	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 31 **of** 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

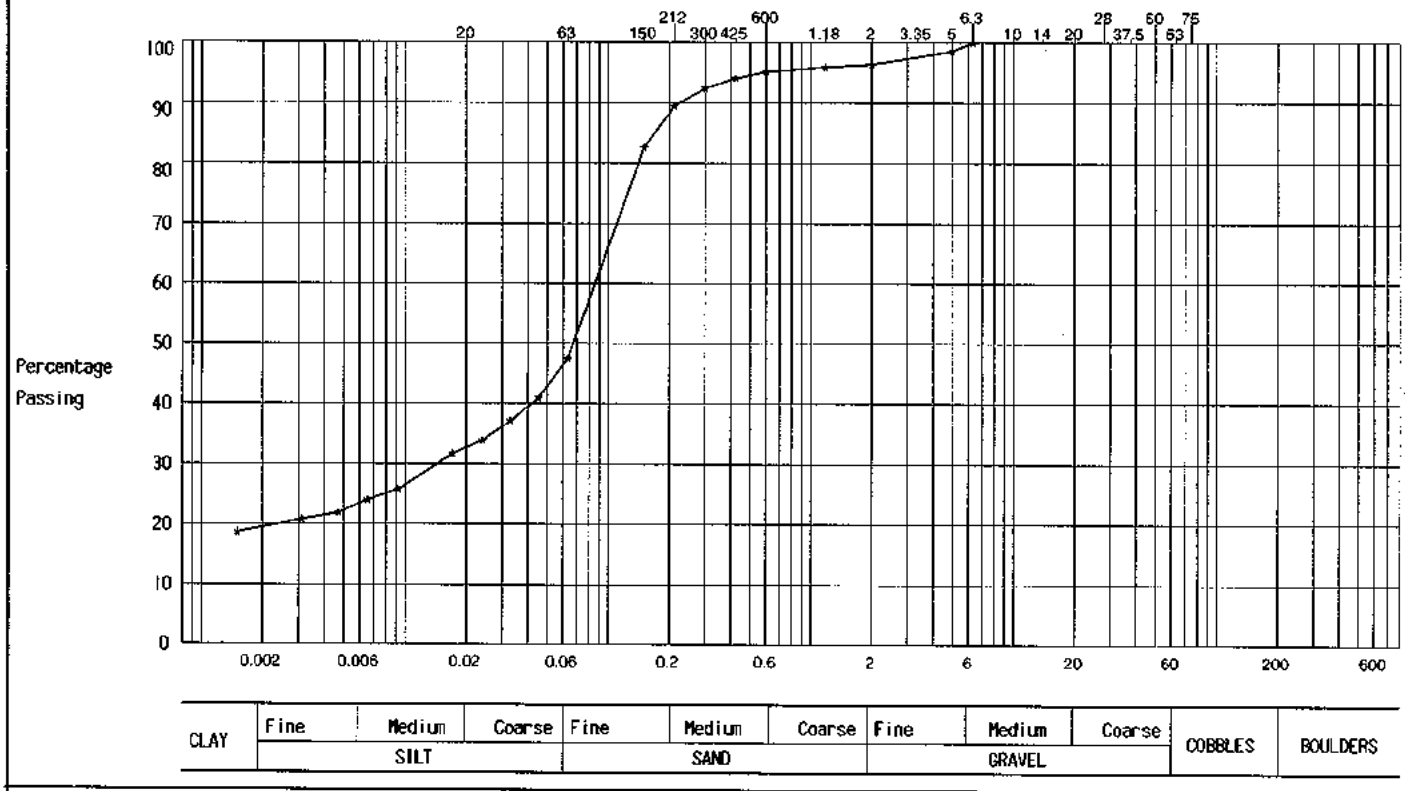
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	7.00	B7	Very soft bluish grey and pale olive slightly gravelly slightly organic sandy silty CLAY. Gravel is fine and medium quartz and sandstone	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)										
Sieve Size				1.5	3.1	4.7	6.5	9.2	17.1	23.9	33	45.4	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				19	21	22	24	26	32	34	37	41	47	83	89	92	94	95	96	96	99	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 11 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

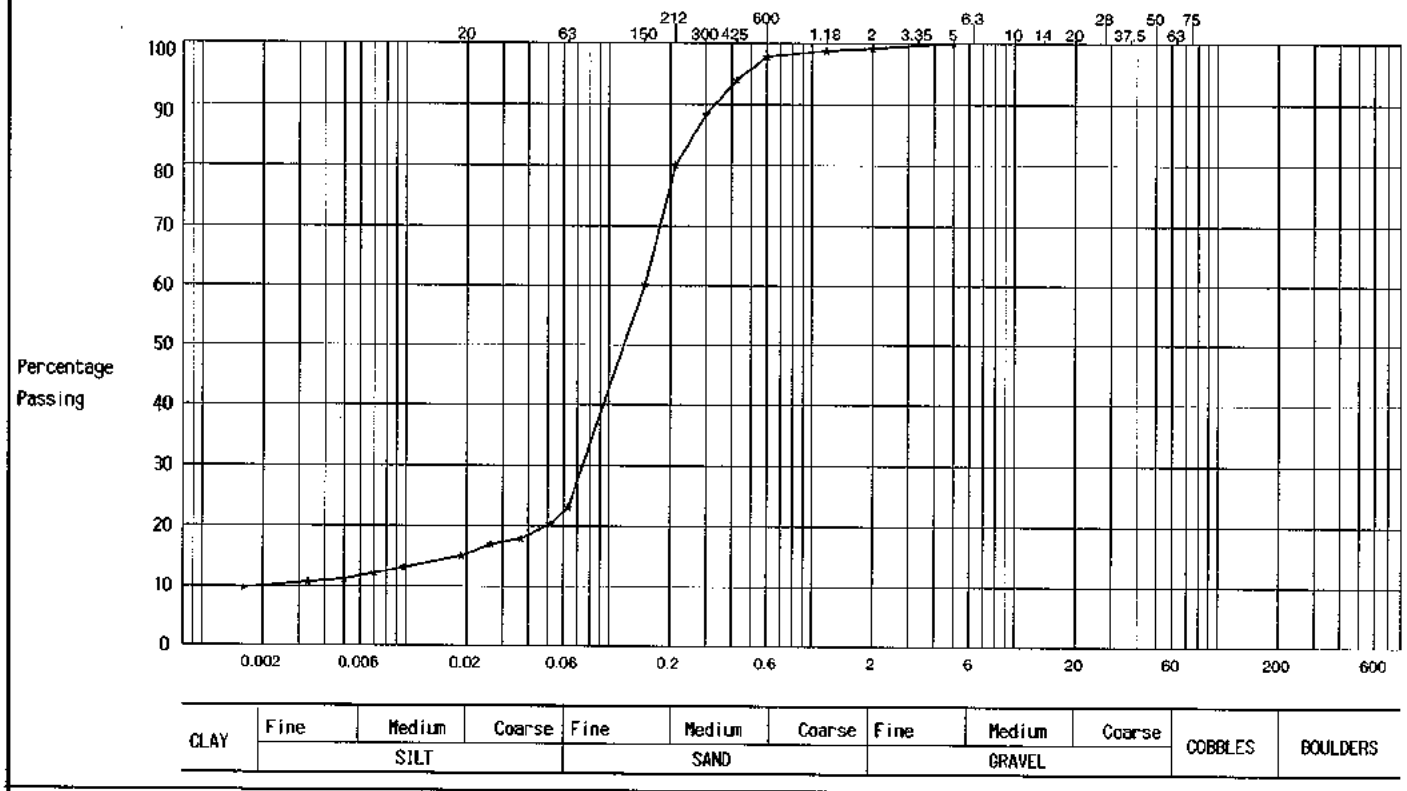
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	8.50	B9	Light olive brown slightly organic clayey silty SAND with bluish grey mottling	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																	Size (mm)										
Sieve Size				1.6	3.3	5	7	9.8	18.8	26.2	36.8	51.3	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				10	11	11	12	13	15	17	18	20	23	60	80	88	94	98	99	99	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 33 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

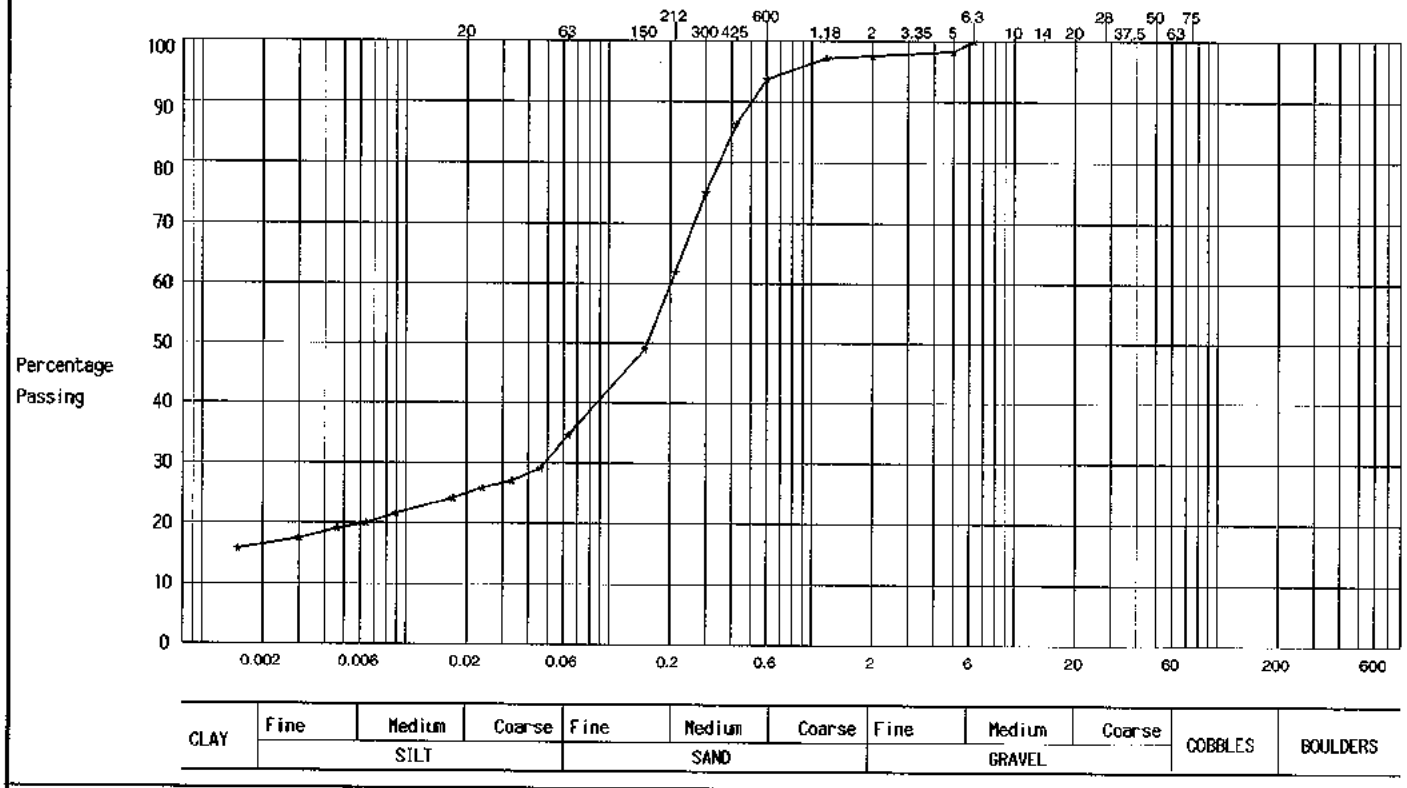
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	11.00	B13	Very soft pale olive slightly gravelly slightly organic sandy silty CLAY with occasional dark grey pockets. Gravel is fine and medium quartz	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)										
Sieve Size	1.5	3	4.6	6.4	9	17	23.7	33.2	46	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	16	17	19	20	22	24	26	27	29	35	49	62	75	86	94	97	98	98	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990: 9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 14 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

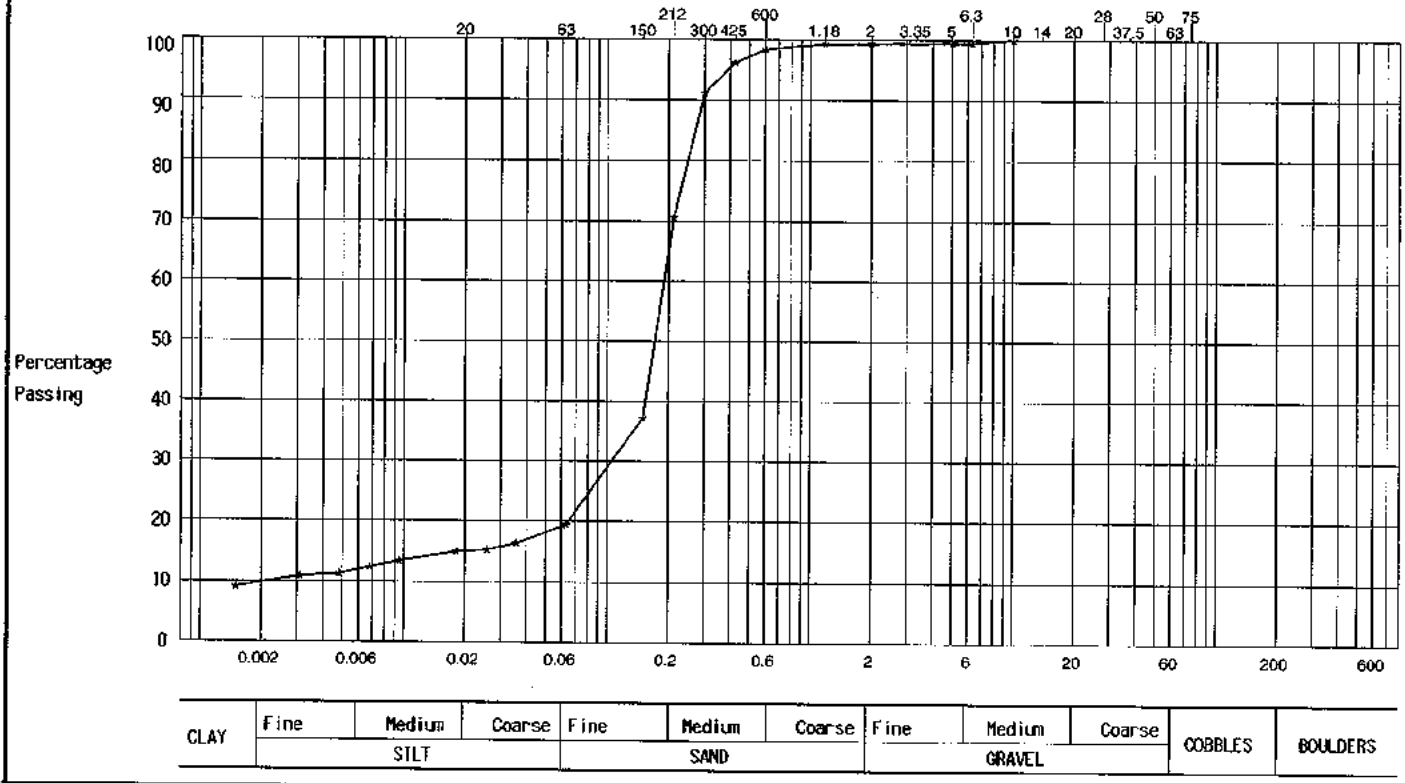
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	14.00	B16	Dark grey slightly organic clayey silty SAND	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)															Size (mm)										
Sieve Size	1.5	3.1	4.8	6.8	9.5	18.1	25.6	35.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	9	11	11	12	13	15	15	16	19	37	71	91	96	98	99	99	99	99	100	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 35 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

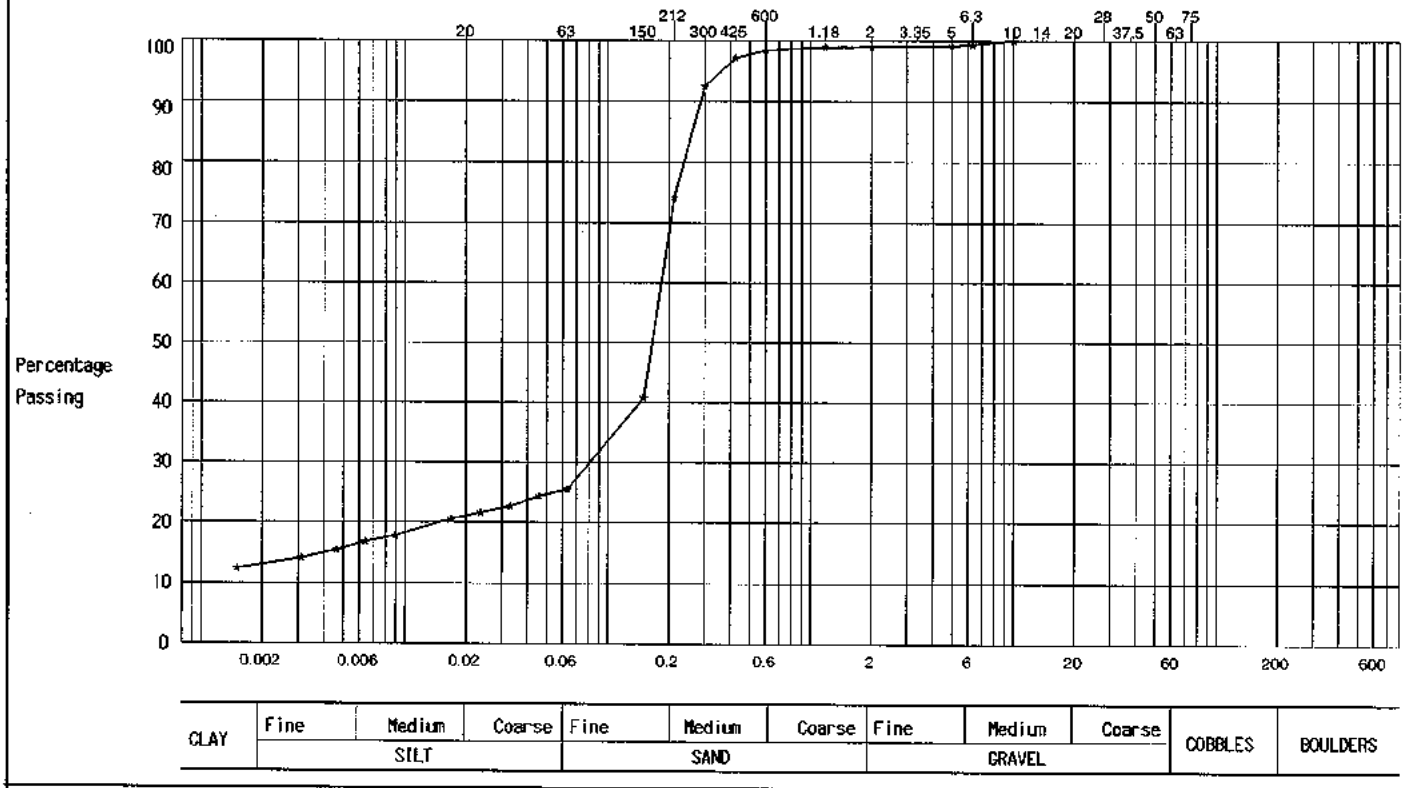
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	18.00	B20	Pale olive and dark grey slightly organic clayey silty fine and medium SAND with rare fine and medium gravel	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

Size (microns)																	Size (mm)										
Sieve Size				1.5	3.1	4.6	6.4	9	16.9	23.6	33	45.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				12	14	15	17	18	21	22	23	24	25	41	74	92	97	98	99	99	99	99	100	-	-	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 36 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

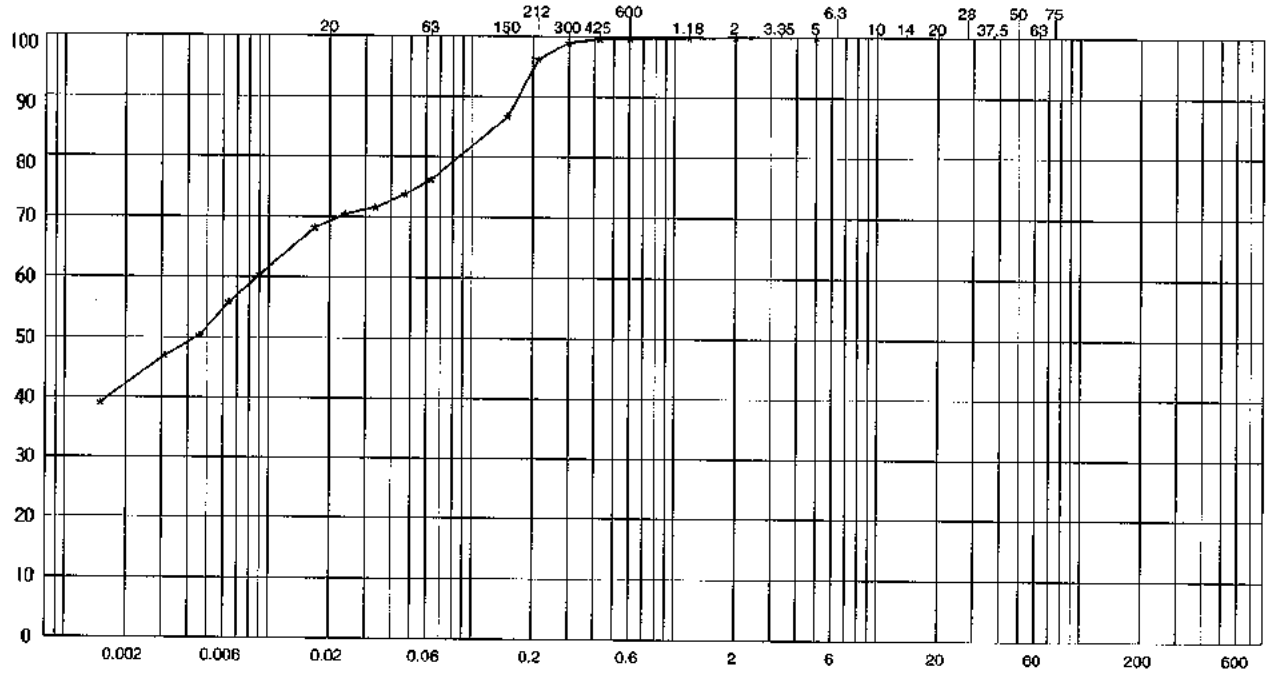
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	19.00	D7	Firm mottled bluish grey and brown slightly sandy silty CLAY with occasional sand partings	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY.

	Size (microns)																Size (mm)										
Sieve Size	1.5	3.1	4.6	6.4	9	16.9	23.8	33.5	47	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	39	47	50	56	60	68	70	71	74	76	87	96	99	100	100	100	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 37 **of** 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

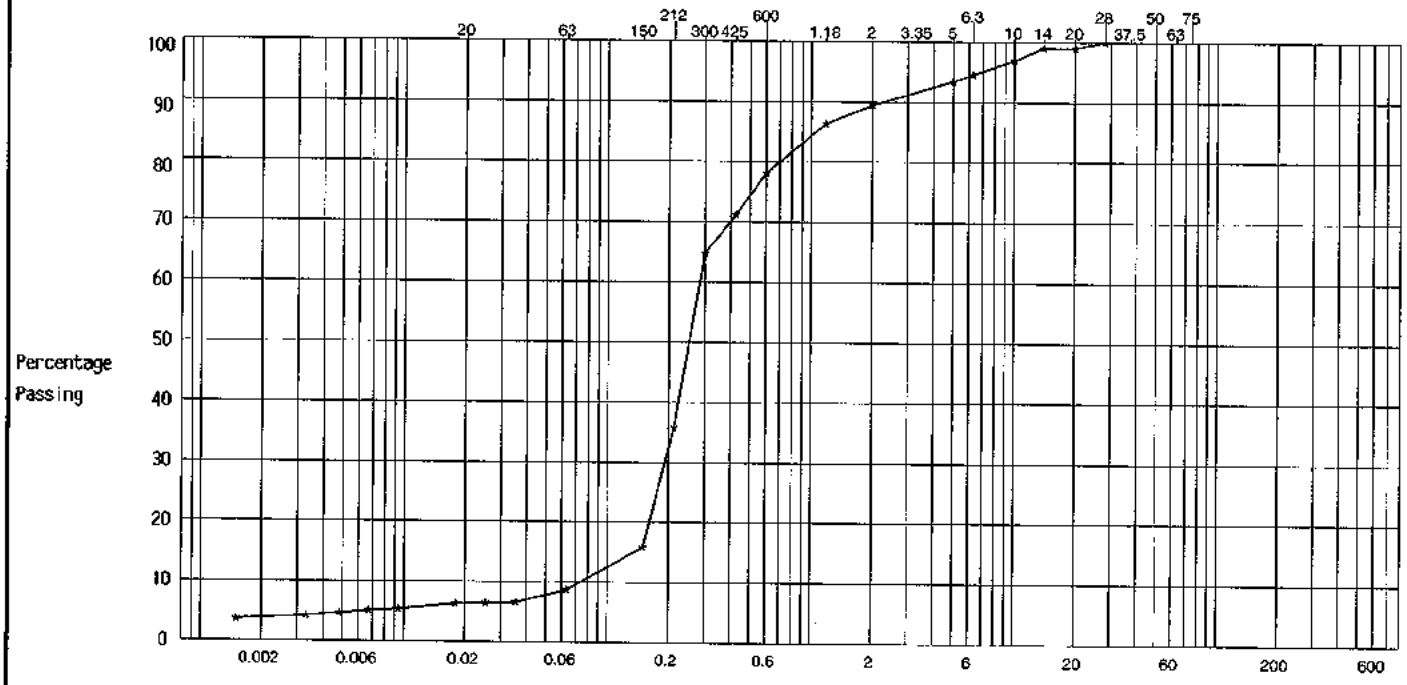
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	21.00 -21.50	B24	Brownish grey slightly clayey silty gravelly SAND with occasional shell fragments. Gravel is black angular to subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)															Size (mm)										
Sieve Size	1.5	3.3	4.8	6.7	9.4	17.9	25.2	35.5	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	4	4	5	5	5	6	6	7	9	16	36	65	71	78	86	89	93	95	97	99	99	100	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 38 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

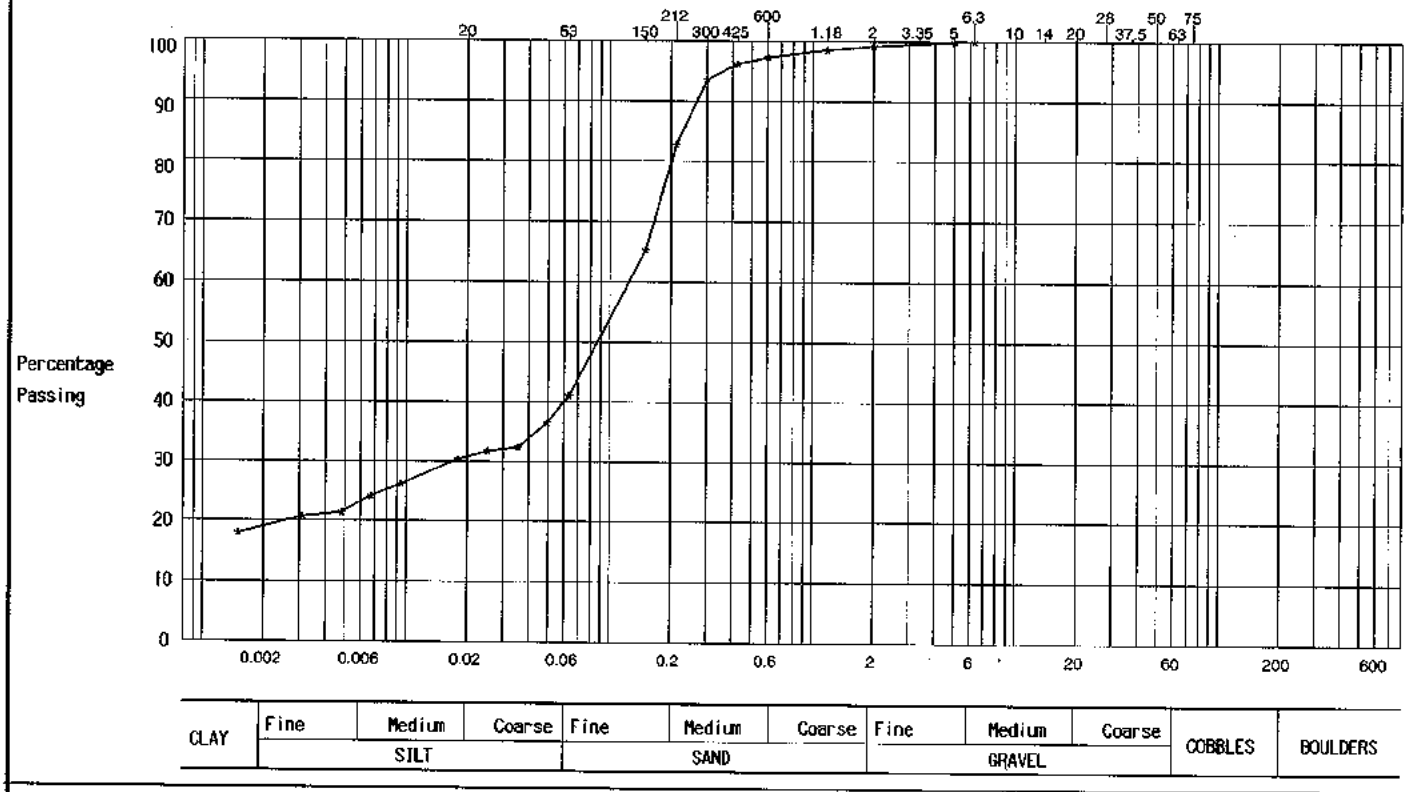
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	24.00	B27	Very soft dark grey organic sandy silty CLAY with occasional shell fragments	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)										
Sieve Size				1.5	3.1	4.8	6.7	9.4	17.9	25.2	35.5	49.1	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				18	21	21	24	26	30	32	32	36	41	65	83	94	96	97	99	99	100	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 39 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

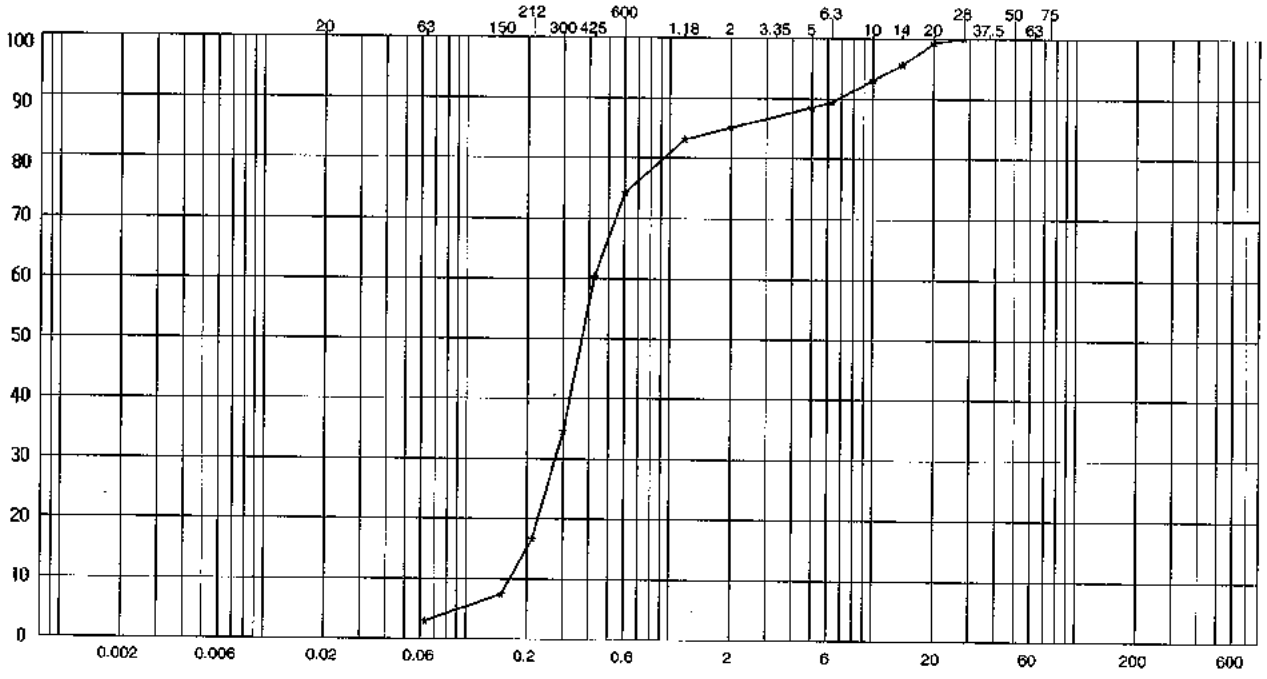
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	1.00	B1	Light brown slightly silty gravelly SAND with rare dark brown clayey sand lumps. Gravel is black, brown and white angular to subrounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

Size (microns)															Size (mm)											
Sieve Size												63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve												3	7	17	34	60	74	83	85	88	89	93	96	99	100	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 60 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

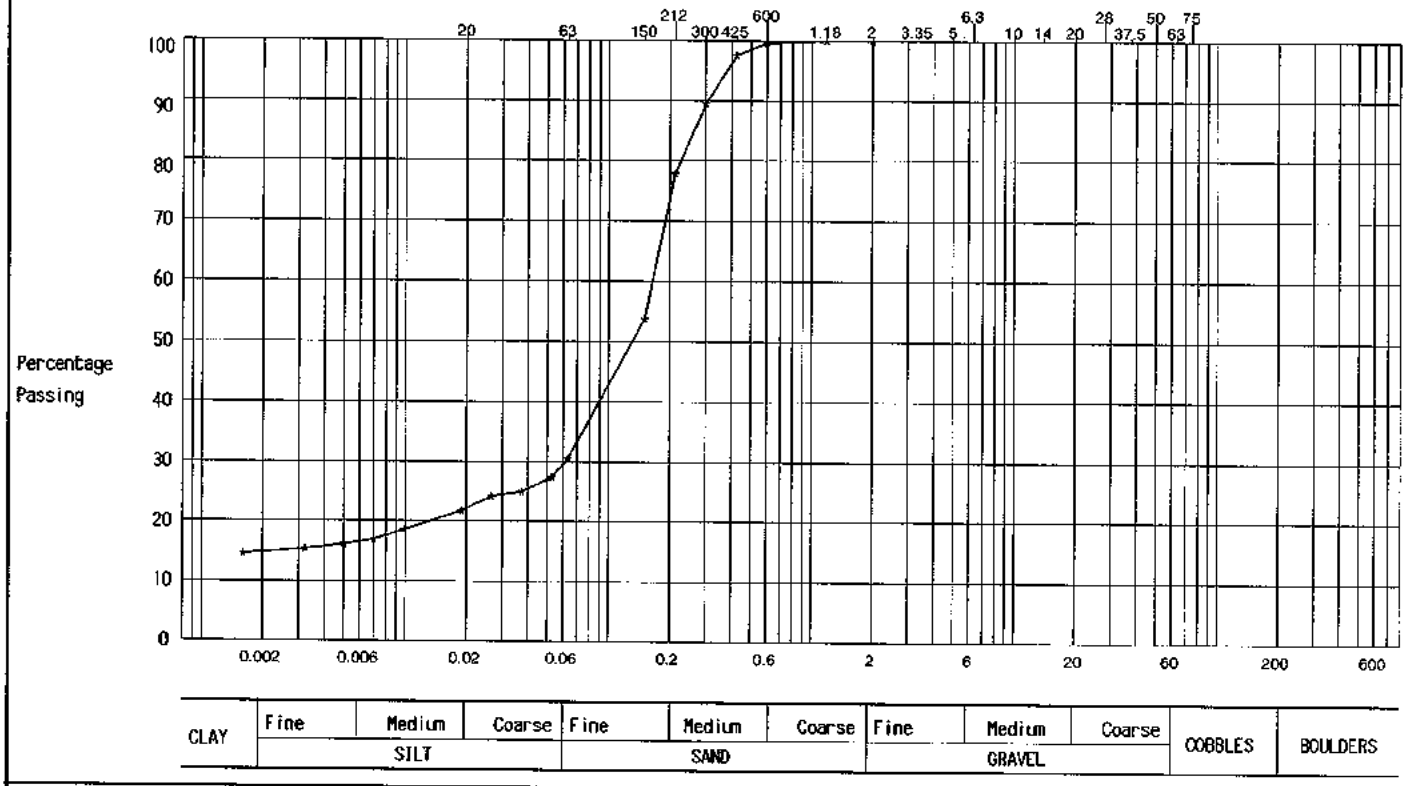
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	2.00	B2	Pale olive clayey silty SAND/ very sandy CLAY	Possible engineering behaviour as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)																Size (mm)										
Sieve Size				1.6	3.2	5	7	9.9	18.9	26.5	37.4	52.5	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				14	15	16	17	18	22	24	25	27	30	54	78	89	98	100	100	100	-	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 41 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

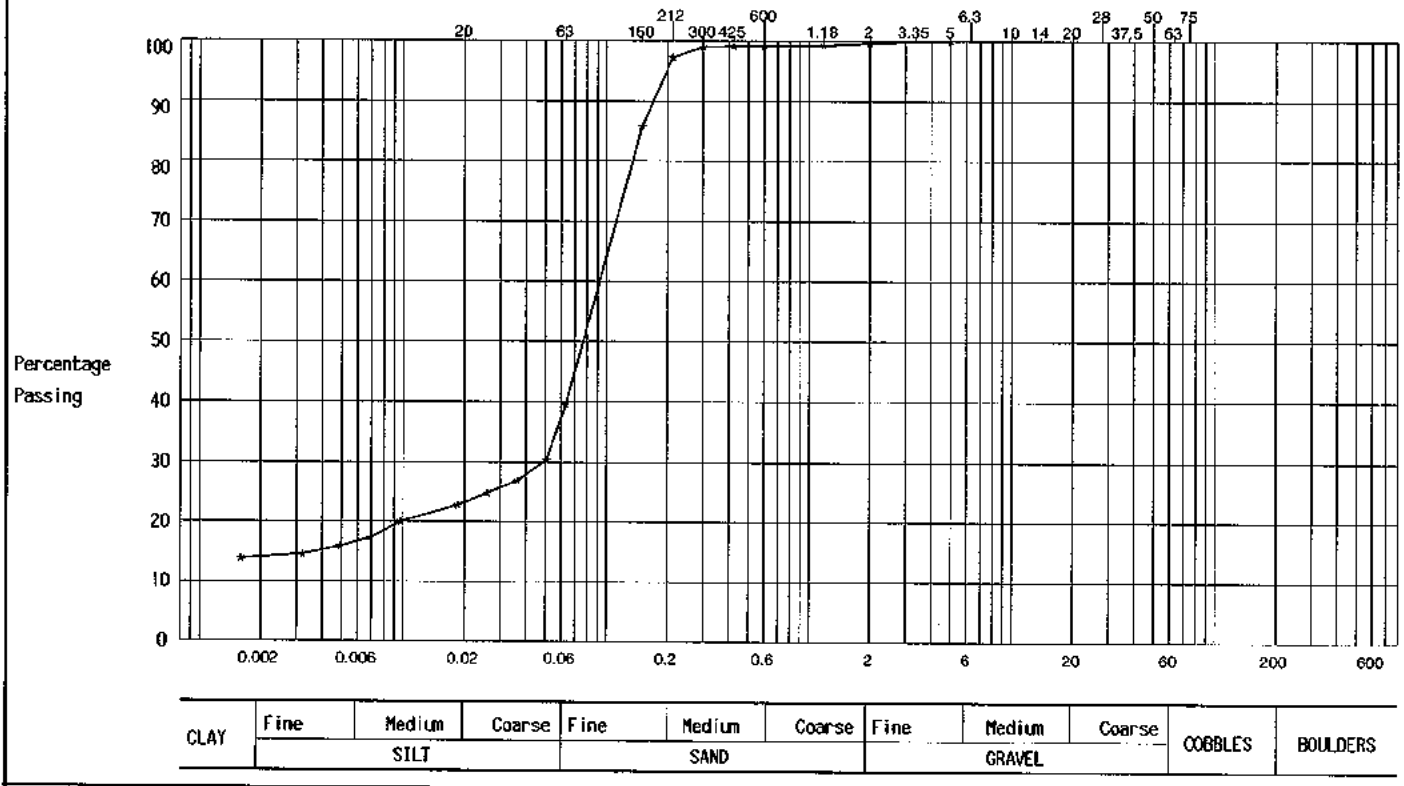
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	4.00	P1	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)															Size (mm)									
Sieve Size	1.6	3.2	4.9	6.9	9.7	18.5	25.9	36.4	50.6	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	14	14	16	17	20	23	25	27	30	39	86	97	99	99	99	99	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 42 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

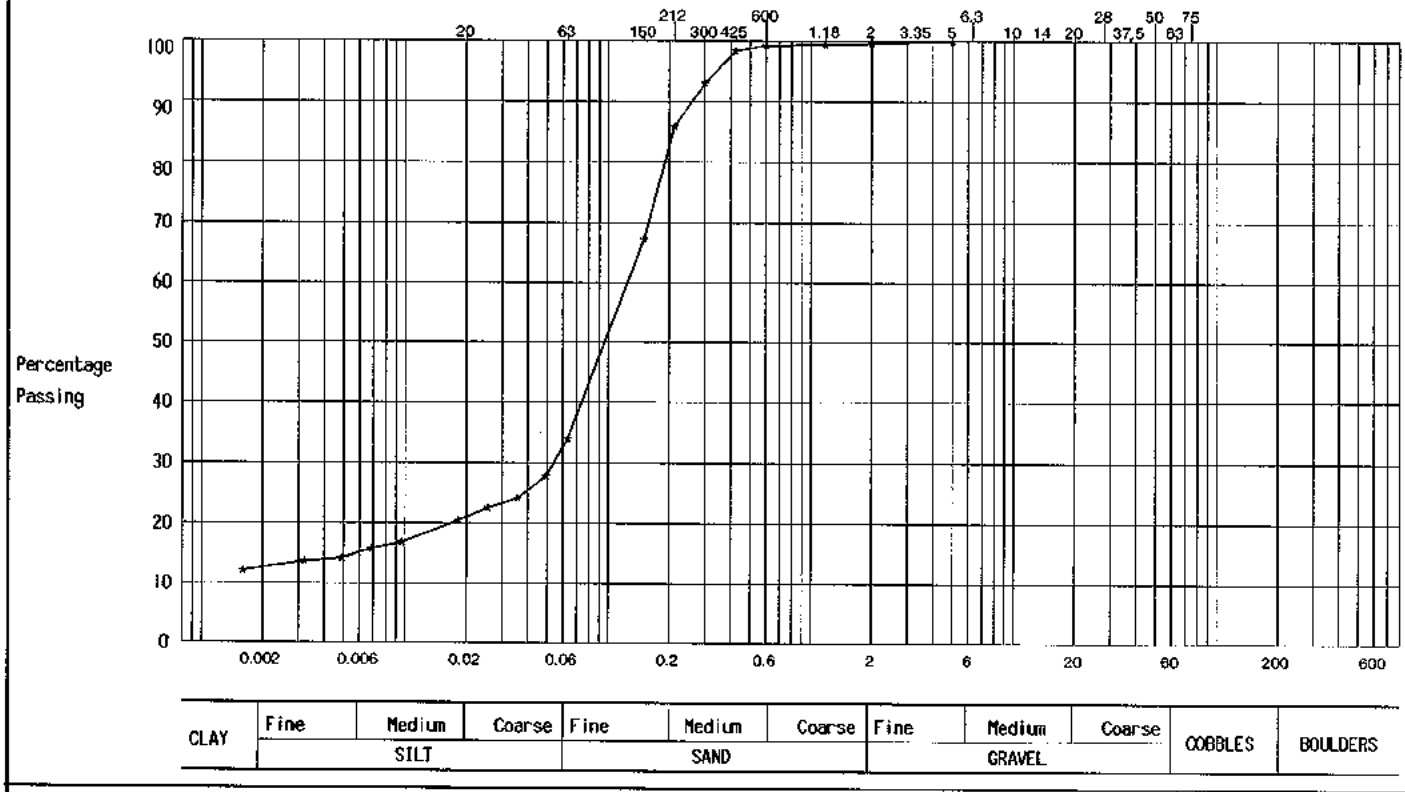
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	5.00	B4	Brownish yellow clayey very silty SAND (very sandy CLAY) with rare fine gravel	Possible engineering behaviour as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY.

Size (microns)																		Size (mm)										
Sieve Size				1.6	3.2	4.9	6.8	9.6	18.3	25.5	35.7	49.2	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				12	14	14	16	17	20	23	24	28	34	67	86	93	98	99	99	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 43 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

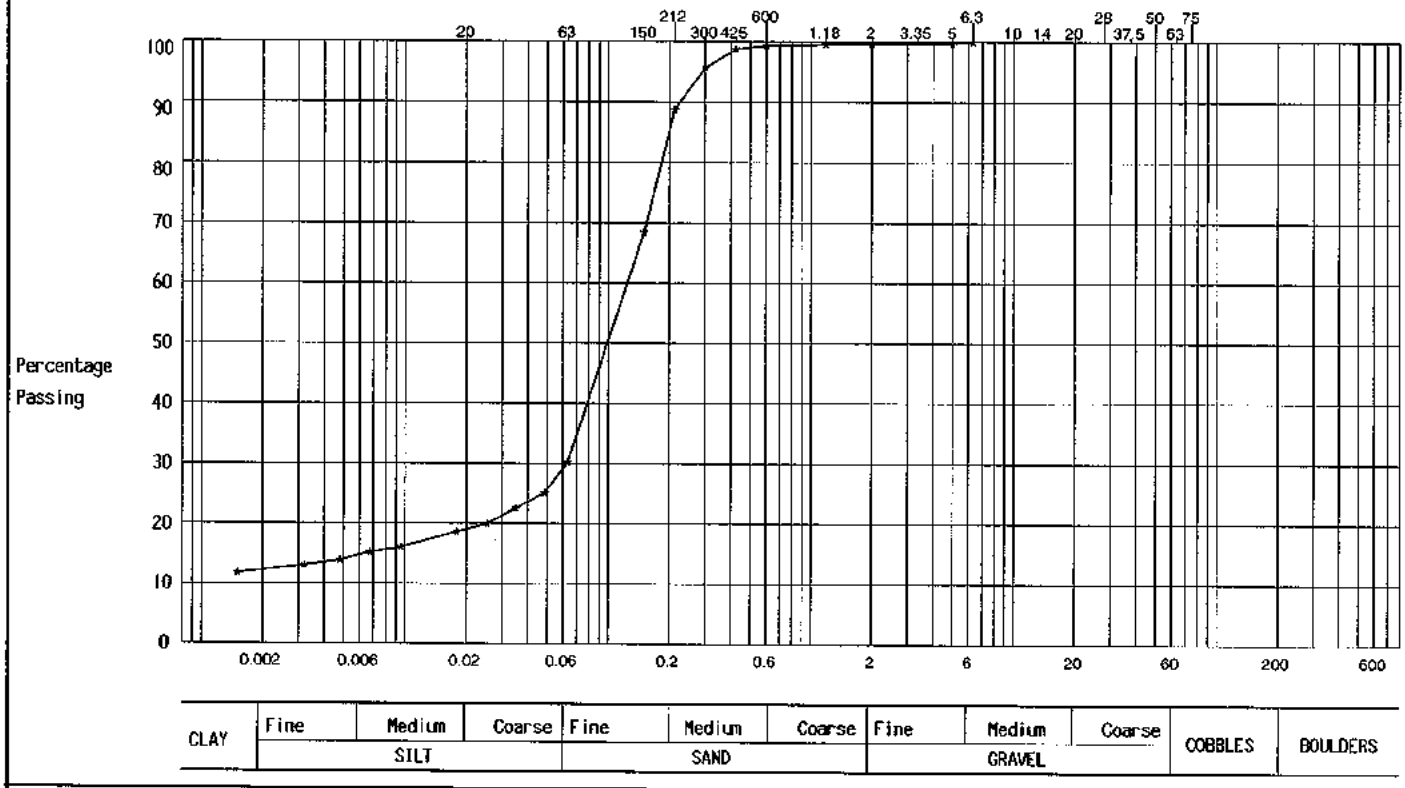
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	7.00	B6	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	Possible engineering behavior as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

Size (microns)																	Size (mm)										
Sieve Size			1.5	3.2	4.8	6.7	9.5	18	25.3	35	48.5	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve			12	13	14	15	16	19	20	22	25	30	68	89	96	99	99	100	100	100	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 44 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

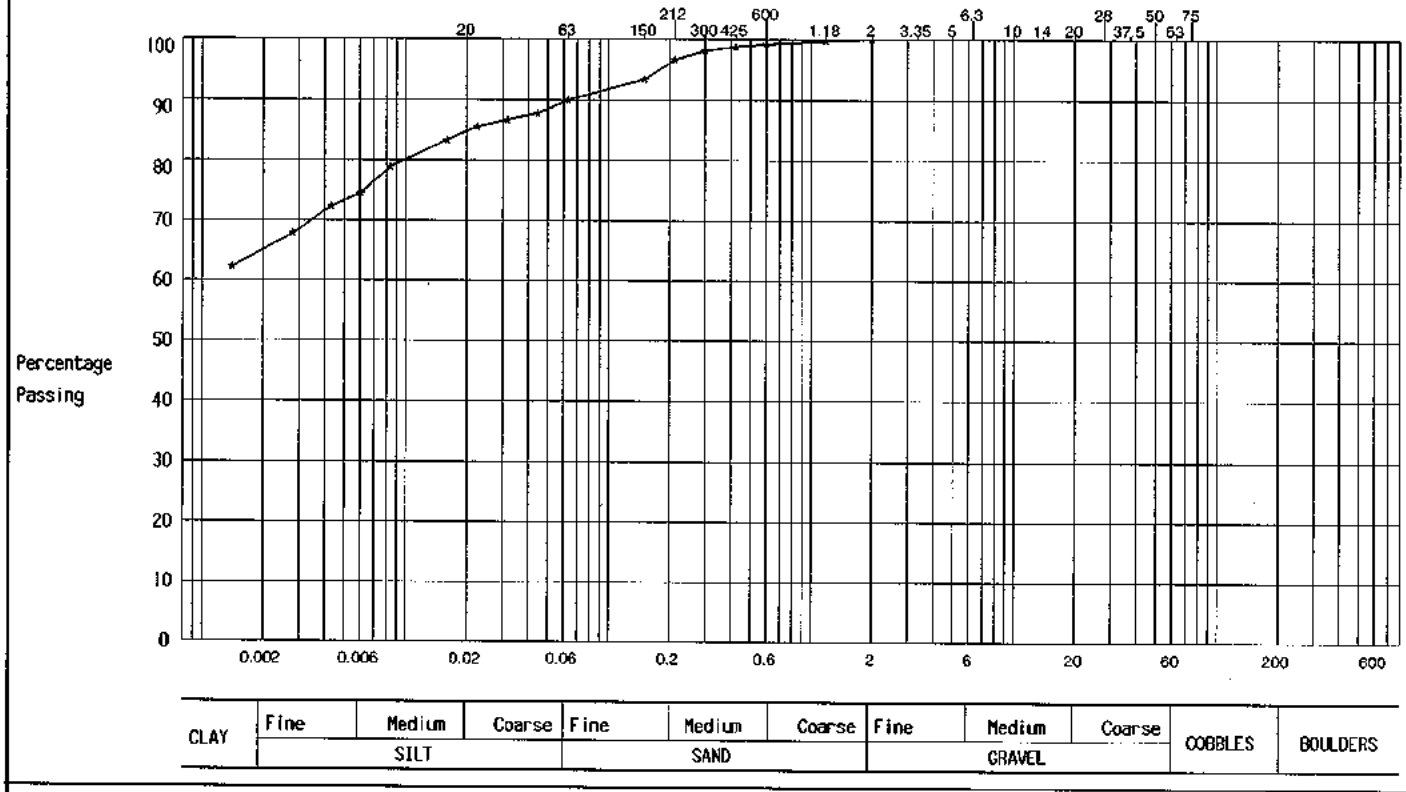
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	10.00	B9	Very stiff light olive brown CLAY with occasional silty fine and medium sand partings	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY.

Size (microns)																	Size (mm)										
Sieve Size				1.4	2.8	4.3	6	8.4	16	22.5	31.7	44.6	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				62	68	72	74	79	83	85	87	88	90	93	97	98	99	99	100	100	-	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 65 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

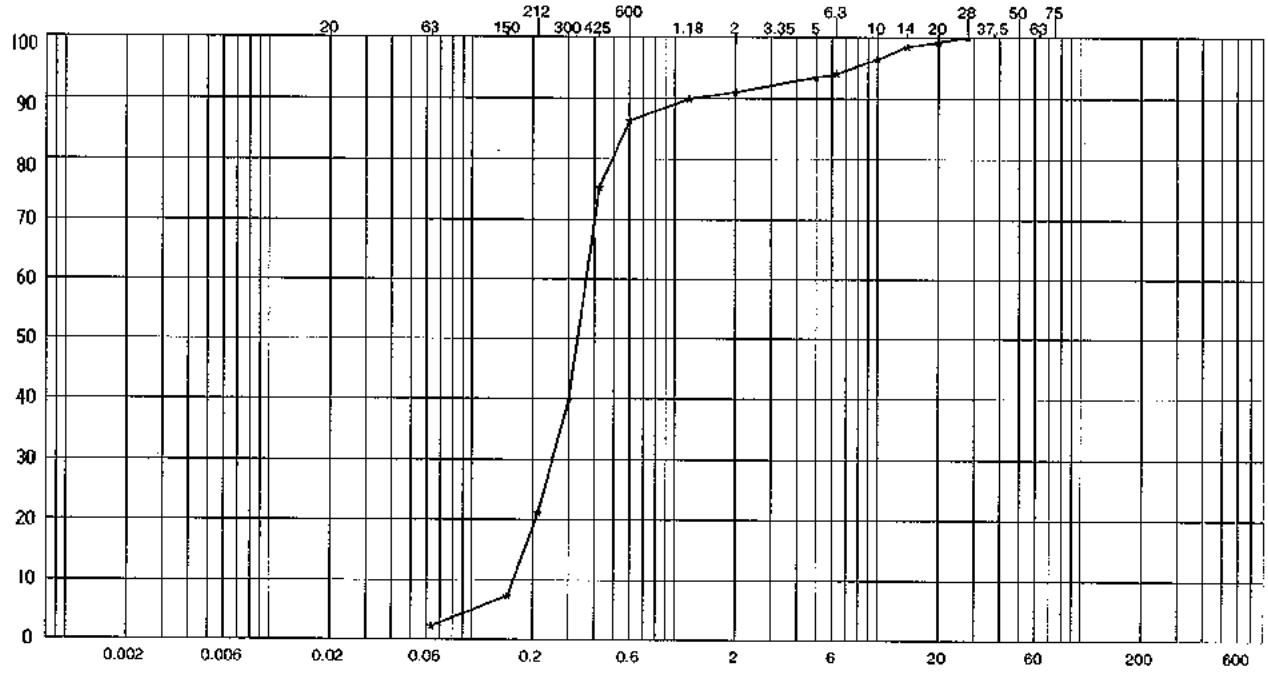
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	1.00	B1	Brown slightly silty gravelly SAND. Gravel is black angular to subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment: DISPERSANT ONLY.

Size (microns)													Size (mm)											
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	2	7	21	40	75	86	90	91	93	94	96	98	99	100	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 46 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

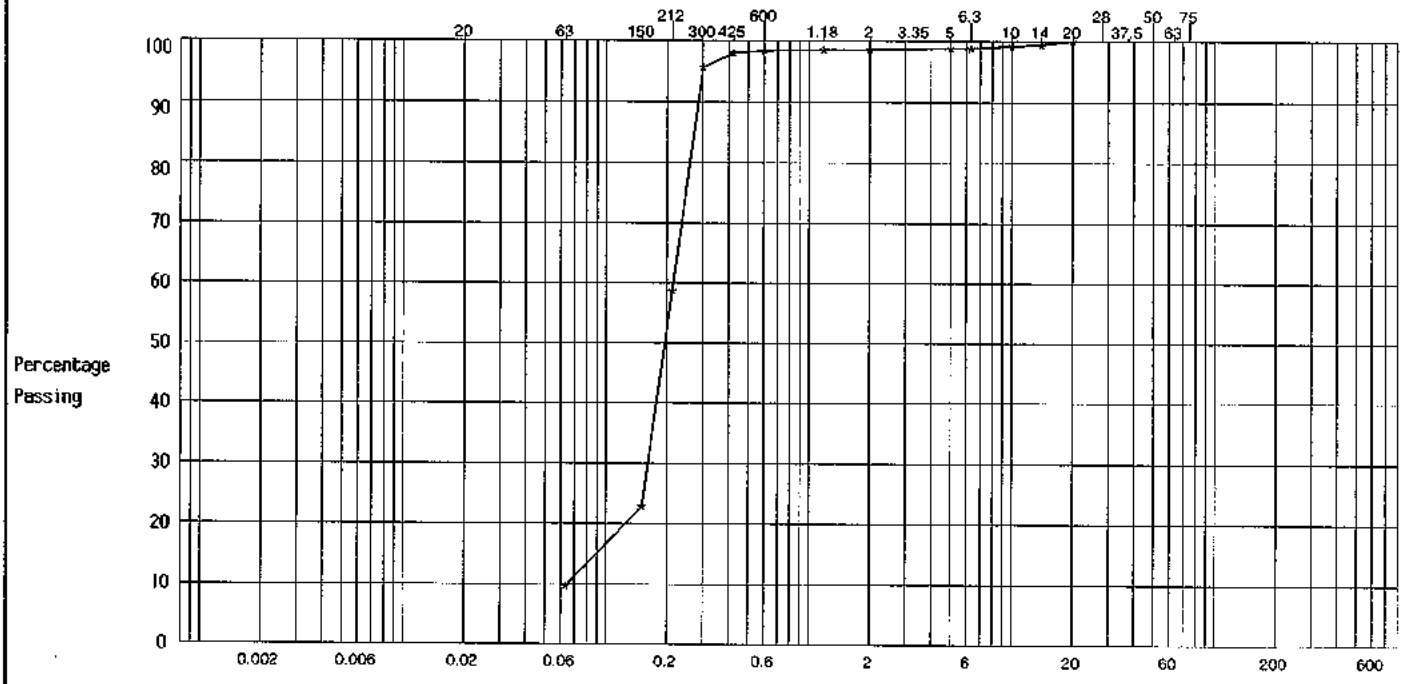
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	2.00	B3	Light olive brown slightly gravelly SAND with occasional soft light brownish grey clay lumps. Gravel is black angular to subrounded flint	

Method of Test: Wet Sieve

Method of pre-treatment: DISPERSANT ONLY.

Size (microns)													Size (mm)											
Sieve Size											63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve											10	23	59	96	98	98	99	99	99	99	99	99	100	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 47 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

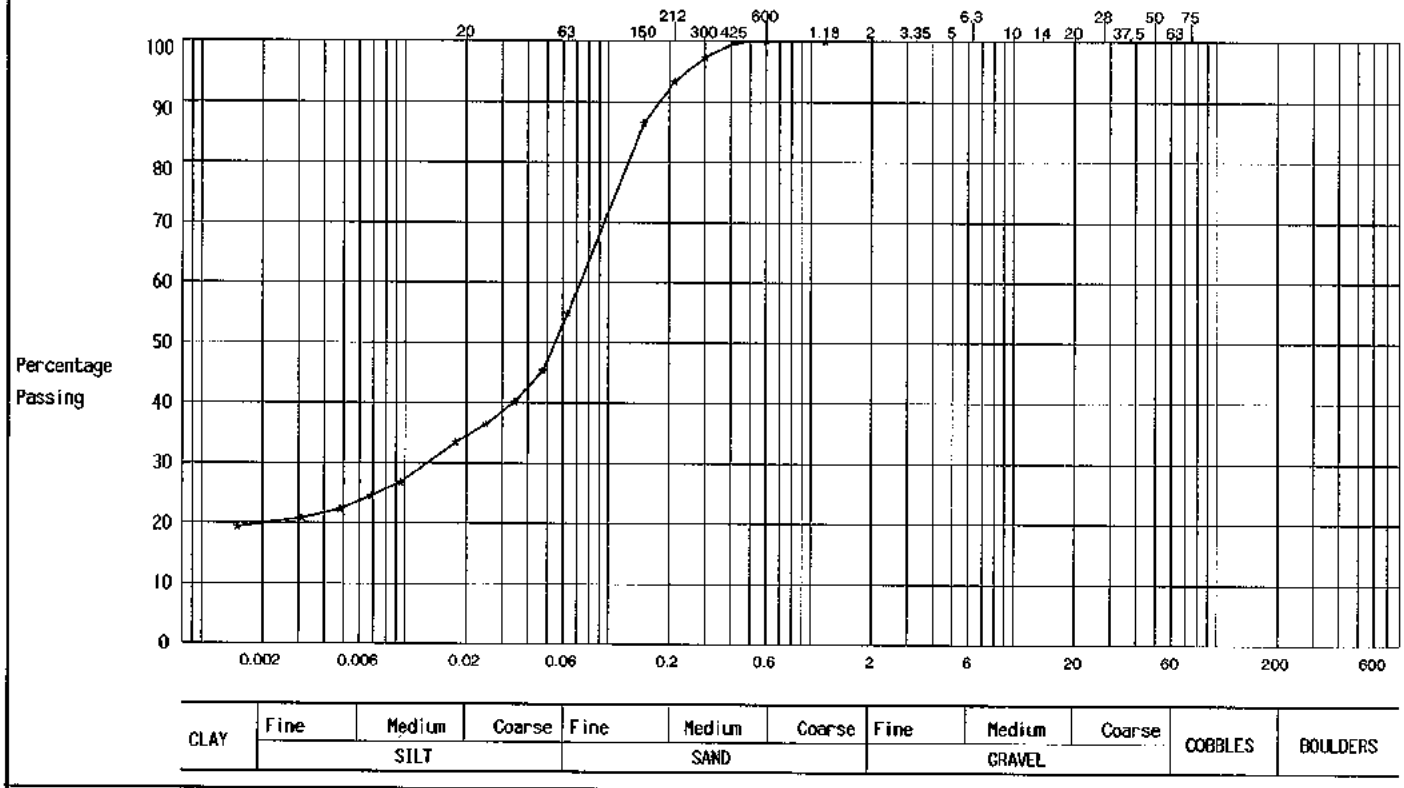
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	4.00	BS	Very soft pale olive sandy silty CLAY	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

Size (microns)				1.5	3.1	4.8	6.8	9.5	17.8	24.9	34.6	47.6	63	150	212	300	425	600	Size (mm) 1.18	2	5	6.3	10	14	20	28	37.5	50	75
Sieve Size																												
Percentage by Mass passing Sieve				19	21	22	24	27	33	36	40	45	55	86	93	97	100	100	100	-	-	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 48 of 71

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

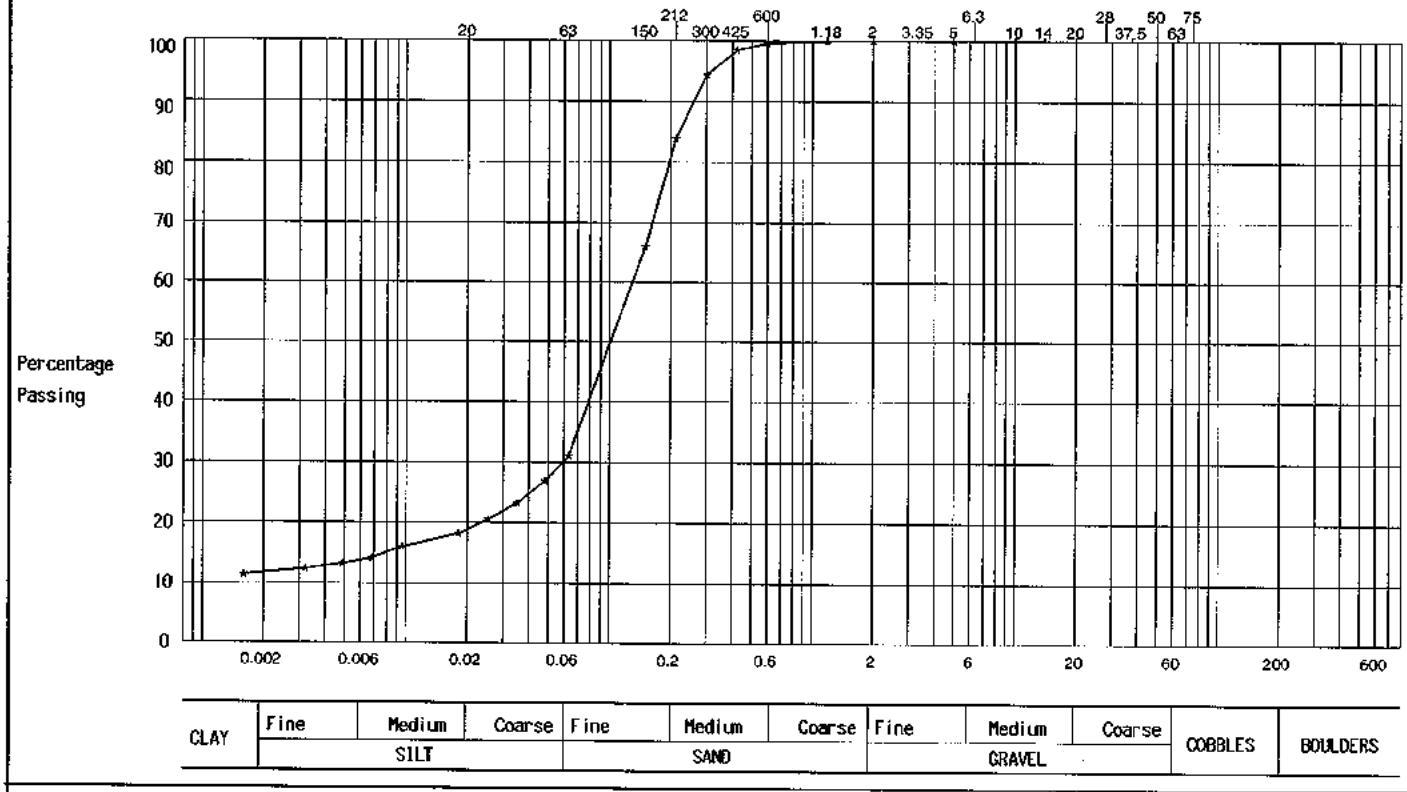
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	6.00	B7	Brownish yellow clayey silty SAND / very sandy CLAY with rare fine gravel	Possible engineering behaviour as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)																Size (mm)										
Sieve Size				1.6	3.2	4.9	6.8	9.5	18.2	25.3	35.1	48.2	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				11	12	13	14	16	18	20	23	27	31	66	84	94	98	100	100	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 69 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

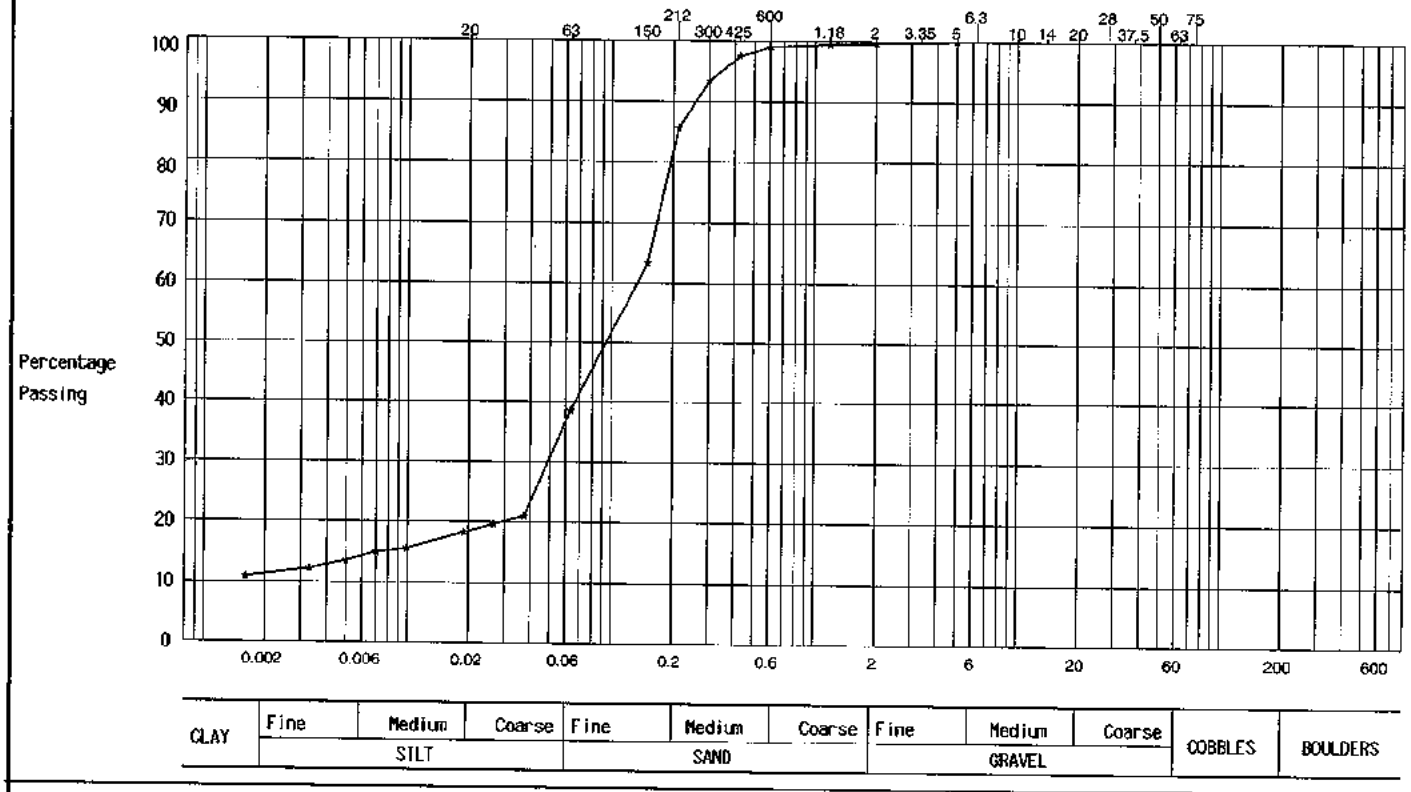
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	8.00	B9	Very soft brownish yellow sandy silty CLAY	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)																Size (mm)										
Sieve Size	1.6	3.3	5	7	9.9	18.9	26.6	37.4	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	11	12	13	15	16	18	20	21	39	63	86	93	97	99	99	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 50 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

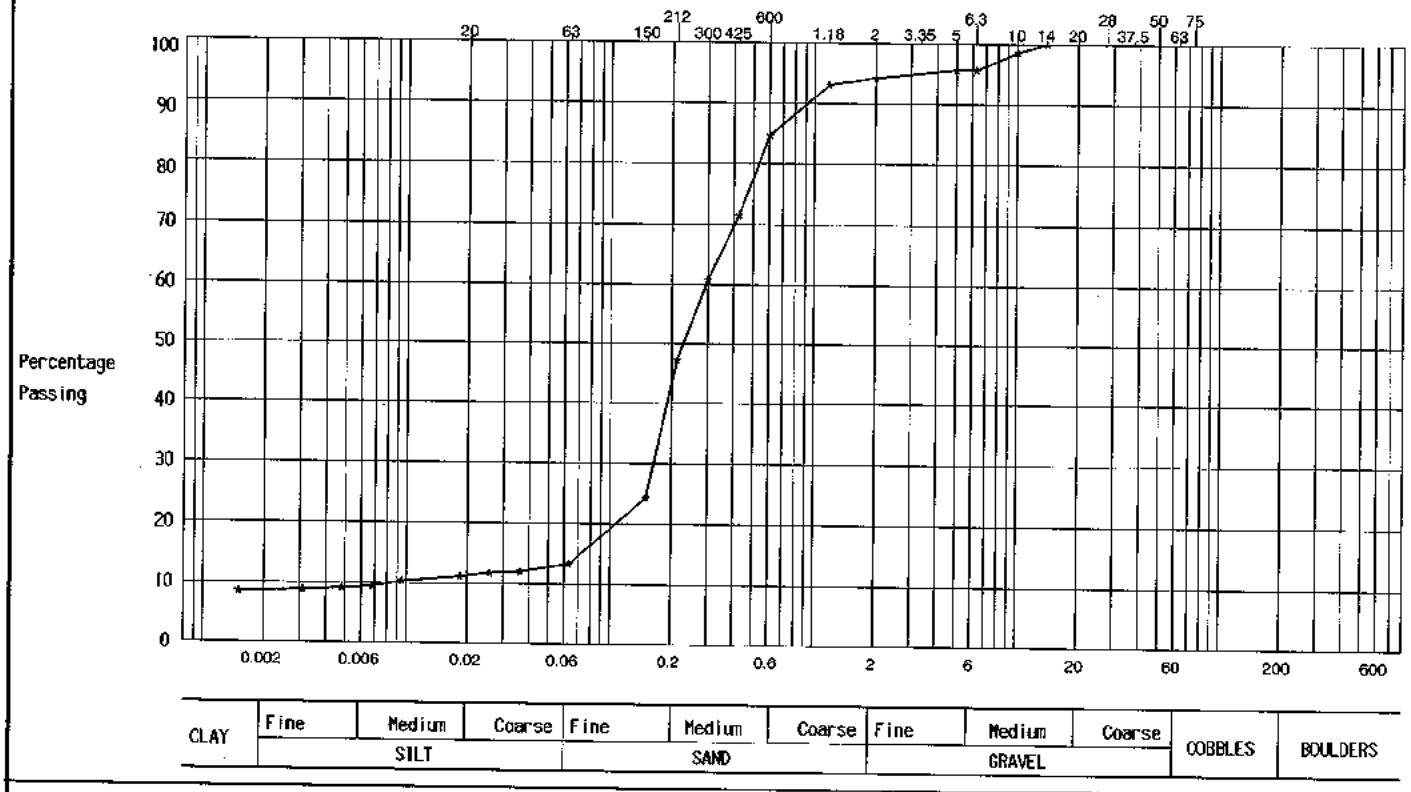
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	13.00	B14	Light olive brown slightly silty gravelly clayey SAND. Gravel is flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

Size (microns)																	Size (mm)										
Sieve Size					1.5	3.1	4.8	6.8	9.5	18.3	25.7	36.3	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					8	9	9	9	10	11	12	12	13	24	47	61	71	85	93	94	96	96	98	100	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 51 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

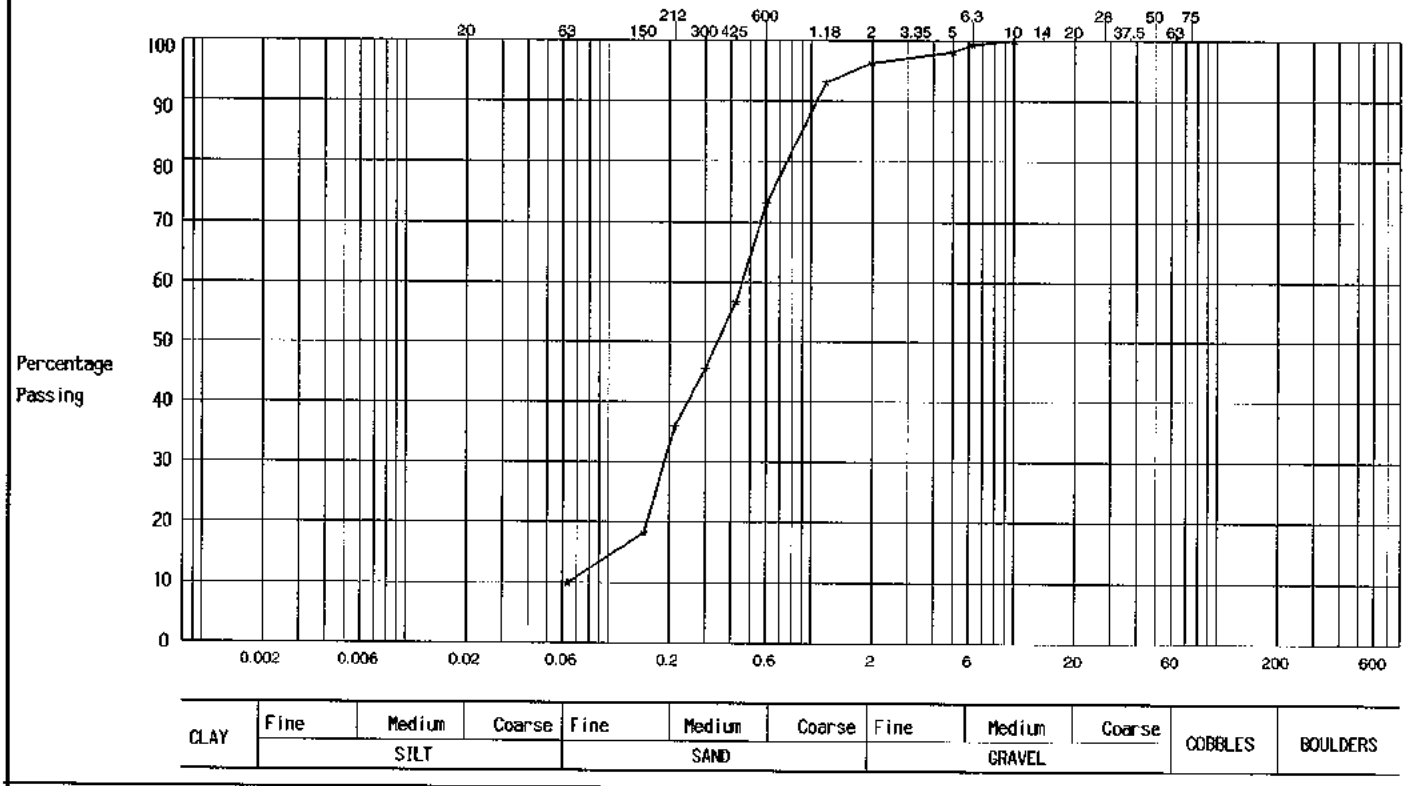
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	16.00	B17	Dark olive grey slightly gravelly slightly silty slightly clayey SAND. Gravel is fine and medium flint and quartzite	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)																Size (mm)										
Sieve Size												63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve												10	18	36	45	57	73	93	96	98	99	100	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 52 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

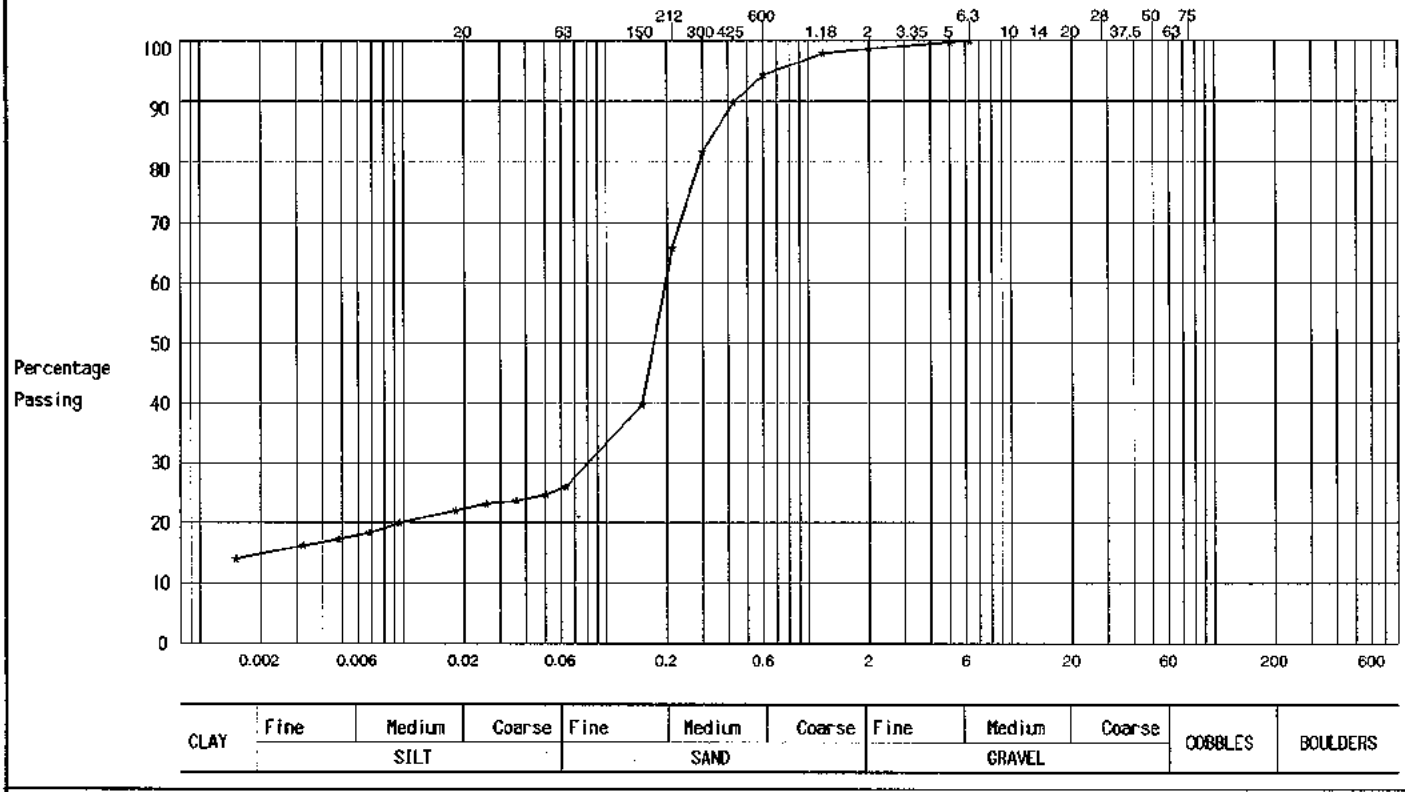
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth .m.	Sample	Description	Remarks
BHC03	18.00	B19	Brownish grey organic clayey silty SAND with rare fine gravel	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED

	Size (microns)																	Size (mm)											
Sieve Size				1.5	3.2	4.8	6.8	9.5	18.	25.5	35.9	50.4	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				14	16	17	18	20	22	23	24	25	26	40	66	82	90	94	98	99	100	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 53 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

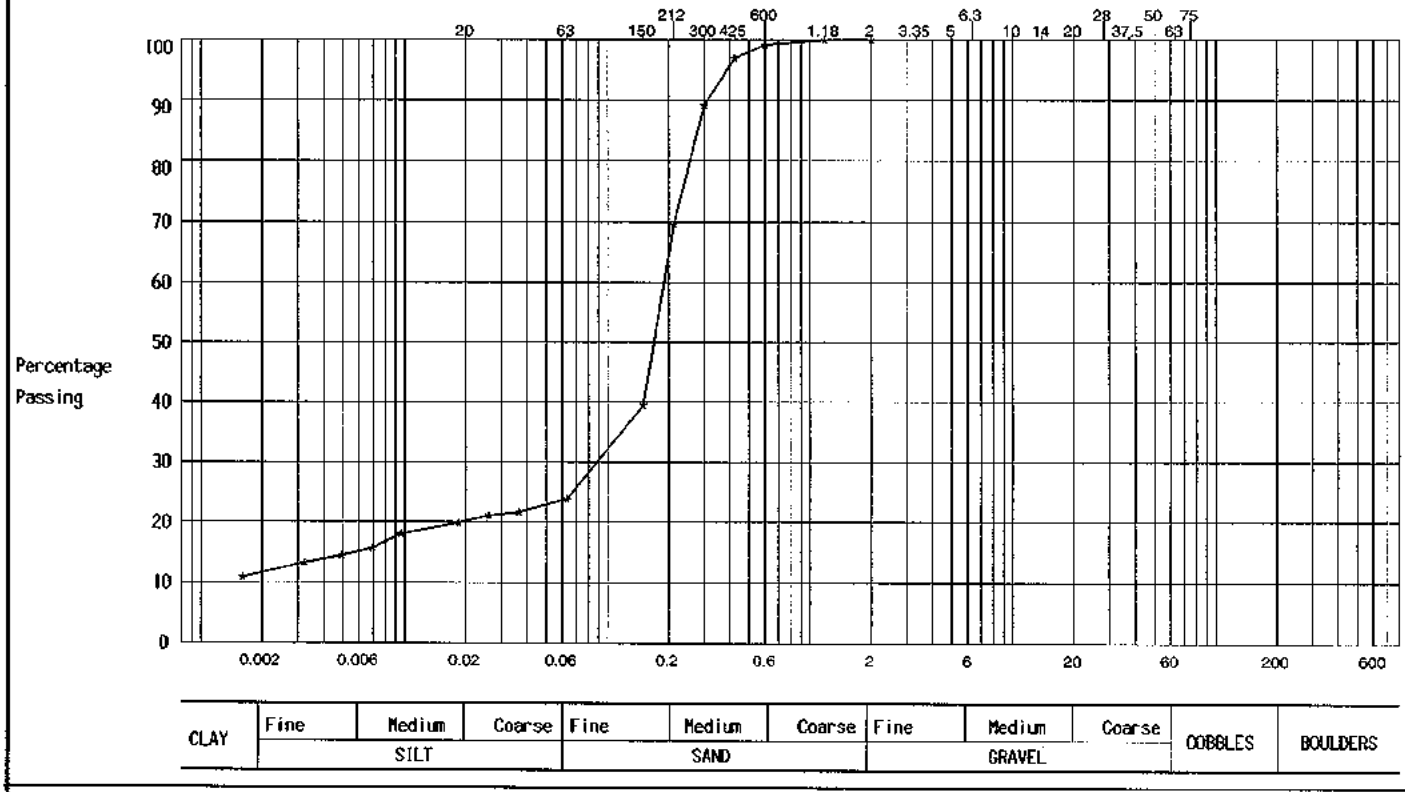
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	20.00	UT3	Dark olive grey slightly organic clayey silty SAND	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)									
Sieve Size					1.6	3.2	4.9	6.9	9.6	18.4	25.9	36.5	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					11	13	14	16	18	20	21	22	24	39	69	89	97	99	100	100	-	-	-	-	-	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 54 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

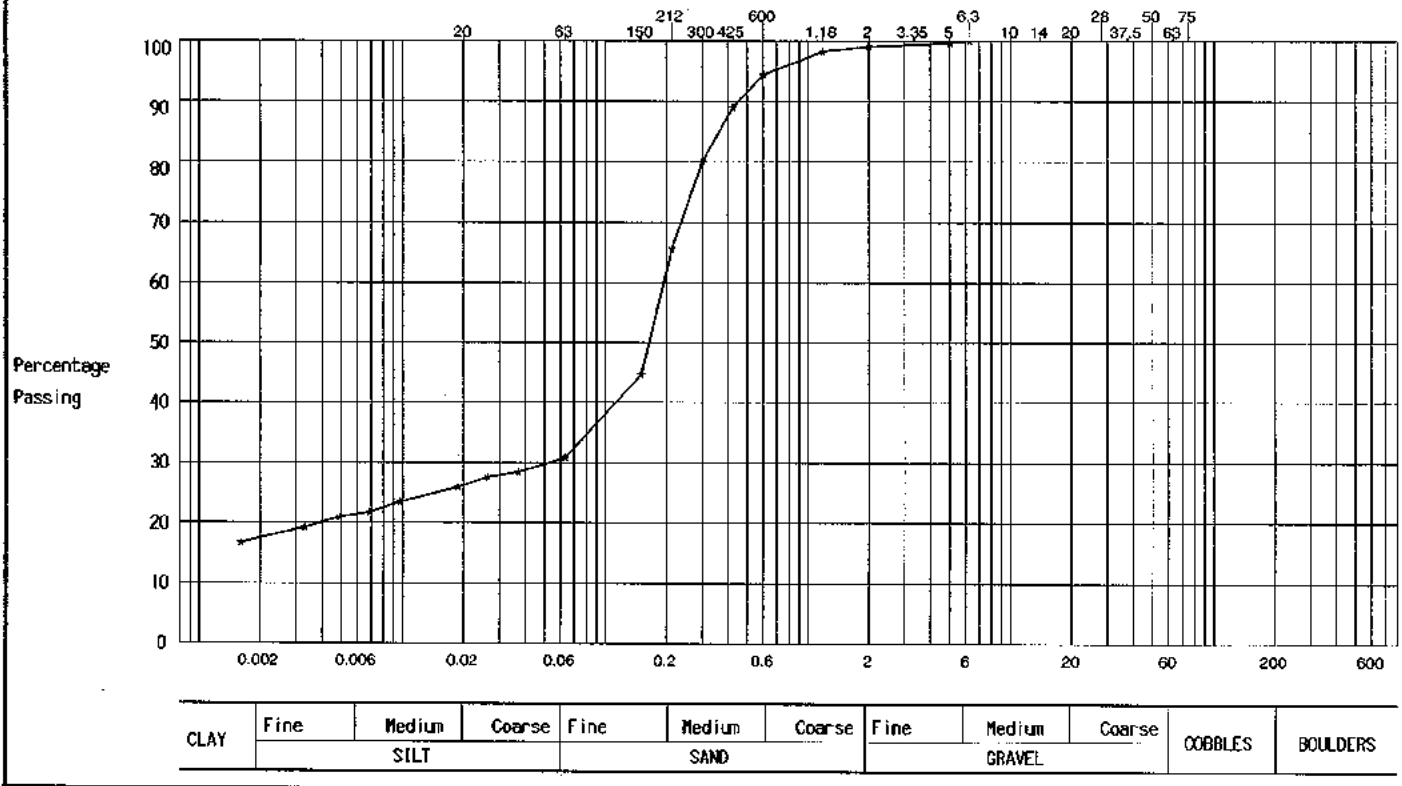
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	22.00	B22	Dark olive grey slightly organic very sandy silty CLAY/clayey SAND	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)															Size (mm)										
Sieve Size	1.6	3.3	4.9	6.9	9.7	18.7	26.3	37.1	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	17	19	21	22	23	26	28	28	31	45	66	80	89	94	98	99	100	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 55 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

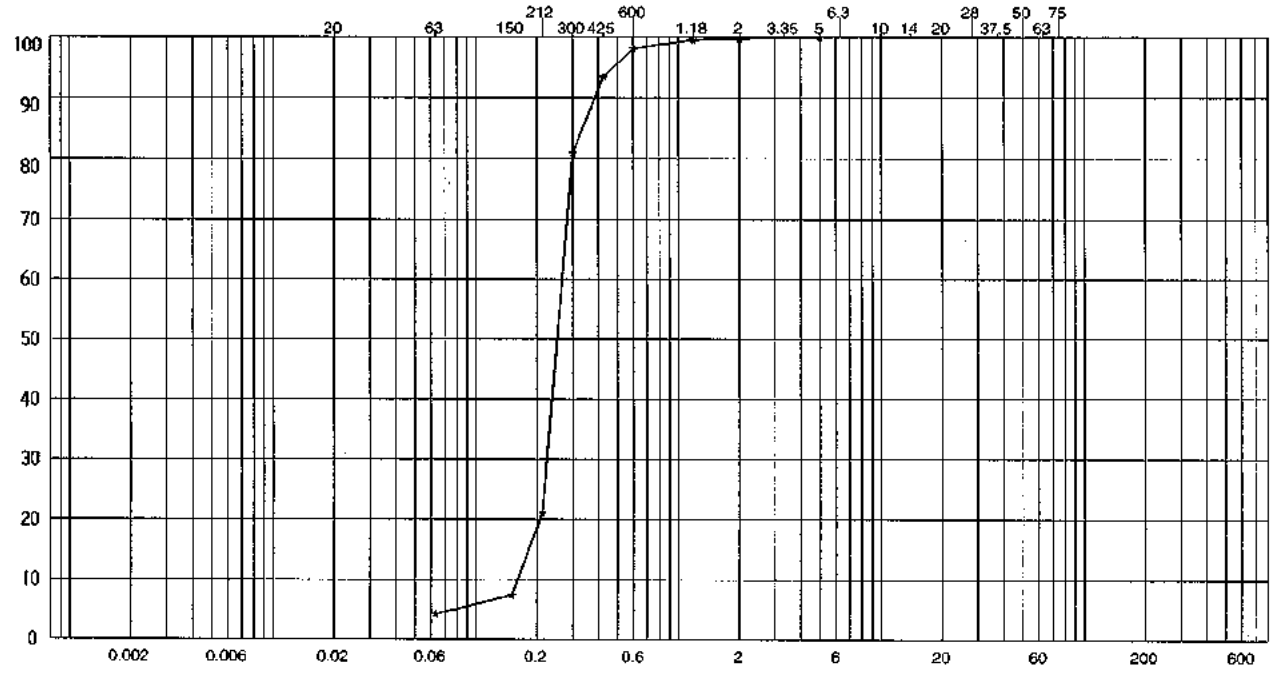
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	24.00	UT4	Dark olive grey slightly silty SAND	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)												Size (mm)												
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75								
Percentage by Mass passing Sieve	4	7	21	81	93	98	100	100	100	-	-	-	-	-	-	-	-								



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 56 of 71

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

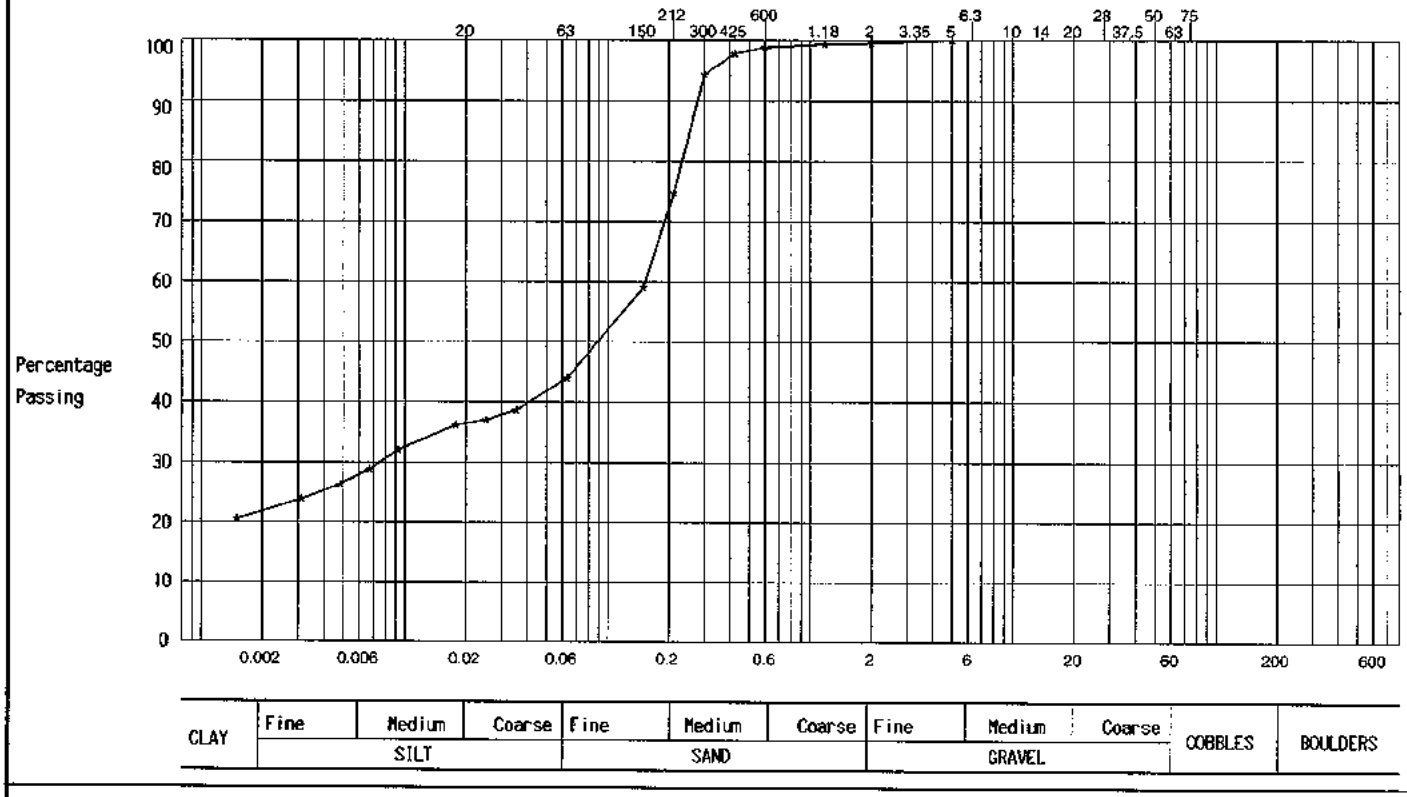
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	28.00	B30	Very soft dark olive grey slightly organic sandy silty CLAY	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)															Size (mm)										
Sieve Size	1.5	3.1	4.8	6.7	9.3	17.8	25.1	35.3	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	21	24	26	29	32	36	37	39	44	59	75	94	98	99	99	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 57 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

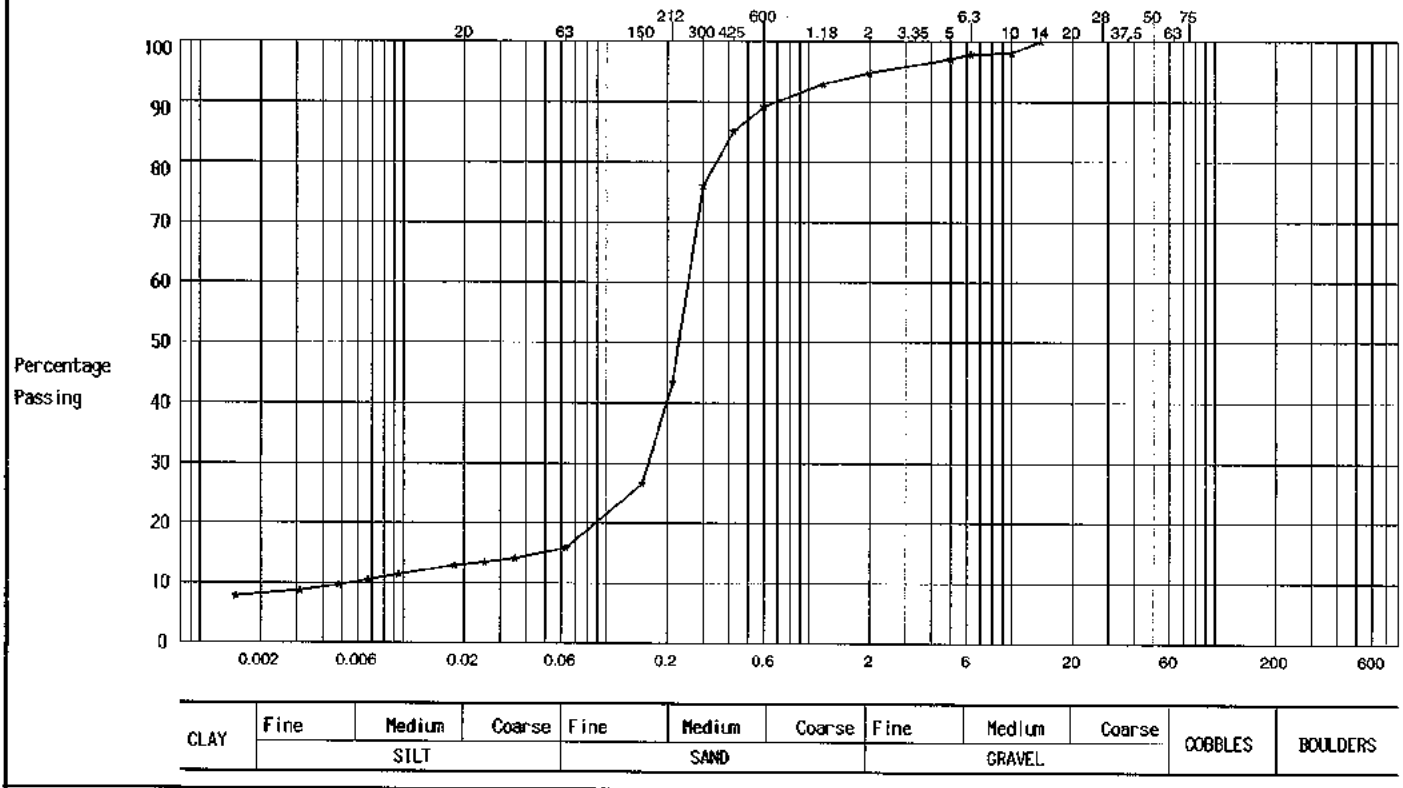
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	31.00	B33	Dark olive grey slightly gravelly slightly organic clayey silty SAND with occasional shell fragments. Gravel is quartzite	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)															Size (mm)										
Sieve Size	1.5	3.1	4.8	6.7	9.4	17.8	25.1	35.3	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	8	9	10	10	11	13	13	14	16	27	43	76	85	89	93	95	97	98	98	100	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 58 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

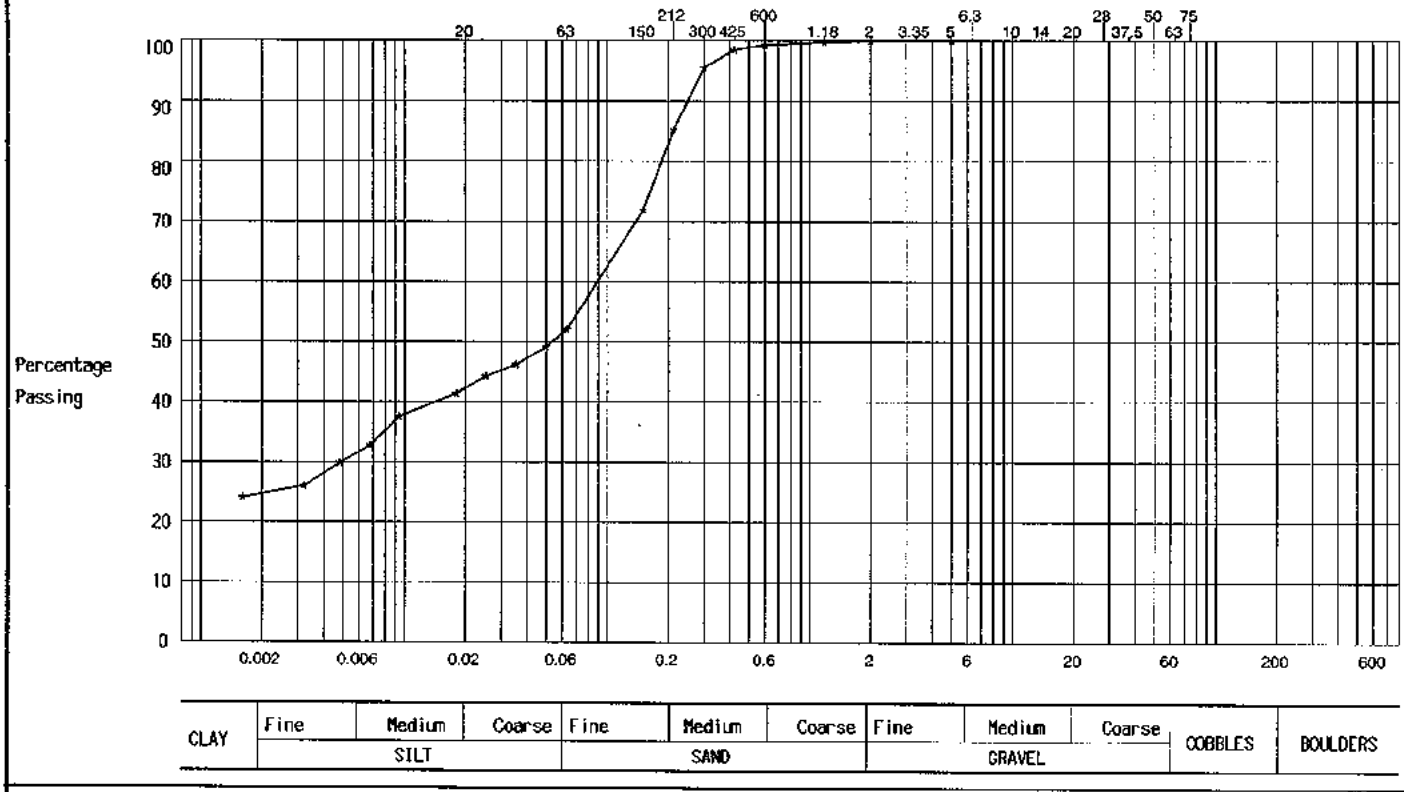
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	34.00	B36	Very soft dark grey organic sandy silty CLAY with rare very stiff clay/extremely weak claystone lumps	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)										
Sieve Size	1.6	3.2	4.8	6.8	9.4	18	25.2	35.4	49.6	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	24	26	30	33	37	41	44	46	49	52	72	85	95	98	99	100	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 59 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

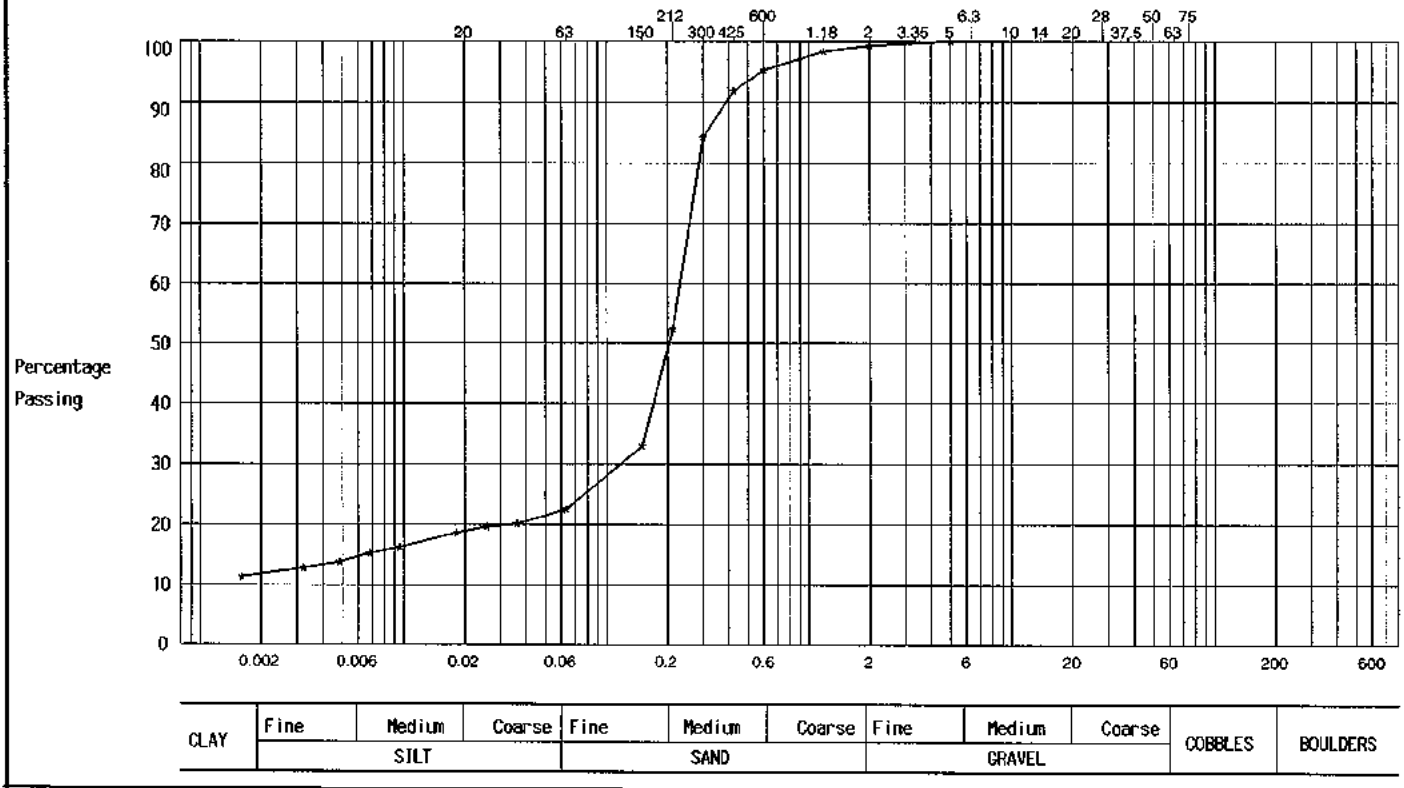
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	36.00	UT4	Dark grey slightly organic clayey silty SAND with occasional shell fragments	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)										
Sieve Size					1.6	3.2	4.8	6.8	9.5	18.2	25.5	36	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					11	13	14	15	16	19	20	20	22	33	52	84	92	95	98	99	100	-	-	-	-	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 60 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

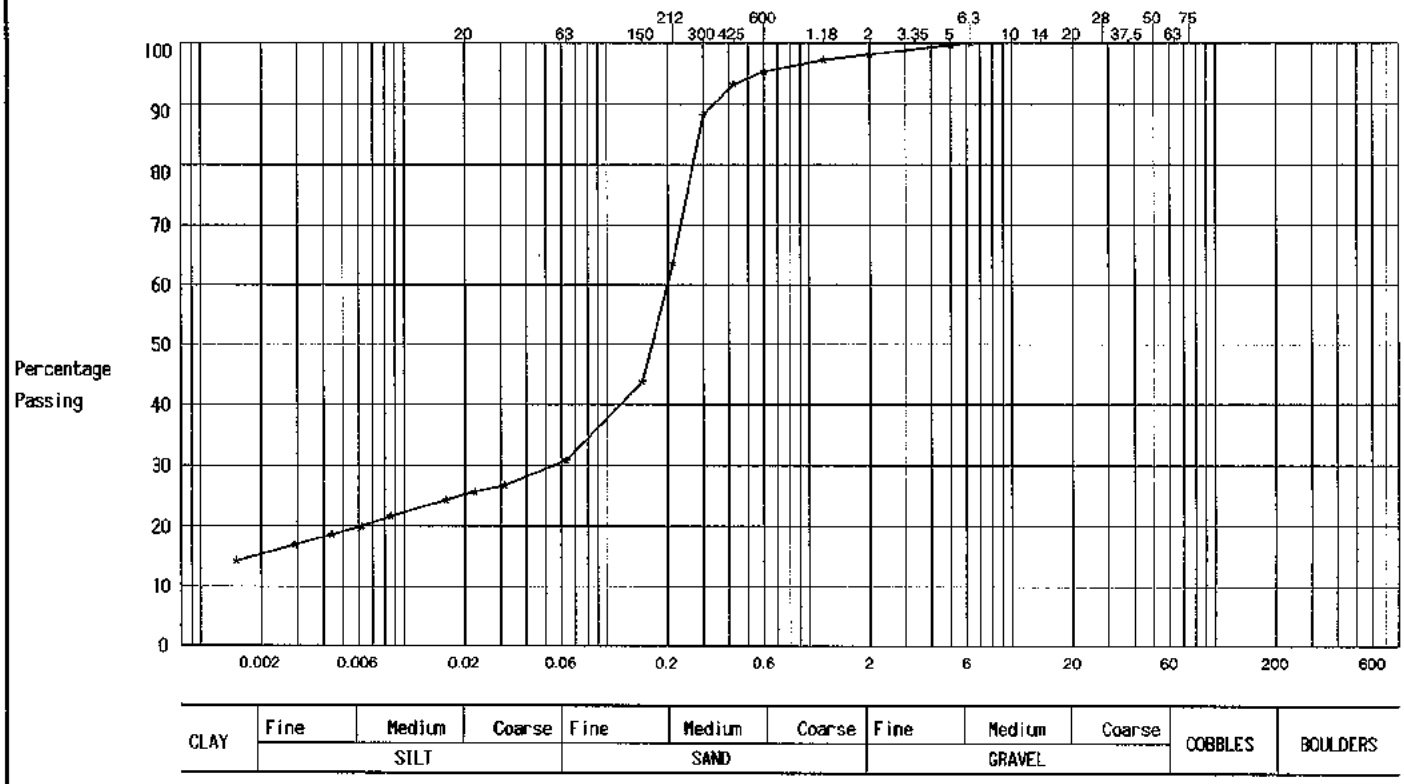
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	38.00	B40	Dark olive grey slightly organic clayey silty SAND with occasional shell fragments	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)															Size (mm)										
Sieve Size	1.5	2.9	4.4	6.2	8.6	16.1	22.3	31.2	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	14	17	19	20	22	24	26	27	31	44	64	88	93	95	97	98	100	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 61 of 71

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

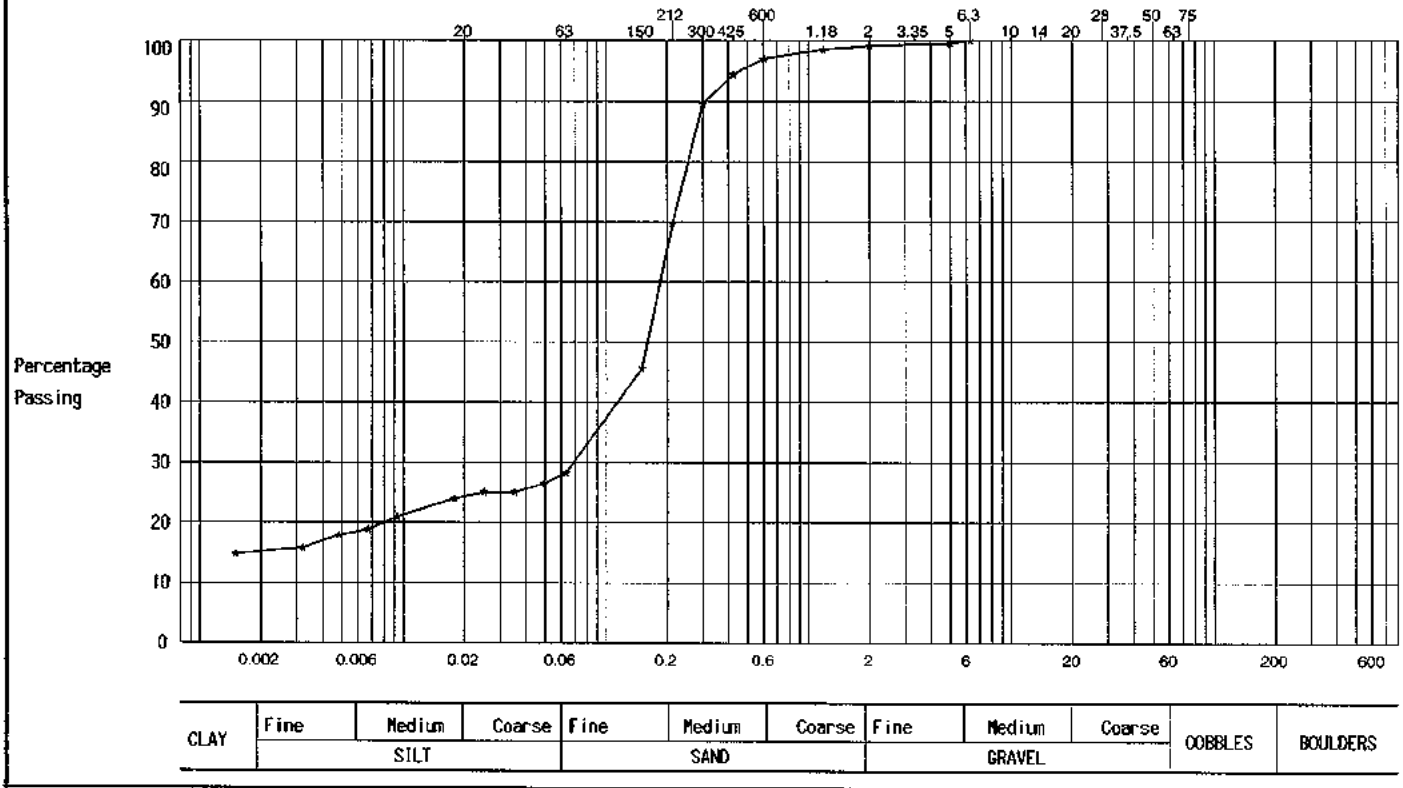
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	41.00	B42	Dark grey slightly organic silty clayey SAND / very sandy CLAY with occasional shell debris	Possible engineering behaviour as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																	Size (mm)										
Sieve Size				1.5	3.2	4.8	6.7	9.3	17.8	25	35.3	49.4	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve				15	16	18	19	21	24	25	25	26	28	46	70	90	94	97	99	99	99	100	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 62 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

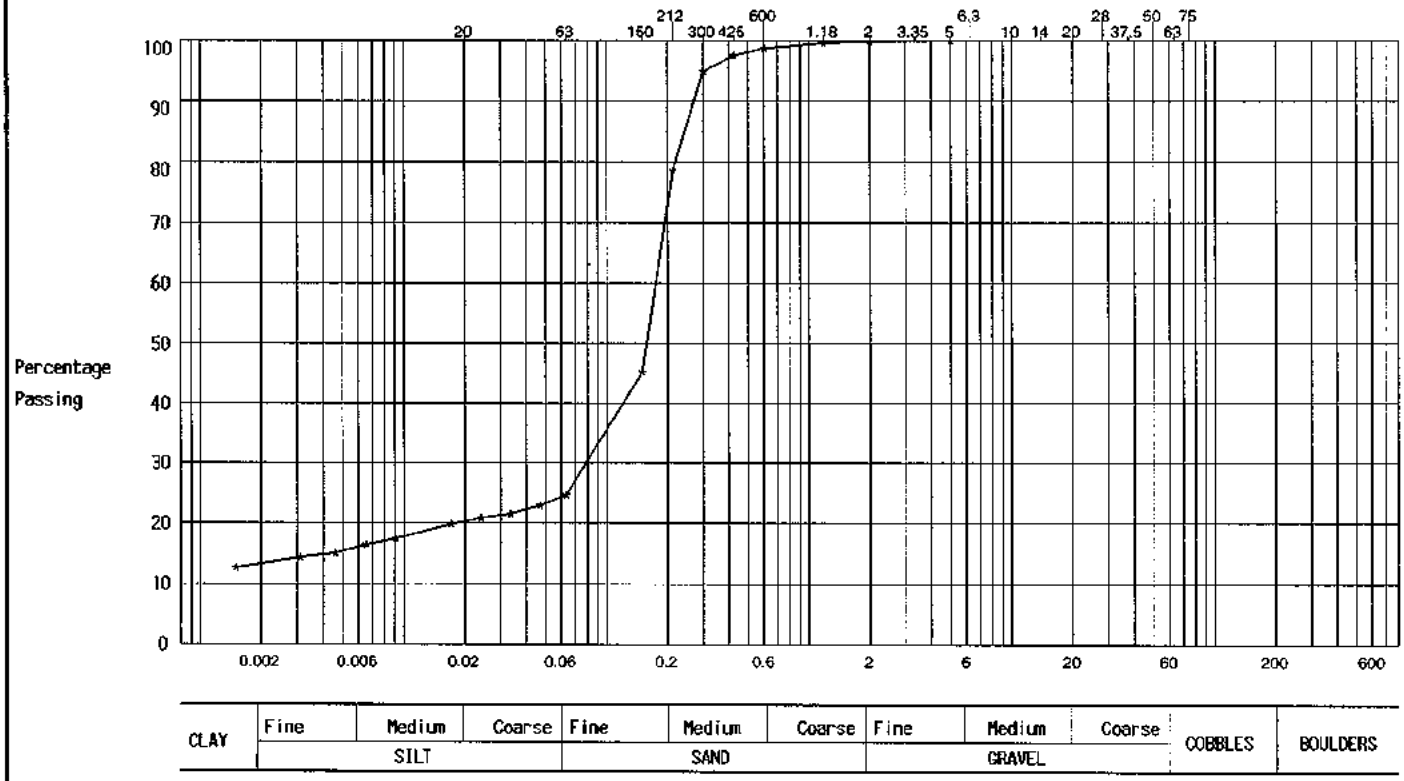
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC06	44.00	B45	Dark grey slightly organic clayey silty SAND with rare shell debris	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

	Size (microns)																Size (mm)										
Sieve Size	1.5	3.1	4.6	6.5	9.1	17.1	24	33.6	46.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	13	14	15	16	17	20	21	21	23	25	45	78	95	98	99	100	100	100	-	-	-	-	-	-	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 67 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

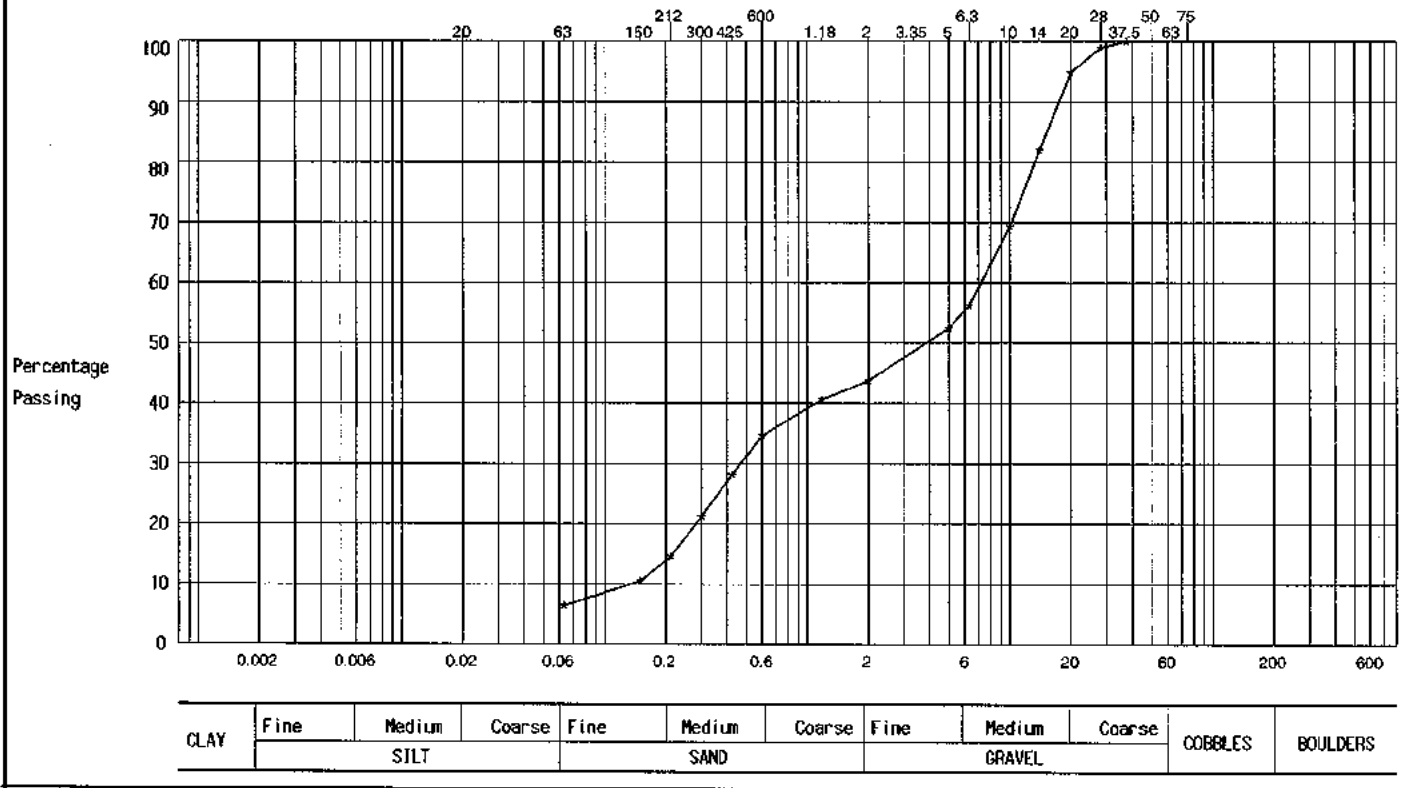
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC21	0.50	B1	Brown, black and white silty very sandy angular to rounded flint GRAVEL. Sand is orangish brown	

Method of Test: Wet Sieve

Method of pre-treatment: DISPERSANT ONLY.

	Size (microns)																Size (mm)										
Sieve Size													63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve													6	10	15	21	28	35	41	44	52	56	69	82	95	99	100	-	-



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 64 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

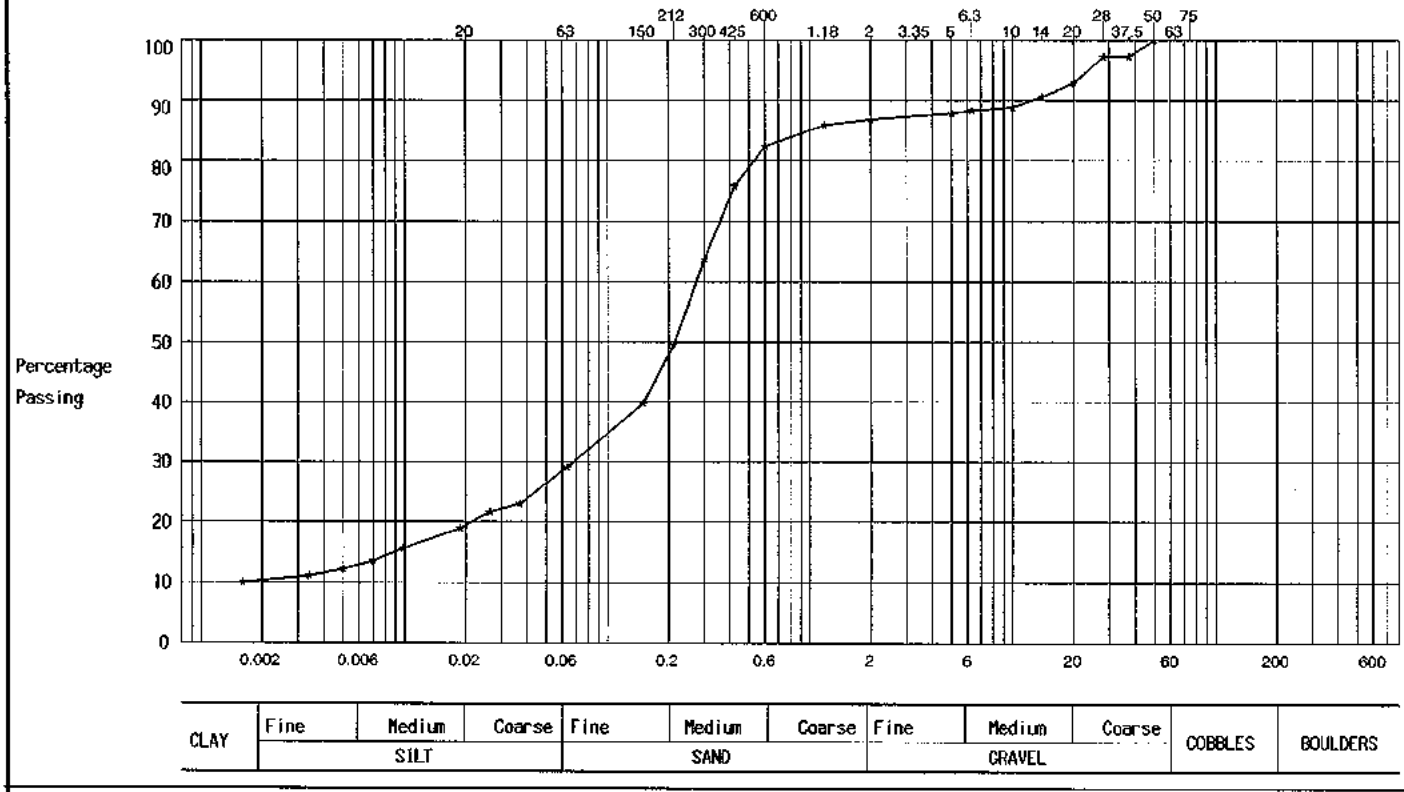
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC21	1.20	B2	Brown, dark brown and dark greyish brown slightly gravelly organic clayey silty SAND / sandy CLAY with occasional concrete and rare asphalt and mortar fragments. Gravel is brown, black and white angular to rounded flint	Possible engineering behaviour as a cohesive soil

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY. ORGANICS NOT REMOVED.

Size (microns)																	Size (mm)										
Sieve Size					1.6	3.4	5	7	9.8	18.7	26.2	36.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve					10	11	12	13	15	19	22	23	29	40	49	64	76	82	86	87	88	88	89	90	93	97	97	100	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 65 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

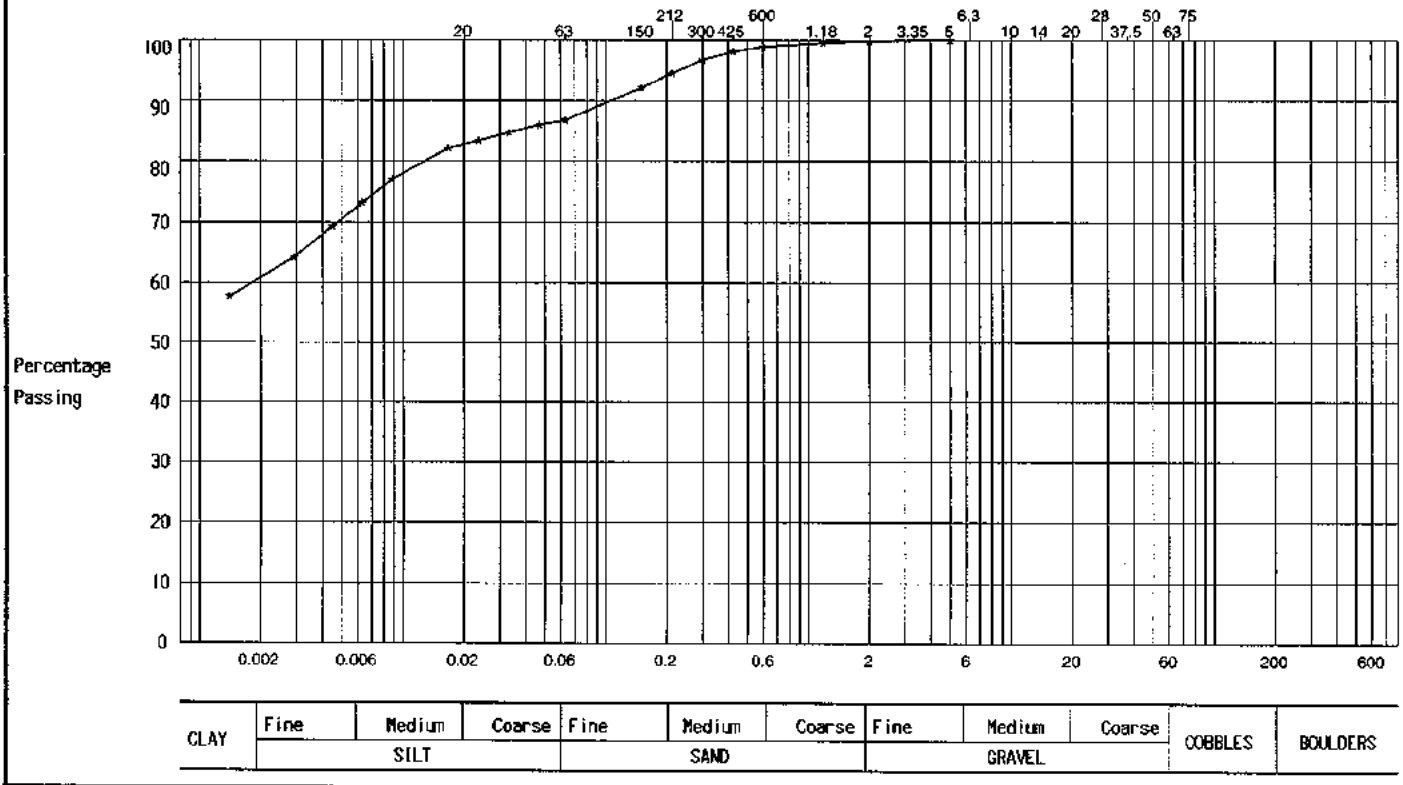
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC21	2.00	B3	Soft light olive brown slightly sandy silty CLAY	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY.

	Size (microns)																Size (mm)										
Sieve Size	1.4	2.9	4.5	6.3	8.8	16.7	23.6	33.2	46.8	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	58	64	69	73	77	82	83	85	86	87	92	94	97	98	99	99	100	100	-	-	-	-	-	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 66 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

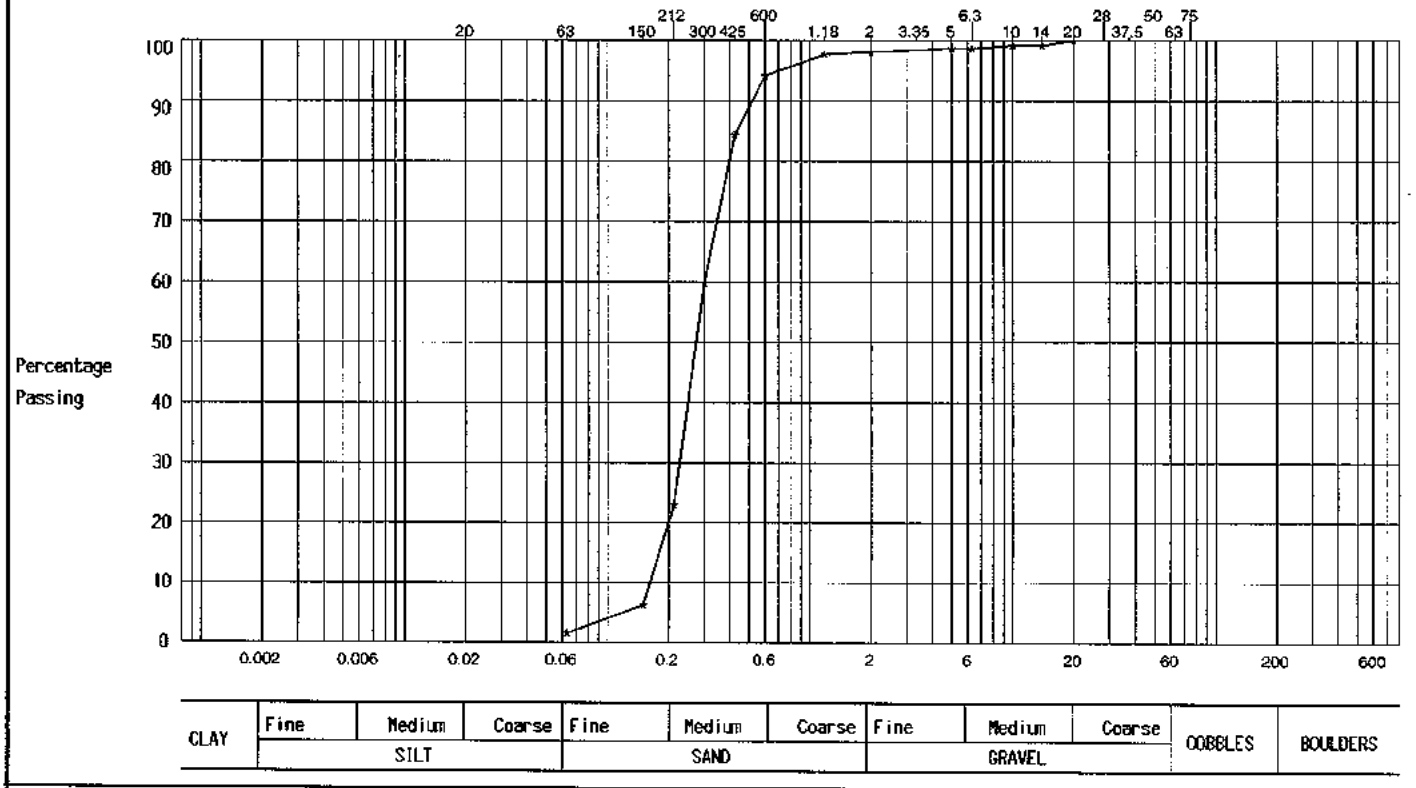
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC22	1.50	B2	Light yellowish brown slightly silty slightly gravelly SAND. Gravel is black, brown and white angular flint with occasional white quartzite and brown sandstone	

Method of Test: Wet Sieve

Method of pre-treatment: DISPERSANT ONLY.

	Size (microns)										Size (mm)														
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75								
Percentage by Mass passing Sieve	1	6	23	60	84	94	98	98	99	99	99	99	100	-	-	-	-								



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 67 of 71

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

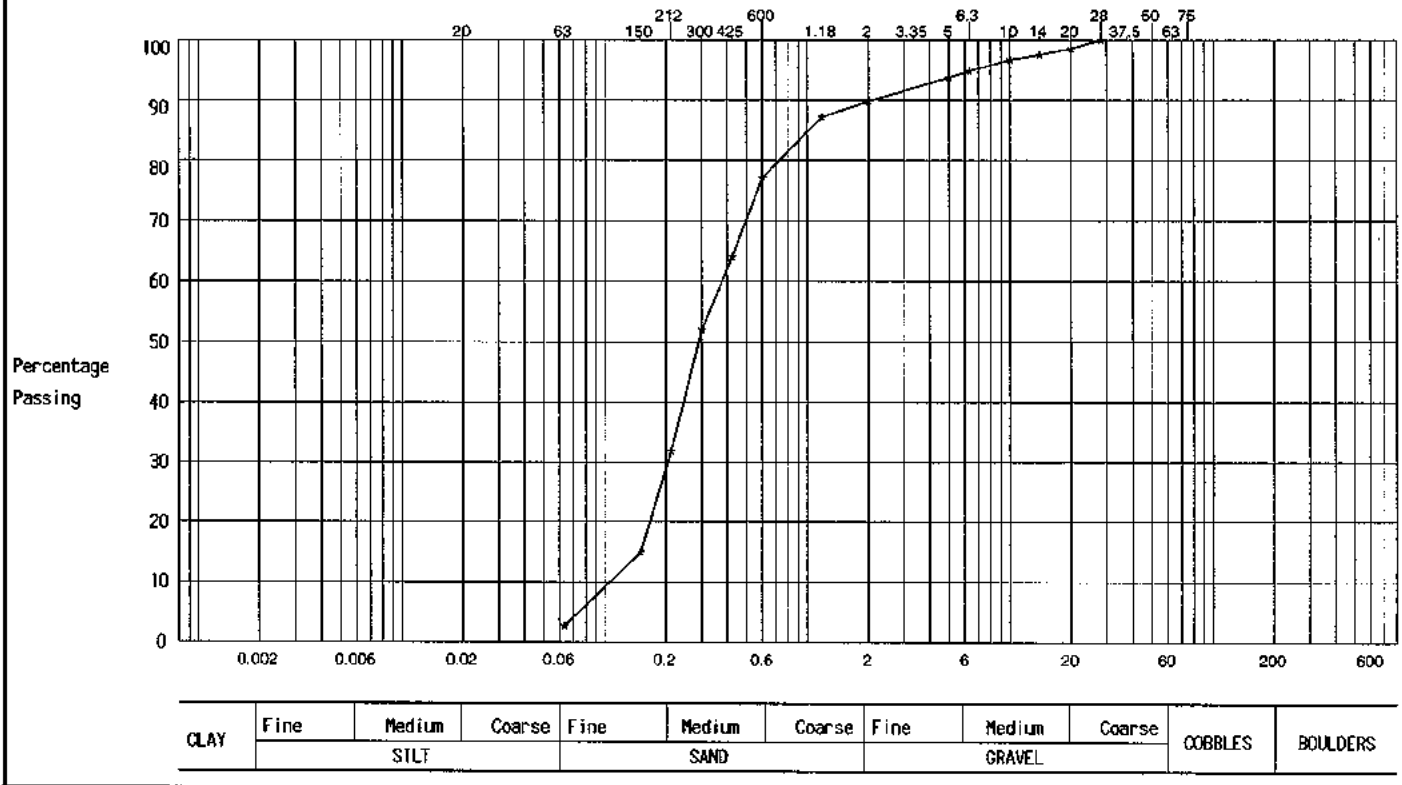
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC22	2.60	B3	Yellowish brown slightly silty gravelly SAND. Gravel is black, white and brown angular to rounded flint	

Method of Test: Wet Sieve

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)																Size (mm)										
Sieve Size													63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve													3	15	32	52	64	77	87	90	94	95	97	98	99	100	-	-	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 69 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

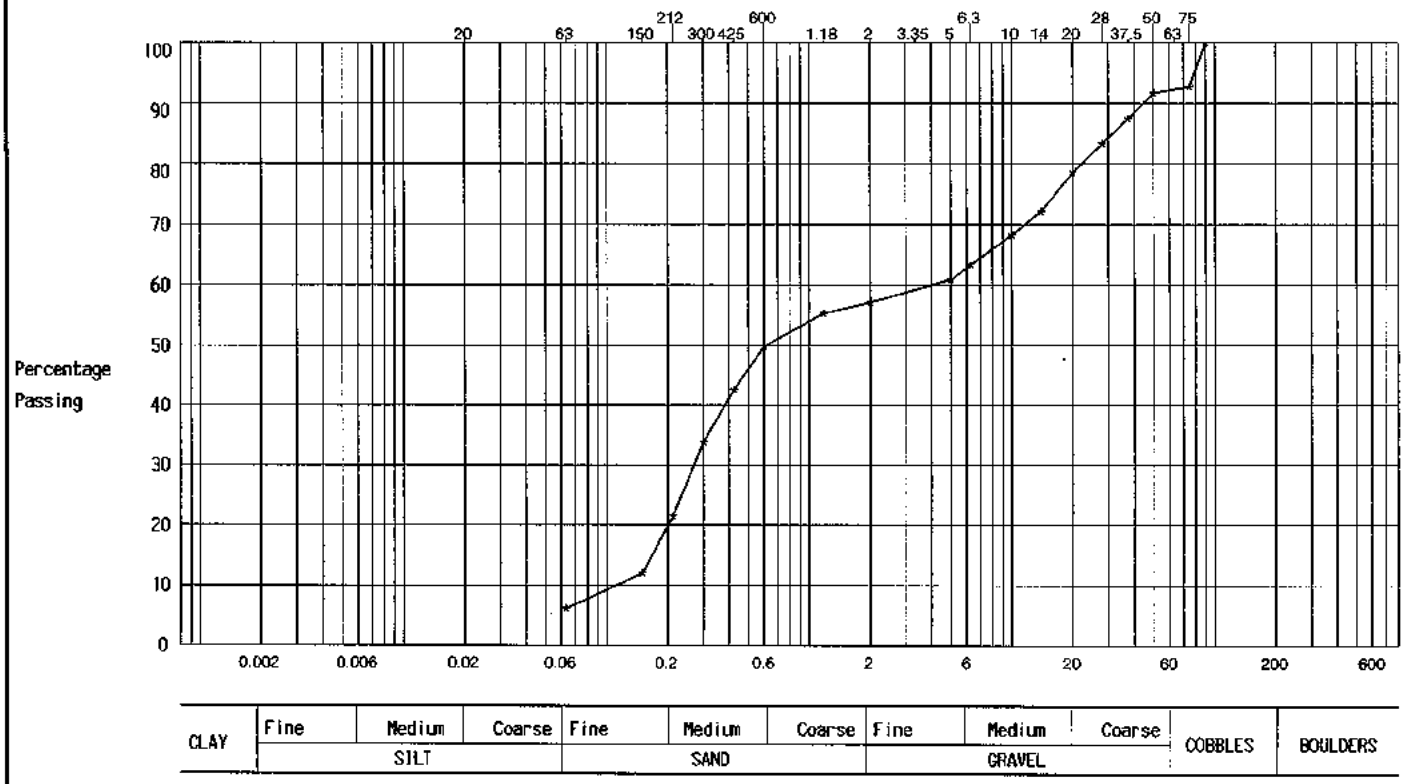
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC23	0.50	B1	Brown and light brown silty very gravelly SAND with occasional brick fragments and flint cobbles. Gravel is black, white and brown angular to rounded flint	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY.

	Size (microns)													Size (mm)											
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75	90							
Percentage by Mass passing Sieve	6	12	21	34	43	50	55	57	61	63	68	72	78	83	87	92	93	100							



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 69 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

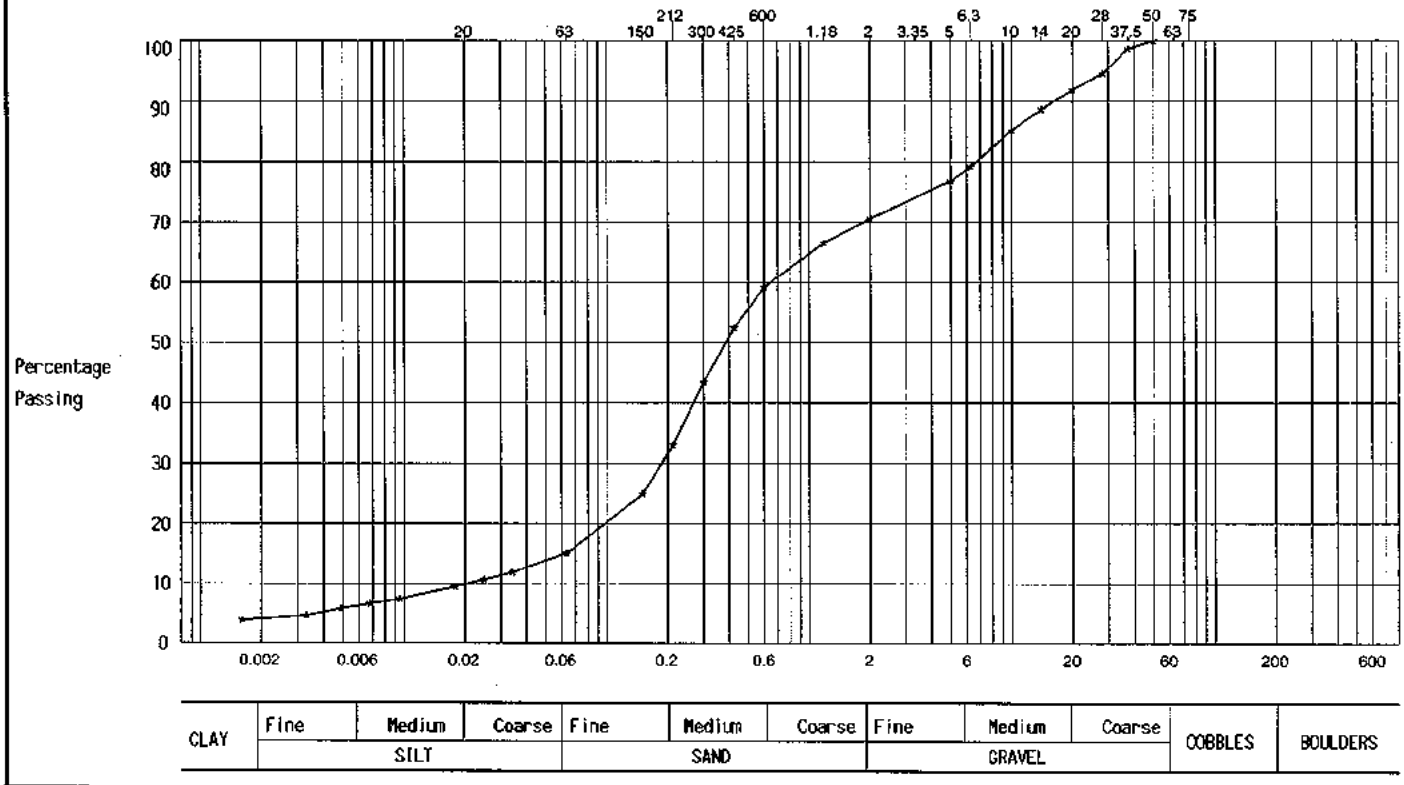
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC23	1.50	B2	MADE GROUND comprising very dark brown slightly clayey silty cindery SAND with glass, cinder, occasional brick, clinker and rare flint, coal and lightweight block	

Method of Test: Wet Sieve + Hydrometer

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)															Size (mm)										
Sieve Size	1.6	3.3	4.9	6.8	9.5	17.8	24.6	34.1	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75
Percentage by Mass passing Sieve	4	5	6	7	7	9	11	12	15	25	33	43	52	59	66	70	77	79	85	89	92	95	99	100	-



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990: 9.2 + 9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 70 of 71

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

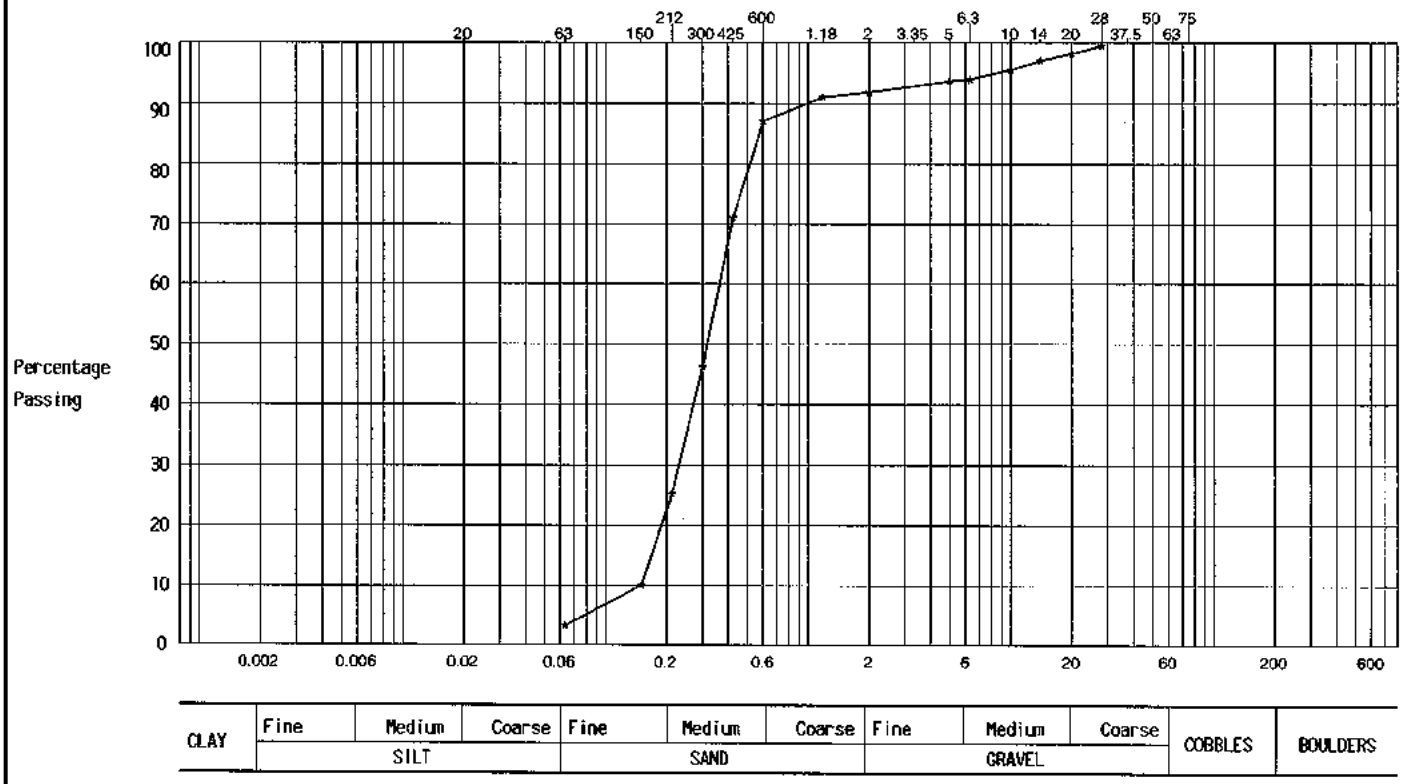
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
TPC23	3.00	B4	Yellowish brown SAND with frequent dark greyish brown slightly clayey sand pockets and occasional lightweight block, concrete and rare glass fragments	

Method of Test: Wet Sieve

Method of pre-treatment: DISPERSANT ONLY

	Size (microns)													Size (mm)											
Sieve Size	63	150	212	300	425	600	1.18	2	5	6.3	10	14	20	28	37.5	50	75								
Percentage by Mass passing Sieve	3	10	25	46	71	87	91	92	94	94	95	97	98	99	-	-	-								



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.3 & 7.4.5

METHOD OF TEST : BS 1377:PART 2:1990:9.2

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 71 of 91

Contract
Lake Lothing

Serial No.
S31644-2

UKAS TESTING
0998

DETERMINATION OF DENSITY, MOISTURE CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	MOHRS CIRCLE ANALYSIS Cu (kPa)	MOHRS CIRCLE ANALYSIS ∅ (degrees)	Description
BH06	19.00	UT2	20	2.02	1.68	382 601 800	204 225 233	102 112 116	86.8	1.9	Stiff (High strength) slightly fissured dark grey CLAY with occasional sand pockets and rare light grey silt pockets
BHC02	4.00	P1	25	2.01	1.61	79 163 241	147 201 235	74 101 118	42.8	12.4	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining
BHC03	10.00	UT1	23	2.12	1.72	198 403 596	48 57 64	24 29 32	19.5	1.2	Very soft (Very low strength) yellowish brown and bluish grey sandy silty CLAY with rare ironstaining and fine and medium sand pockets

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4.2 & 8 PART 2:1990:7.2 PART 7:1990:8.3

METHOD OF TEST : BS 1377:PART 2:1990:3 Determination of Moisture Content 1990:7 Determination of Density
:PART 7:1990:8 Undrained Shear Strength 1990:9 Multi-stage test
Note Multi-stage test used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 72 of 91

Contract Lake Lothing

Serial No. S31644-2

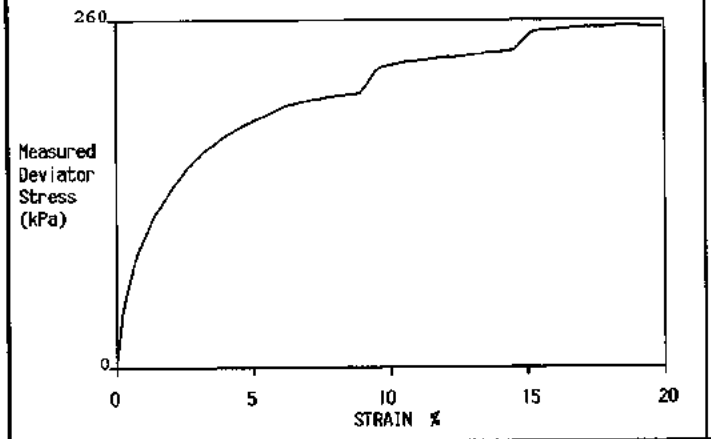
UKAS TESTING 0998

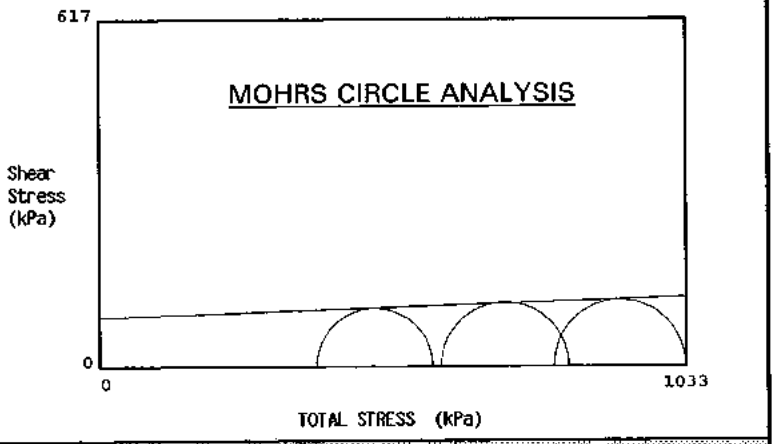
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH06	19.00	UT2	Stiff (High strength) slightly fissured dark grey CLAY with occasional sand pockets and rare light grey silt pockets	

Initial Specimen	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m^3	Dry Density Mg/m^3
Depth of Top of Specimen (m) 19.17	150.5	103.0	2530	20	2.02	1.68

TEST INFORMATION — Rate of Strain 2.0 % per Min — Rubber Membrane Thickness 0.3 mm





Specimen at Failure	Measured Cell Pressure $\sigma 3$ (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma 1 - \sigma 3$ (kPa)	Shear Stress Cu $\frac{1}{2}(\sigma 1 - \sigma 3)_f$ (kPa)	Mohrs Circle Analysis	
			Membrane Thickness	Piston Friction			Cu (kPa)	Phi °
	382	8.7	0.6	/	204	102		
	601	14.5	0.9	11.3	225	112	86.81	1.91
	800	18.5	1.1	21.6	233	116		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 77 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

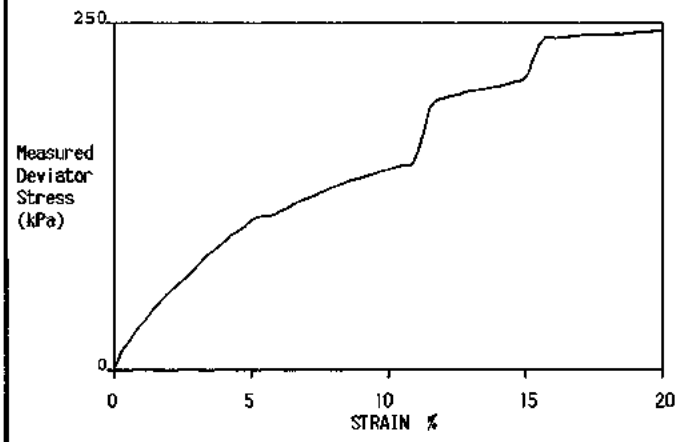
Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC02	4.00	P1	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining	

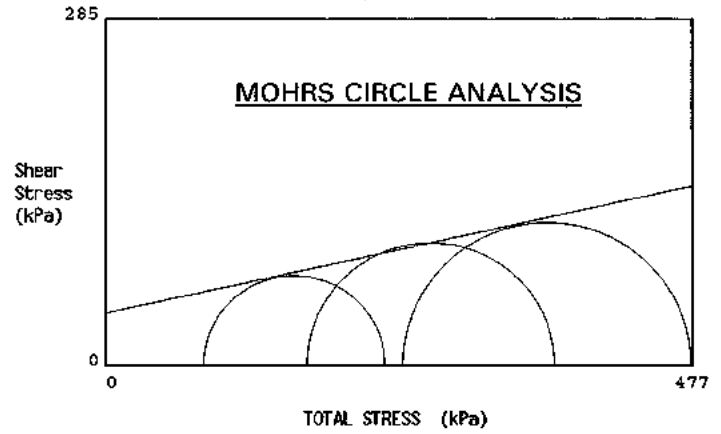
Initial Specimen

Depth of Top of Specimen (m): 4.22

Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m^3	Dry Density Mg/m^3
150.0	100.5	2389	25	2.01	1.61

TEST INFORMATION — Rate of Strain 2.0 % per Min — Rubber Membrane Thickness 0.3 mm





Specimen at Failure	Measured Cell Pressure $\sigma 3$ (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma 1 - \sigma 3$ (kPa)	Shear Stress Cu $\frac{1}{2}(\sigma 1 - \sigma 3)_f$ (kPa)	Mohrs Circle Analysis	
			Membrane Thickness	Piston Friction			Cu (kPa)	PHI °
	79	10.7	0.7	/	147	74		
	163	14.9	0.9	5.9	201	101	42.77	12.39
	241	20.0	1.1	8.8	235	118		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 74 of 91

Contract Lake Lothing

Serial No. S31644-2

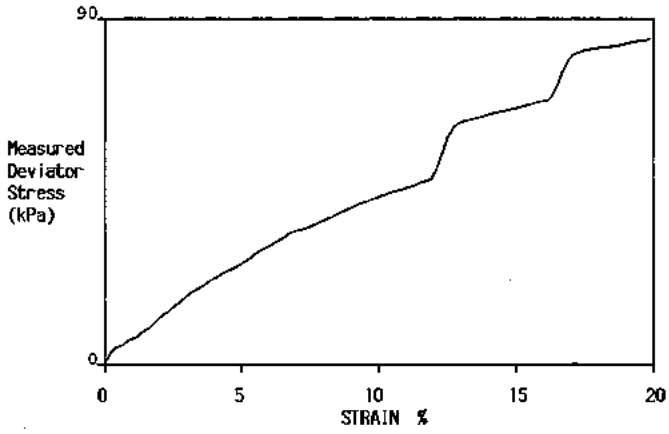
UKAS TESTING 0998

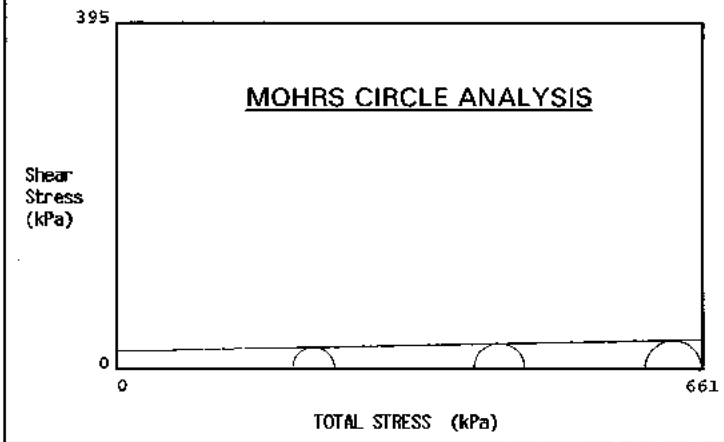
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

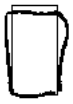
Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BHC03	10.00	UT1	Very soft (Very low strength) yellowish brown and bluish grey sandy silty CLAY with rare ironstaining and fine and medium sand pockets	

Initial Specimen	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m^3	Dry Density Mg/m^3
Depth of Top of Specimen (m) 10.14	147.2	104.4	2679	23	2.12	1.72

TEST INFORMATION — Rate of Strain 2.0 % per Min — Rubber Membrane Thickness 0.3 mm





Specimen at Failure	Measured Cell Pressure $\sigma 3$ (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma 1 - \sigma 3$ (kPa)	Shear Stress Cu $\frac{1}{2}(\sigma 1 - \sigma 3)_f$ (kPa)	Mohrs Circle Analysis	
			Membrane Thickness	Piston Friction			Cu (kPa)	PHI °
	198	11.9	0.7	/	48	24		
	403	16.1	0.9	10.7	57	29	19.48	1.16
	596	20.1	1.1	20.2	64	32		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 75 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

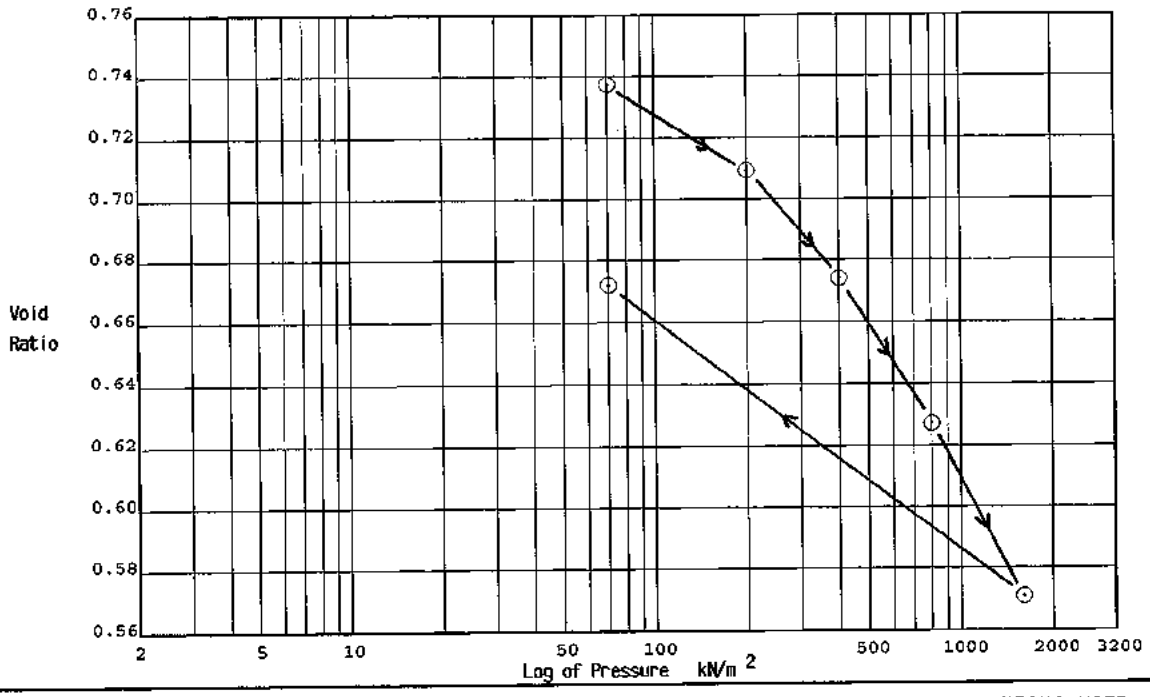
DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth m.	Sample	Specimen Depth/Location m. H/V	Moisture Content %	Description	Remarks
BH06	19.00	UT2	19.13 Horizontal	27	Stiff (High strength) slightly fissured dark grey CLAY with occasional sand pockets and rare light grey silt pockets	

INITIAL CONDITIONS

Height	18.75 mm	Particle Density	2.77 Assumed
Diameter	50.00 mm	Void Ratio	0.741
Wet Weight	74.27 g	Degree of Saturation	100 %
Moisture Content	27 %	Swelling Pressure	70 kN/m^2
Bulk Density	2.02 Mg/m^3	Dry Density	1.59 Mg/m^3

Increment No.	Load kN/m^2	Change in Height (mm)	Void Ratio	Cv (m^2/yr)	Mv (m^2/MN)	Temp °C	Corrected Cv
1	70	0.031	0.738		0.02	21	
2	200	0.332	0.710	0.78	0.12	21	0.77
3	400	0.713	0.675	0.58	0.10	22	0.55
4	800	1.217	0.628	0.46	0.07	22	0.45
5	1600	1.824	0.572	0.44	0.04	22	0.43
6	70	0.735	0.673		0.04	21	



METHOD OF PREPARATION: BS 1377:PART 5:1990:3.3 & 3.4 METHOD OF TIME FITTING USED : Square Root

METHOD OF TEST : BS 1377:PART 5:1990:3.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 16 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

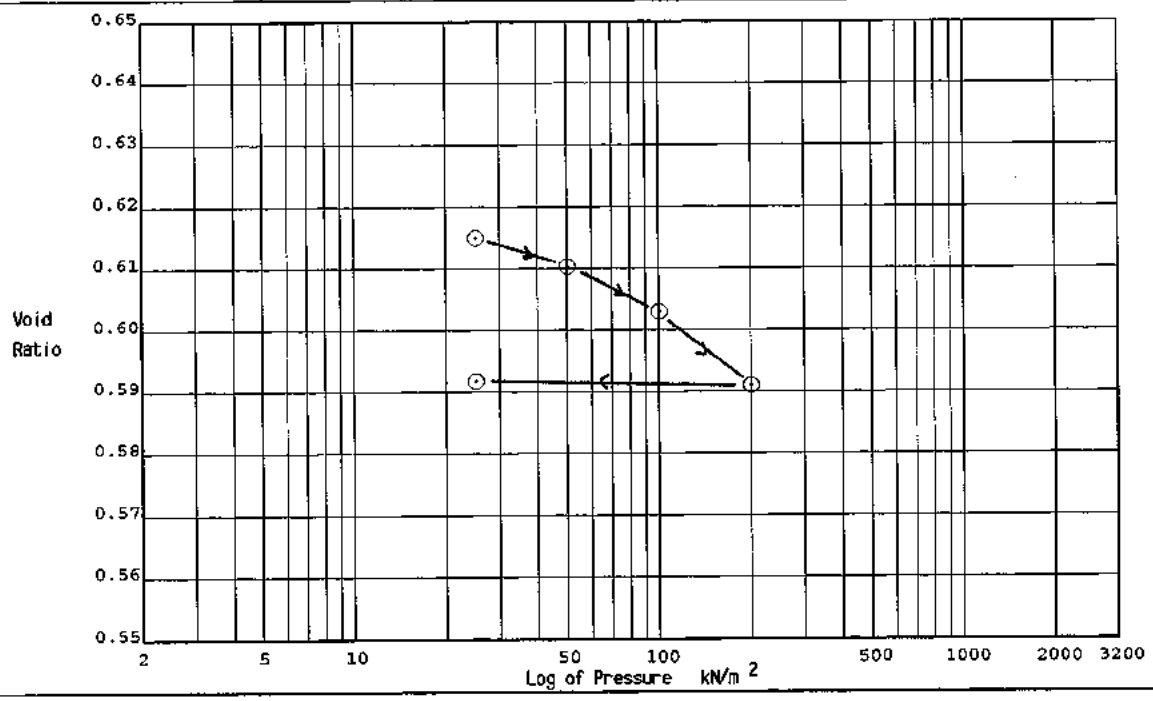
DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth m.	Sample	Specimen Depth/Location m. H/V	Moisture Content %	Description	Remarks
BHC02	4.00	P1	4.18 Horizontal	23	Firm (Medium strength) yellowish brown sandy silty CLAY with light grey mottling, occasional fine to coarse sand pockets and rare ironstaining	

INITIAL CONDITIONS

Height	18.66 mm	Particle Density	2.77 Assumed
Diameter	50.00 mm	Void Ratio	0.632
Wet Weight	76.42 g	Degree of Saturation	100 %
Moisture Content	23 %	Swelling Pressure	kN/m^2
Bulk Density	2.09 Mg/m^3	Dry Density	1.70 Mg/m^3

Increment No.	Load kN/m^2	Change in Height (mm)	Void Ratio	Cv (m^2/yr)	Mv (m^2/MN)	Temp °C	Corrected Cv
1	25	0.193	0.615	2.8	0.41	21	2.7
2	50	0.247	0.611	5.5	0.12	21	5.4
3	100	0.330	0.603	4.8	0.09	22	4.6
4	200	0.467	0.591	5.1	0.08	22	4.9
5	25	0.459	0.592		0.00	22	



METHOD OF PREPARATION: BS 1377:PART 5:1990:3.3 & 3.4 METHOD OF TIME FITTING USED : Square Root

METHOD OF TEST : BS 1377:PART 5:1990:3.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 77 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

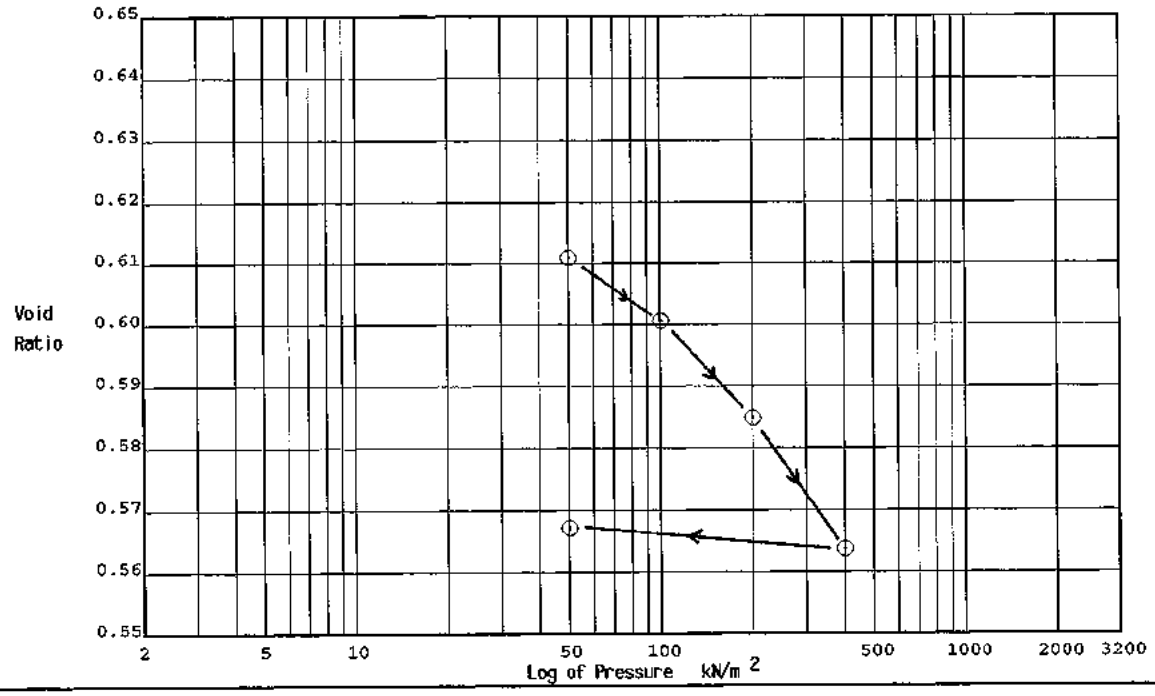
DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth m.	Sample	Specimen Depth/Location m. H/V	Moisture Content %	Description	Remarks
BHC03	10.00	UT1	10.09 Horizontal	23	Very soft (Very loe strength) yellowish brown and bluish grey sandy silty CLAY with rare ironstaining and fine and medium sand pockets	

INITIAL CONDITIONS

Height	18.83 mm	Particle Density	2.77 Assumed
Diameter	50.00 mm	Void Ratio	0.633
Wet Weight	77.08 g	Degree of Saturation	100 %
Moisture Content	23 %	Swelling Pressure	kN/m^2
Bulk Density	2.09 Mg/m^3	Dry Density	1.70 Mg/m^3

Increment No.	Load kN/m^2	Change in Height (mm)	Void Ratio	Cv (m^2/yr)	Mv (m^2/MN)	Temp °C	Corrected Cv
1	50	0.253	0.611	6.7	0.27	21	6.6
2	100	0.371	0.601	5.6	0.13	21	5.5
3	200	0.554	0.585	5.5	0.10	22	5.3
4	400	0.798	0.564	5.8	0.07	22	5.6
5	50	0.758	0.568		0.01	22	



METHOD OF PREPARATION: BS 1377:PART 5:1990:3.3 & 3.4 METHOD OF TIME FITTING USED : Square Root

METHOD OF TEST : BS 1377:PART 5:1990:3.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 78 of 91

Contract Lake Lothing

Serial No. S31644-2

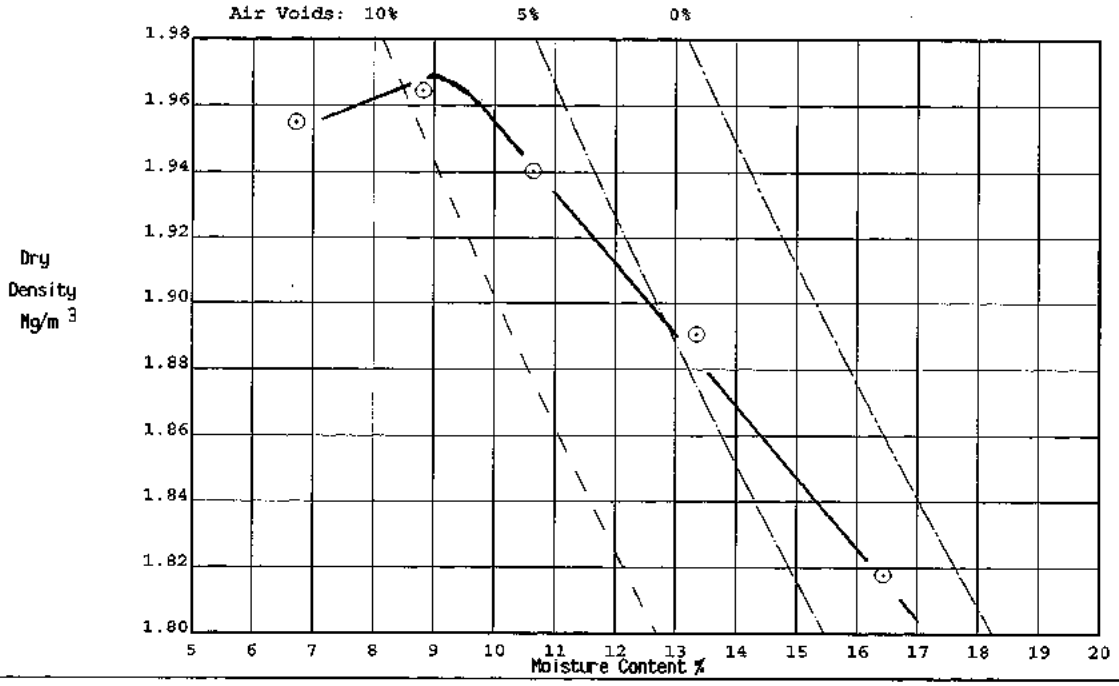
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH06	1.50	B2	13	Brown slightly gravelly SAND with occasional dark grey organic pockets. Gravel is fine to coarse flint	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	7.0 %	Single or separate samples	Single.
Grading Zone	3	Particle density	2.68 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 1.97 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 9.0 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Insufficient sample to carry out test using CBR Mould

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 79 of 91

Contract Lake Lothing

Serial No. S31644-2

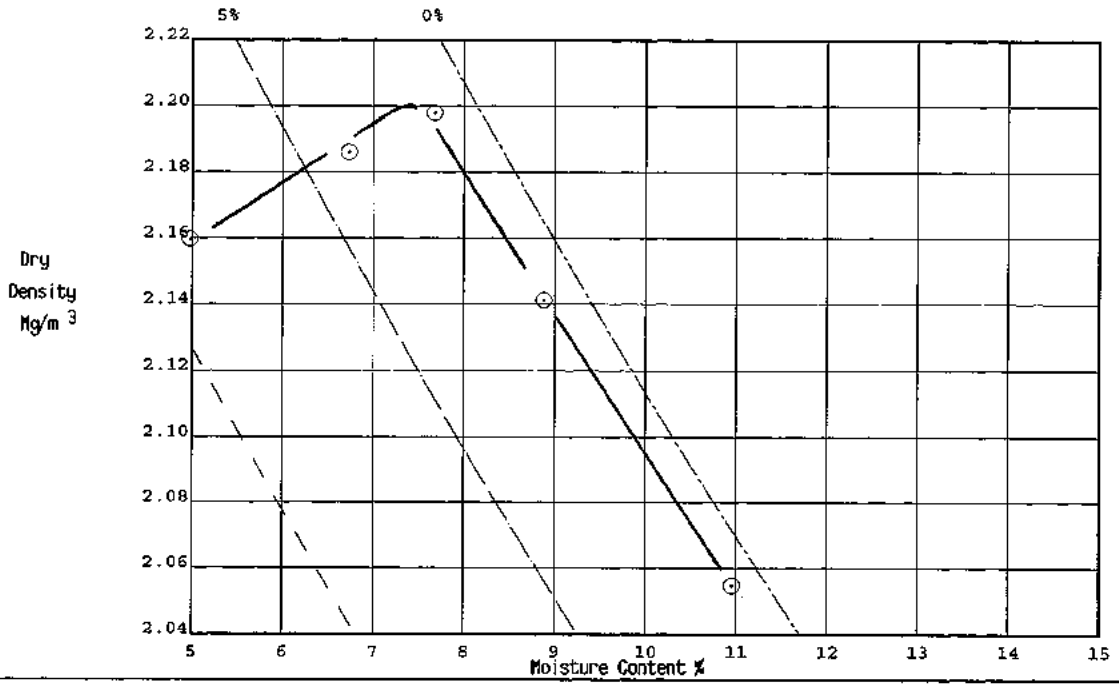
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC21	0.50	B1	6.8	Brown, black and white silty very sandy angular to rounded flint GRAVEL. Sand is orangish brown	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	5.0 %	Single or separate samples	Single.
Grading Zone	3	Particle density	2.68 Assumed
Mould Type	CBR.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.4).

MAX DRY DENSITY 2.20 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 7.5 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 80 of 91

Contract Lake Lothing

Serial No. S31644-2

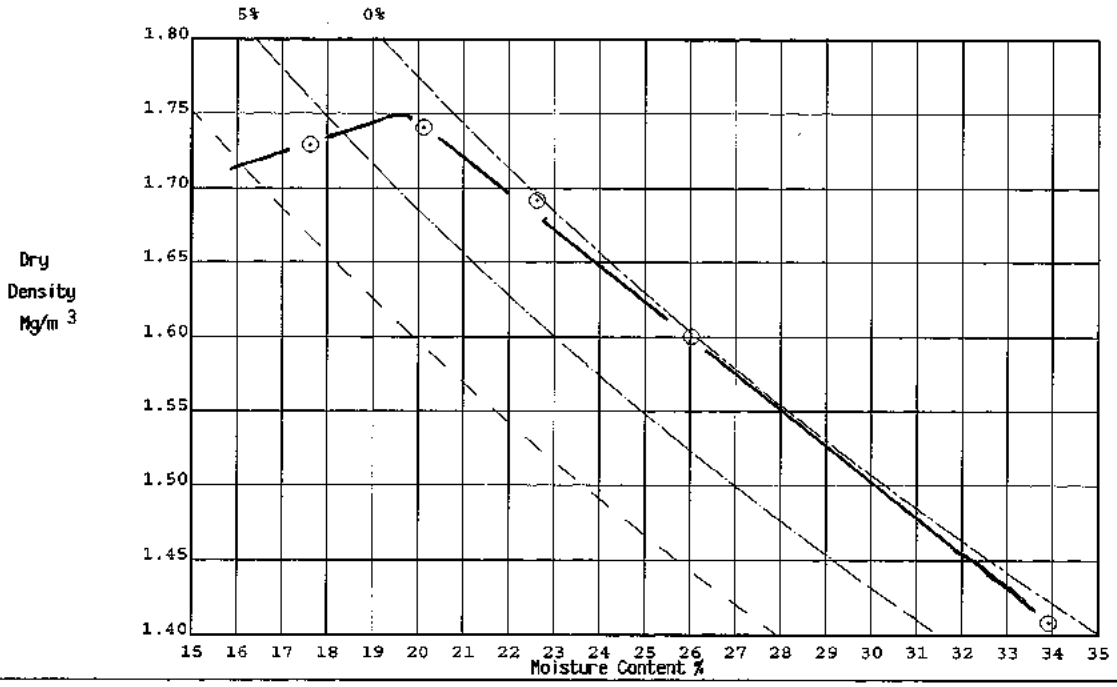
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC21	2.00	B3	34	Soft light olive brown slightly sandy silty CLAY	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	20 mm
Percentage retained 20.0mm	0.0 %	Single or separate samples	Separate.
Grading Zone	1	Particle density	2.75 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 1.75 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 20 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 81 of 91

Contract Lake Lothing

Serial No. S31644-2

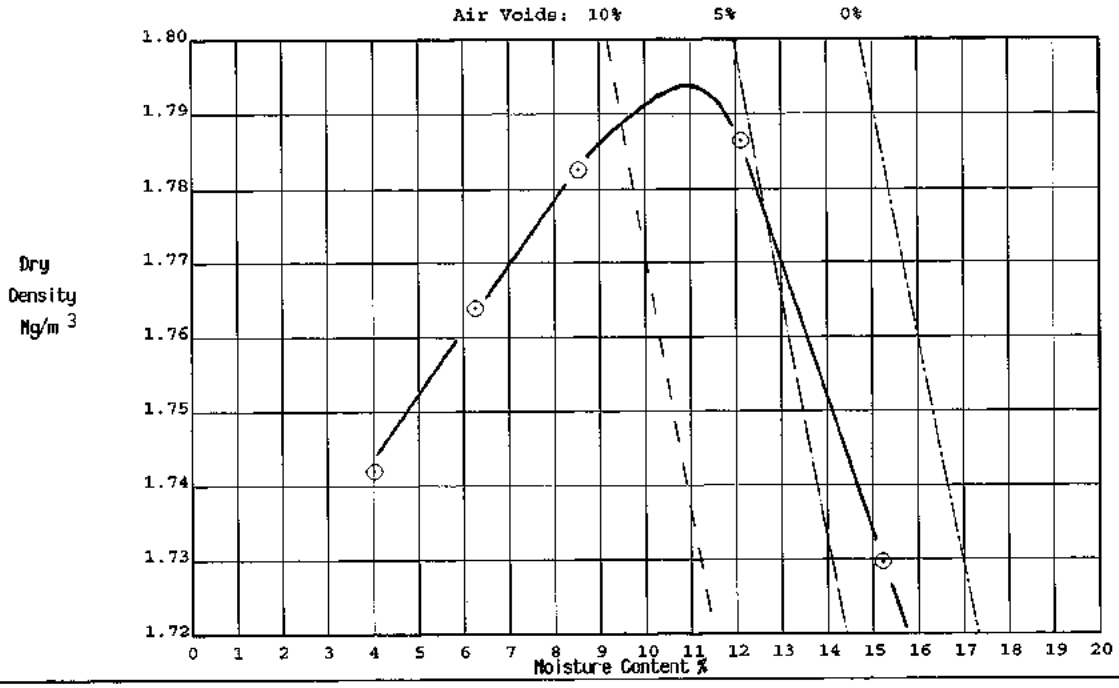
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC22	1.50	B2	11	Light yellowish brown slightly silty slightly gravelly SAND. Gravel is black, brown and white angular flint with occasional white quartzite and brown sandstone	

Percentage retained 37.5mm	0.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	0.0 %	Single or separate samples	Single.
Grading Zone	1	Particle density	2.45 Assumed
Mould Type	Proctor.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.5).

MAX DRY DENSITY 1.79 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 11 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 82 of 91

Contract Lake Lothing

Serial No. S31644-2

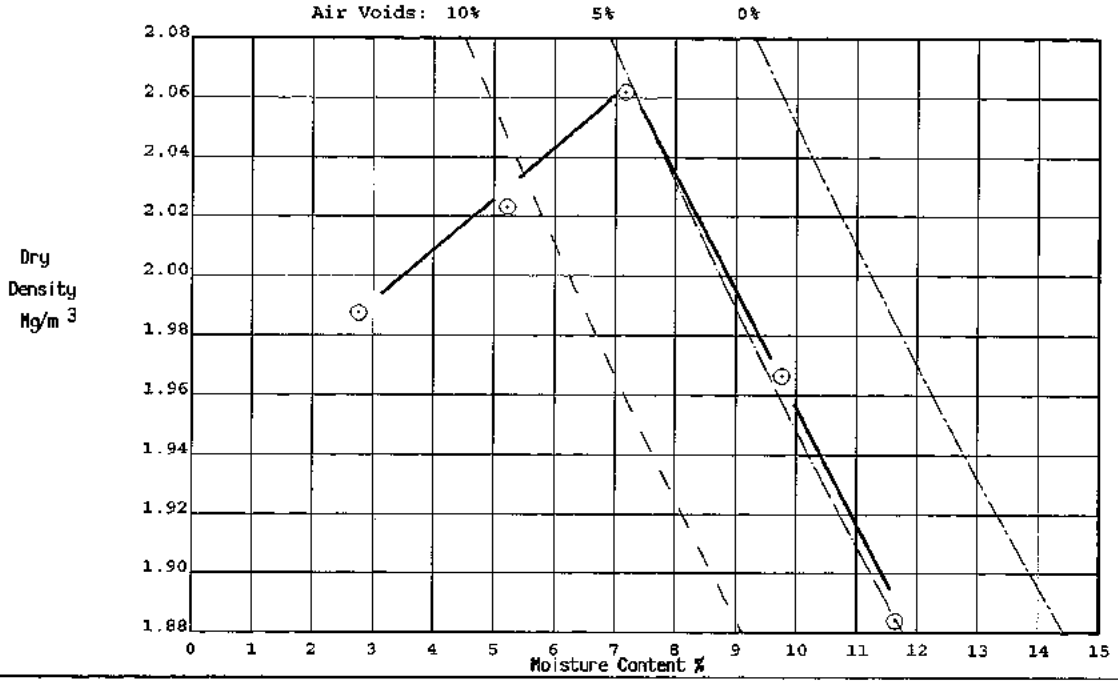
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC23	0.50	B1	2.8	Brown and light brown silty very gravelly SAND with occasional brick fragments and flint cobbles. Gravel is black, white and brown angular to rounded flint	

Percentage retained 37.5mm	13 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	22 %	Single or separate samples	Single.
Grading Zone	X	Particle density	2.58 Assumed
Mould Type	CBR.	METHOD OF COMPACTION	B.S. 2.5 kg Rammer Method (BS 1377:Part 4:1990 3.4).

MAX DRY DENSITY 2.06 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 7.0 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Brick crushed to pass 37.5mm sieve

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 83 of 91

Contract Lake Lothing

Serial No. S31644-2

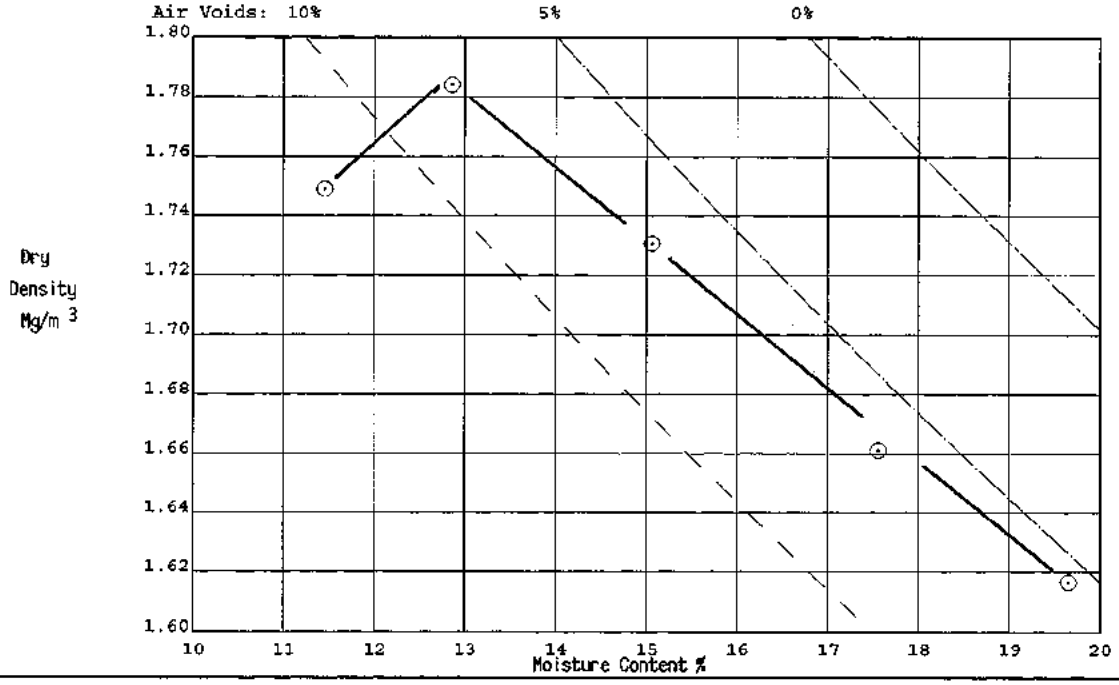
UKAS TESTING 0998

DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TPC23	1.50	B2	18.	MADE GROUND comprising very dark brown slightly clayey silty cindery SAND with glass, cinder, occasional brick, clinker and rare flint, coal and lightweight block	

Percentage retained 37.5mm	1.0 %	Max size of cohesive lumps	mm
Percentage retained 20.0mm	8.0 %	Single or separate samples	Single.
Grading Zone	4	Particle density	2.58 Assumed
Mould Type	CBR.	METHOD OF COMPACTION	B.S. 4.5 kg Rammer Method (BS 1377:Part 4:1990 3.6).

MAX DRY DENSITY 1.78 Mg/m^3 **OPTIMUM MOISTURE CONTENT** 13 %



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6

METHOD OF TEST : BS 1377:PART 2:1990:3.2 & PART 4:1990:3

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 **PAGE** 64 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC21	0.50	B1	Brown, black and white silty very sandy angular to rounded flint GRAVEL. Sand is orangish brown	Reported densities and moisture content before soaking. After soaking Top=8.2% Bottom=7.7%

Moisture Content % TOP: 7.3 BOTTOM: 7.3 Average: 7.3

Bulk Density Mg/m^3 2.25

Dry Density Mg/m^3 2.10

CBR VALUES

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	2.12	16		16	
	5.0	2.71	14			
BOTTOM ⊙	2.5	6.07	46		51	
	5.0	10.20	51			

% material retained on 20mm sieve and removed before test : 5

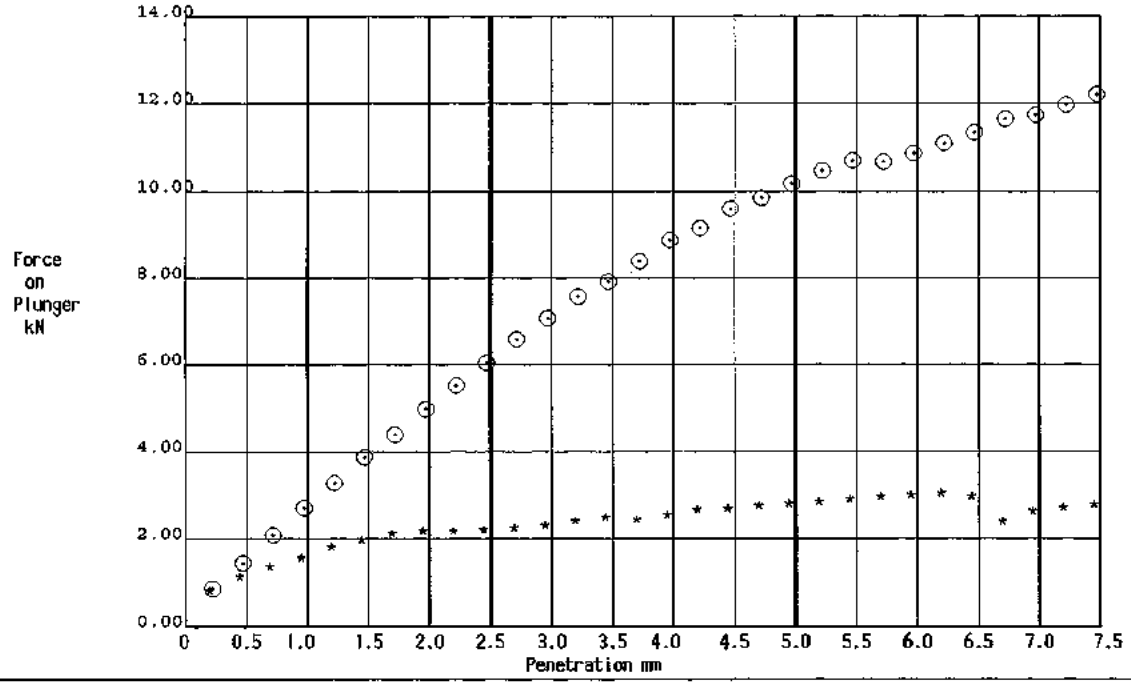
METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5

Period of Soaking: 4 days

SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 85 OF 91 **Pages**

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

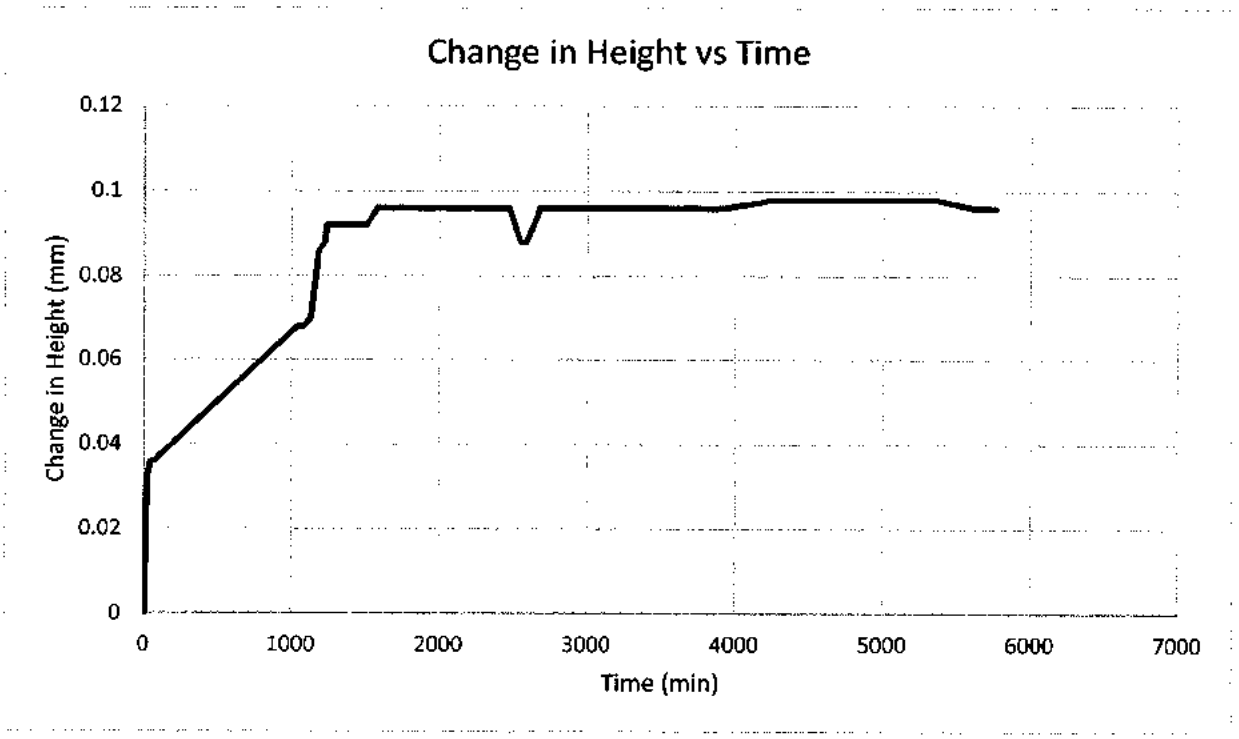
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC21	0.5	B1	Brown, black and white silty very sandy angular to rounded flint GRAVEL. Sand is orangish brown	

After Soaking

Moisture Contents	Top 8.2%	Bottom 7.7%	Bulk Density 2.27Mg/m^3	Dry Density 2.10 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height +0.096 mm

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 86 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC22	1.50	B2	Light yellowish brown slightly silty slightly gravelly SAND. Gravel is black, brown and white angular flint with occasional white quartzite and brown sandstone	Reported densities and moisture content before soaking. After soaking Top=17% Bottom=17%

Moisture Content % TOP: 11 BOTTOM: 11 Average: 11

Bulk Density Mg/m^3 1.88 Dry Density Mg/m^3 1.70

CBR VALUES

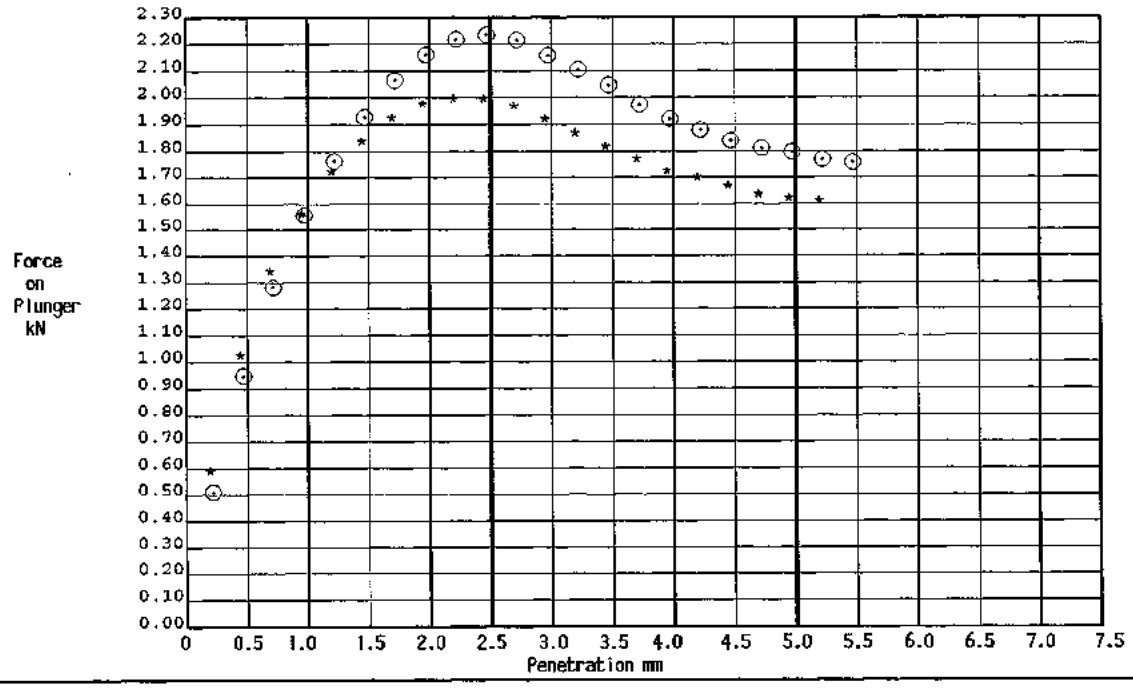
% material retained on 20mm sieve and removed before test : 0

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	1.98	15		15	16
	5.0	1.61	8.0			
BOTTOM ⊙	2.5	2.24	17		17	
	5.0	1.80	9.0			

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 18
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 87 **OF** 91 **Pages**

Contract
Lake Lothing

Serial No.
S31644-2

UKAS TESTING
0998

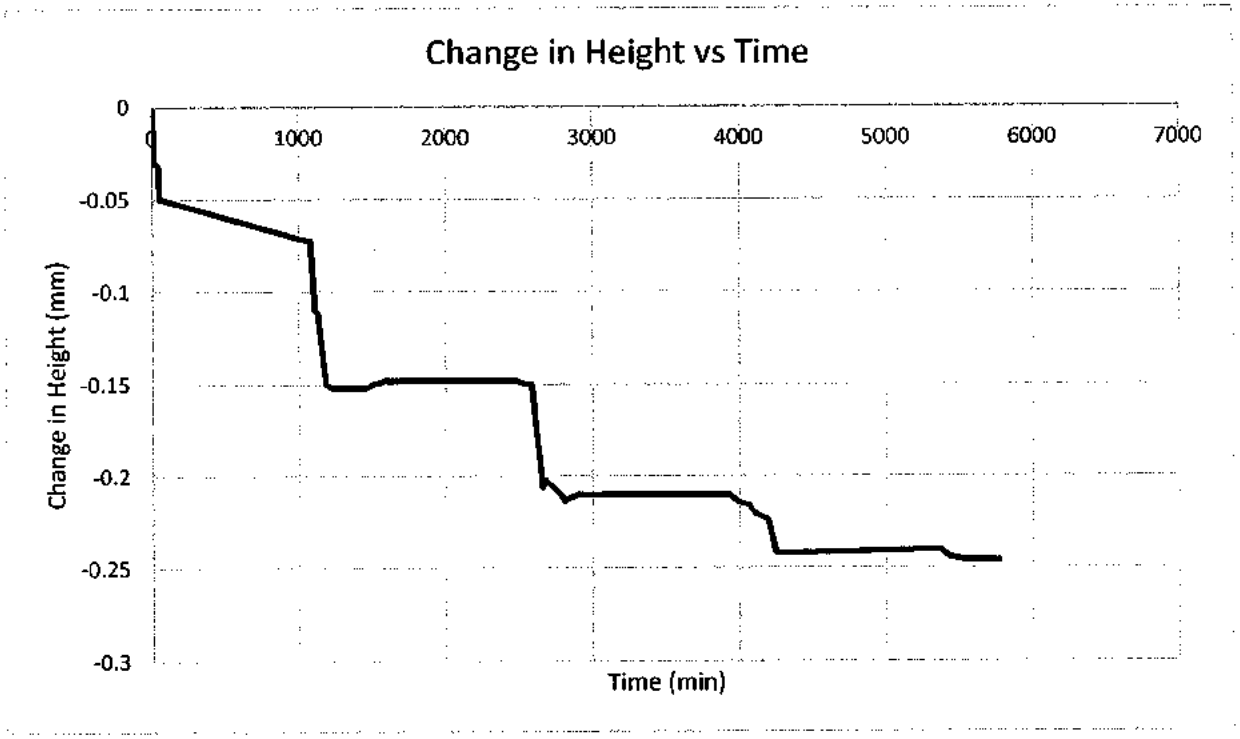
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC22	1.5	B2	Light yellowish brown slightly silty slightly gravelly SAND. Gravel is black, brown and white angular flint with occasional white quartzite and brown sandstone	

After Soaking

Moisture Contents	Top 17%	Bottom 17%	Bulk Density 1.98Mg/m^3	Dry Density 1.69 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height -0.246 mm

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 68 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC23	0.50	B1	Brown and light brown silty very gravelly SAND with occasional brick fragments and flint cobbles. Gravel is black, white and brown angular to rounded flint	Reported densities and moisture content before soaking. After soaking Top=12% Bottom=10%

Moisture Content % TOP: 6.5 BOTTOM: 6.5 Average: 6.5

Bulk Density Mg/m^3 2.09 Dry Density Mg/m^3 1.96

% material retained on 20mm sieve and removed before test : 22

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

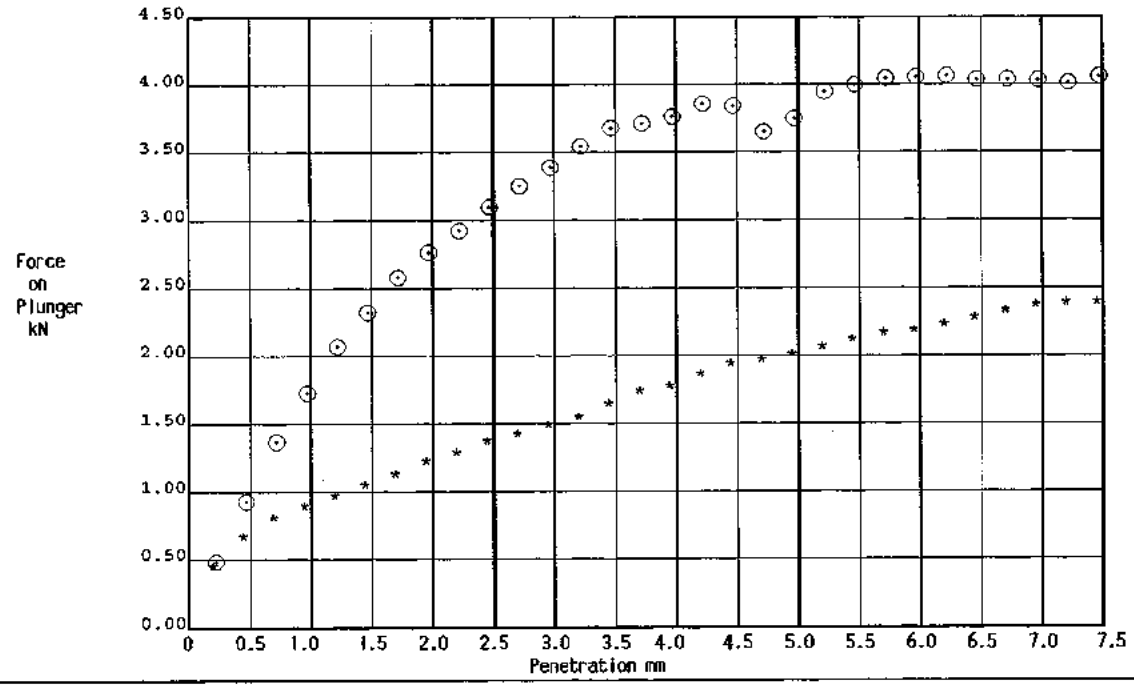
Surcharge weights (kg) : 18

Period of Soaking: 4 days

SOAKED TEST : YES

CBR VALUES

Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	1.34	10		10	
	5.0	1.99	9.9			
BOTTOM ⊙	2.5	3.10	23		23	
	5.0	3.75	19			



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 89 **OF** 91 **Pages**

Contract
Lake Lothing

Serial No.
S31644-2

UKAS TESTING
0998

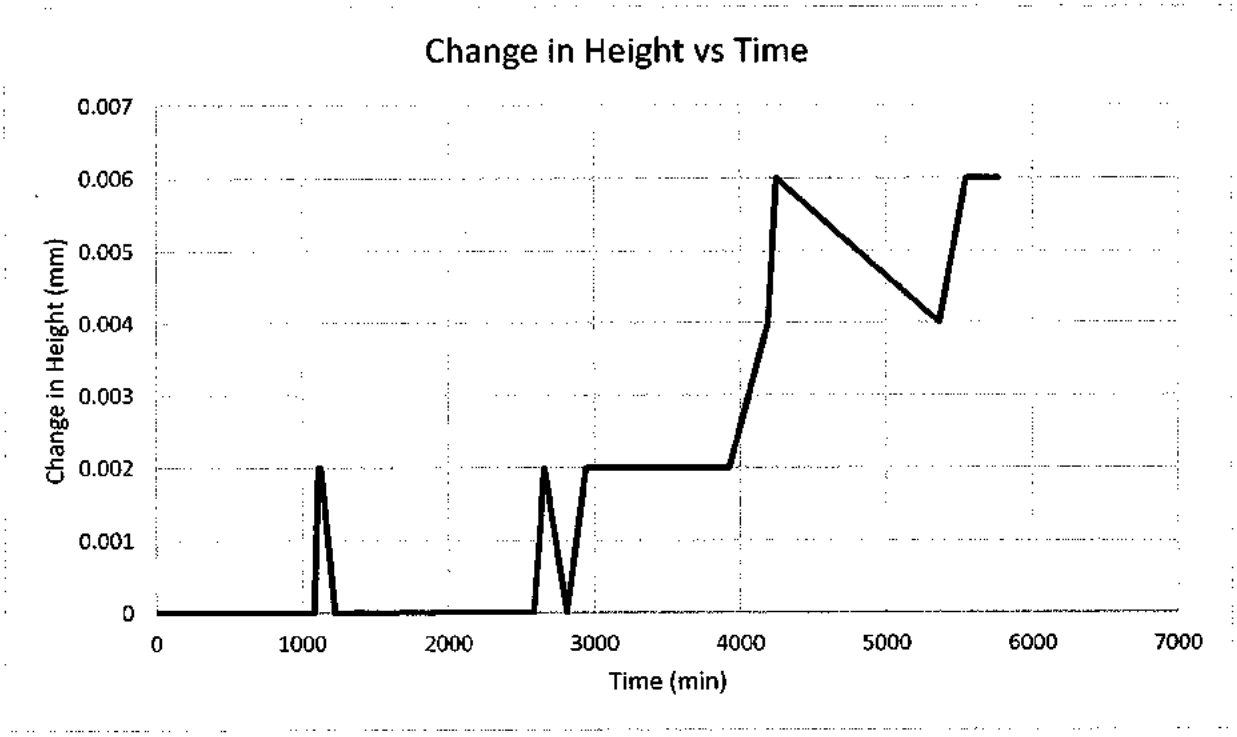
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC23	0.5	B1	Brown and light brown silty very gravelly SAND with occasional brick fragments and flint cobbles. Gravel is black, white and brown angular to rounded flint	

After Soaking

Moisture Contents	Top 12%	Bottom 10%	Bulk Density 2.19Mg/m^3	Dry Density 1.97 Mg/m^3

Surcharge Weights: 18 kg



Total Change in Height +0.006 mm

TEST REPORT.

ISSUED BY : **SOIL PROPERTY TESTING LTD.**

DATE OF ISSUE : As page 1 **PAGE** 90 of 91

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TPC23	1.50	B2	MADE GROUND comprising very dark brown slightly clayey silty cindery SAND with glass, cinder, occasional brick, clinker and rare flint, coal and lightweight block	Reported densities and moisture content before soaking. After soaking Top=16% Bottom=16%

Moisture Content % TOP: 12 BOTTOM: 12 Average: 12

Bulk Density Mg/m^3 1.93 Dry Density Mg/m^3 1.72

CBR VALUES

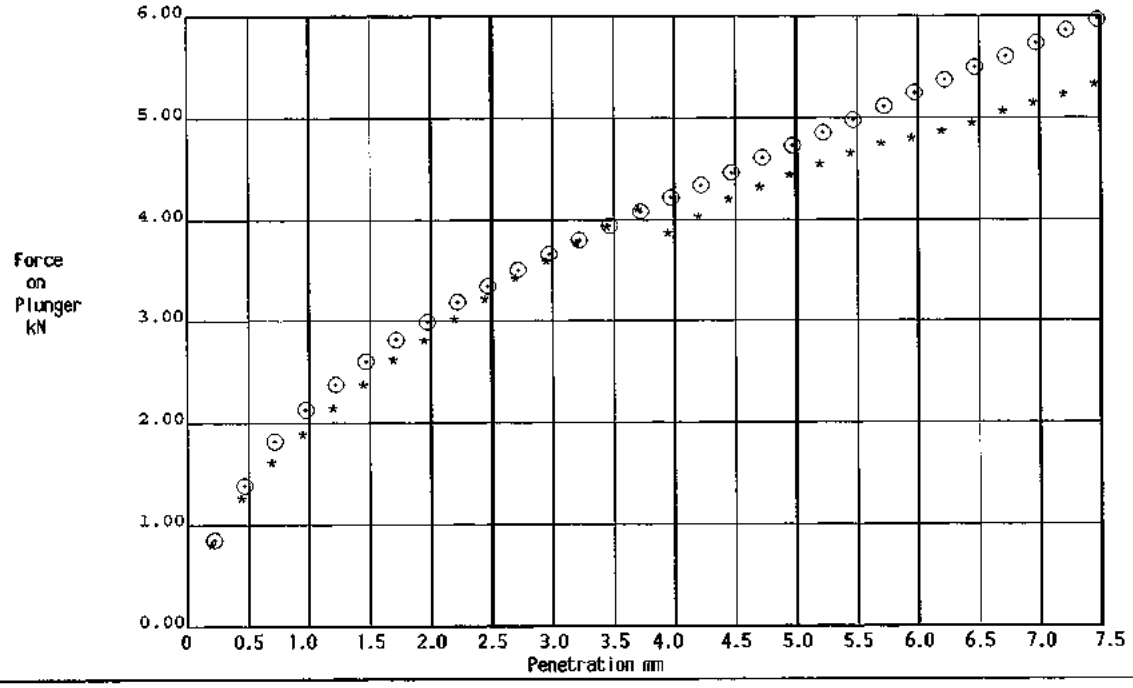
Penetration mm		Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)
TOP *	2.5	3.17	24		24	25
	5.0	4.41	22			
BOTTOM ⊙	2.5	3.34	25		25	
	5.0	4.74	24			

% material retained on 20mm sieve and removed before test : 8

METHOD OF PREPARATION

BS 1377:Part 4:1990 7.2.4 Dynamic Compaction.

Surcharge weights (kg) : 4.5
Period of Soaking: 4 days
SOAKED TEST : YES



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT

ISSUED BY: SOIL PROPERTY TESTING LTD

Date of Issue: As page 1 **PAGE** 91 OF 91 **Pages**

Contract Lake Lothing

Serial No. S31644-2

UKAS TESTING 0998

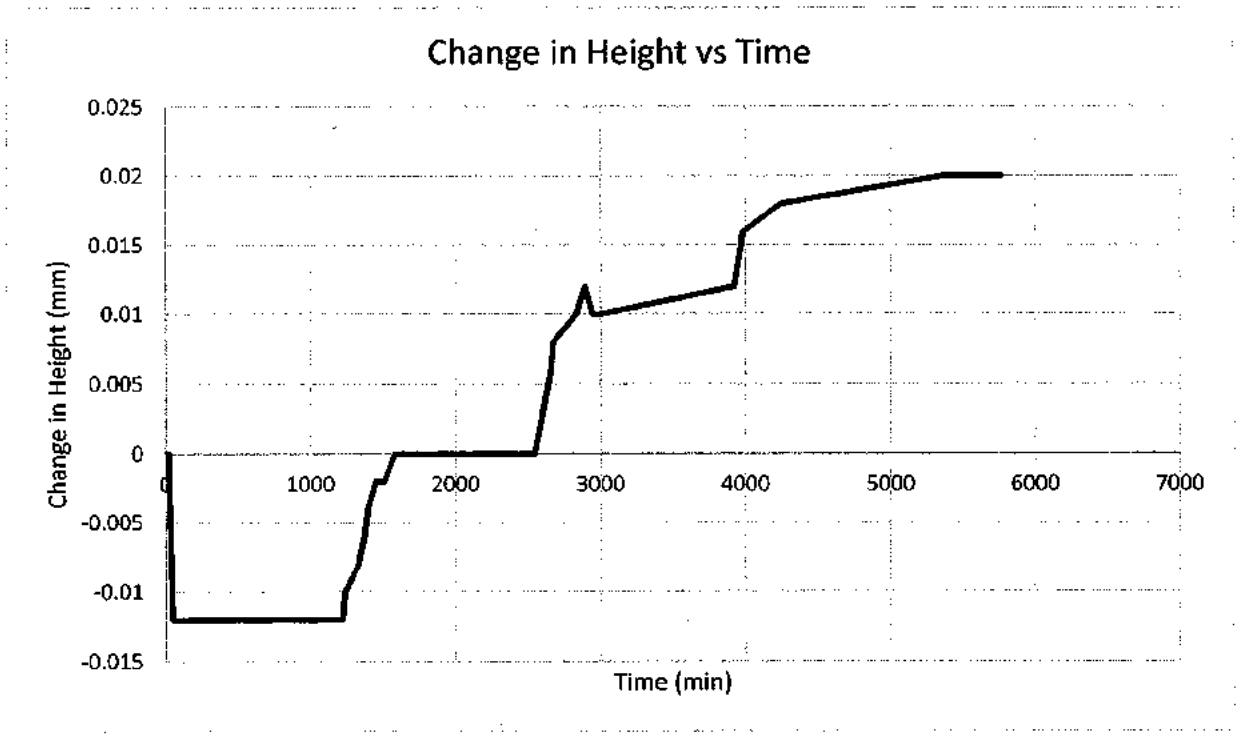
Determination of Change in Height during Soaking

Borehole	Depth	Sample	Description	Remarks
TPC23	1.5	B2	MADE GROUND comprising very dark brown slightly clayey silty cindery SAND with glass, cinder, occasional briwck, clinker and rare flint, coal and lightweight block	

After Soaking

Moisture Contents	Top 16%	Bottom 16%	Bulk Density 1.98Mg/m^3	Dry Density 1.71 Mg/m^3

Surcharge Weights: 4.5 kg



Total Change in Height +0.020 mm

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-30382-1
Initial Date of Issue:	22-Nov-2017
Client	Soil Property Testing
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG
Contact(s):	Jon Garner
Project	S31644-2 Lake Lothing
Quotation No.:	Q17-10468
Order No.:	S31644-2
No. of Samples:	13
Turnaround (Wkdays):	5
Date Approved:	22-Nov-2017
Approved By:	
Details:	Robert Monk, Technical Manager

Date Received:	16-Nov-2017
Date Instructed:	16-Nov-2017
Results Due:	22-Nov-2017

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-2 Lake Lothing

Client: Soil Property Testing					Chemtest Job No.:	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382	17-30382
Quotation No.: Q17-10468					Chemtest Sample ID.:	539936	539937	539938	539939	539940	539941	539942	539943	539944	539945	539946	539947
Order No.: S31644-2					Client Sample Ref.:	BH06	BH06	BHC02	BHC02	BHC03	BHC03	BHC03	BHC06	TPC21	TPC21	TPC23	TPC23
					Client Sample ID.:	B1	B27	B1	B4	B1	B3	B19	B36	B1	B2	B1	B2
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	24.00	1.00	5.00	1.00	2.00	18.00	34.00	0.50	1.20	0.50	1.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
Moisture	N	2030	%	0.020	10	18	6.8	20	13	16	19	20	0.22	14	0.15	0.29
pH (2.5:1)	N	2010		N/A		[A] 7.7		[A] 7.5			[A] 7.8	[A] 7.8		[A] 7.9	[A] 7.4	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		0.46		0.039			0.34	0.26		0.12	0.056	
Loss on Ignition 440 (Fines)	U	2620	%	0.20	[E] 0.45		[E] 0.39		[E] 0.44				[E] 1.4			[E] 8.0
Group 1 & 2 Material > 20mm	N	2620	%	0.10	< 0.10		< 0.10		< 0.10				< 0.10			< 0.10
Organic Matter BS1377	N	2930	%	0.10						[A] 0.20				[A] 1.1		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-2 Lake Lothing

Client: Soil Property Testing	Chemtest Job No.:				17-30382
Quotation No.: Q17-10468	Chemtest Sample ID.:				539948
Order No.: S31644-2	Client Sample Ref.:				TPC23
	Client Sample ID.:				B4
	Sample Type:				SOIL
	Top Depth (m):				3.00
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	11
pH (2.5:1)	N	2010		N/A	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	
Loss on Ignition 440 (Fines)	U	2620	%	0.20	
Group 1 & 2 Material > 20mm	N	2620	%	0.10	
Organic Matter BS1377	N	2930	%	0.10	[A] 0.30

Chemtest
The right chemistry to deliver results

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
539936	BH06	B1		E	Plastic Bag
539937	BH06	B27		A	Plastic Bag
539938	BHC02	B1		E	Plastic Bag
539939	BHC02	B4		A	Plastic Bag
539940	BHC03	B1		E	Plastic Bag
539941	BHC03	B3		A	Plastic Bag
539942	BHC03	B19		A	Plastic Bag
539943	BHC06	B36		A	Plastic Bag
539944	TPC21	B1		E	Plastic Bag
539945	TPC21	B2		A	Plastic Bag
539946	TPC23	B1		A	Plastic Bag
539947	TPC23	B2		E	Plastic Bag
539948	TPC23	B4		A	Plastic Bag

Chemtest
The right chemistry to deliver results

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2620	LOI 440	LOI 440	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Chemtest
The right chemistry to deliver results

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** Technical Director
- ☐ **S.P. Townend FGS** Quality Manager
- ☐ **W. Johnstone** Materials Lab Manager
- ☐ **D. Sabnis** Operations Manager

[redacted]

Date Received: 22/01/2018

Samples Tested Between: 22/01/2018 **and** 16/02/2018

Remarks:

For the attention of Mr S Gilchrist
Your Reference No: 2543,GI

Chemical tests subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2 (a) UKAS - United Kingdom Accreditation Service
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-3**	**Target Date**	05/02/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve+ Hydro	Hydrometer Inc. Pre-sieve	Organic Content (Dichromat	Loss On Ignition	Brownfield Site-pyrite absen	Brownfield Site-pyrite prese	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage	Consolidation	Consol extra 24hr increment						Sample Remarks
BHC103	B	1	0.50	1		1																
BHC103	B	4	1.50		1			1														
BHC103	B	5	2.50						1		1											
BHC103	B	6	3.50	1	1																	
BHC103	B	15	8.00		1																	
BHC103	B	19	10.00							1												
BHC103	B	24	14.00	1	1																	
BHC103	B	29	17.00				1															
BHC103	B	38	21.00	1	1																	
BHC103	UT	40	22.00								1		2									
BHC103	D	41	22.60				1			1												
BHC103	B	44	23.00	1							1											
BHC103	UT	45	24.00								1		2									
BHC103	D	46	24.60	1		1																
BHC103	B	57	29.00				1															
BHC103	B	67	34.50		1																	
BHC103	B	75	38.00						1													
BHC103	D	78	40.00	1	1																	
BHC28	D	2	1.00	1		1		1			1	1										
BHC28	D	5	1.70	1							1	1										
BHC28	B	7	2.00							1												
BHC28	D	8	2.60					1														
BHC28	B	10	3.00	1		1			1		1	1										
BHC28	B	17	6.40	1	1																	
BHC28	B	21	8.50		1					1												
BHC28	B	25	10.50	1	1																	
BHC28	D	29	12.10			1																
BHC28	B	30	12.20	1		1					1	1										
BHC28	D	34	14.20		1					1												
BHC28	D	43	17.90				1															
BHC28	UT	44	18.00	1							1											
BHC28	B	50	20.00				1															
BHC28	B	52	21.50	1							1	1										
BHC28	UT	54	22.30								1		1	1	3							
BHC28	B	56	22.70				1															

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-3**	**Target Date**	05/02/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve+ Hydro	Hydrometer Inc. Pre-sieve	Organic Content (Dichromat	Loss On Ignition	Brownfield Site-pyrite absen	Brownfield Site-pyrite prese	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage	Consolidation	Consol extra 24hr increment						Sample Remarks
BHC28	B	58	23.00	1								1	1									
BHC28	B	65	26.50	1			1															
BHC28	D	72	30.40	1							1	1										
BHC28	UT	75	31.50				1															
BHC28	B	86	36.50	1	1																	
BHC28	B	106	46.50	1	1																	
BHC28	D	113	50.00		1																	
Totals				**20**	**14**	**6**	**8**	**3**	**2**	**2**	**6**	**12**	**6**	**5**	**1**	**3**						**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC103	0.50 - 0.70	B	1	**18.6**									Black very gravelly silty clayey SAND with occasional brick, cinder, asphalt and glass fragments. Gravel is black, white and brown angular to subangular flint, and rare brown and white subrounded quartzite.	
BHC103	3.50 - 4.00	B	6	**13.4**									Dark yellowish brown very gravelly slightly silty SAND. Gravel is black, white and brown angular to subrounded flint, and occasional white and yellowish brown subrounded to rounded quartzite.	
BHC103	14.00 - 14.50	B	24	**6.7**									Black, brown and white very sandy slightly silty subangular to subrounded flint GRAVEL with occasional white and yellowish brown subrounded to rounded quartzite. Sand is dark yellowish brown.	
BHC103	21.00 - 21.50	B	38	**18.9**									Grey silty SAND with occasional olive pockets.	
BHC103	22.00 - 22.45	UT	40	**30.0**	54	23	31	0.23	From Natural	0 (A)		24	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	CH
BHC103	22.00 - 22.45	UT	40	**31.1**									Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	
BHC103	23.00 - 23.50	B	44	**44.2**	59	25	34	0.56	From Natural	0 (A)		25	Very soft dark grey slightly sandy CLAY. Sand is fine.	CH
BHC103	24.00 - 24.45	UT	45	**31.9**	76	31	45	0.02	From Natural	0 (A)		24	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	CV

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC103	24.00 - 24.45	UT	45	**32.4**									Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	
BHC103	24.60	D	46	**20.8**									Dark grey silty clayey SAND with occasional shell fragments of fine and medium gravel size.	
BHC103	40.00	D	78	**26.4**									Olive grey slightly silty SAND.	
BHC28	1.00	D	2	**24.0**	39	21	18	0.17	Wet Sieved	11 (M)	26.9*	26	Firm brown slightly gravelly slightly sandy silty CLAY with occasional shell debris. Gravel is black and white angular to subangular flint and rare lignite	CI
BHC28	1.70	D	5	**21.1**	35	18	17	0.18	Wet Sieved	39 (M)	34.7*	27	Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black and white fine to coarse angular to subrounded flint and quartzite.	CL/CI
BHC28	3.00 - 3.30	B	10	**19.2**	22	17	5	0.44	Wet Sieved	35 (M)	29.3*	24	Dark greyish brown gravelly silty slightly clayey SAND. Gravel is black, brown and white angular to subangular flint.	ML
BHC28	6.40 - 6.60	B	17	**13.4**									Light olive grey very gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint, and occasional white subangular to subrounded quartzite.	
BHC28	10.50 - 11.00	B	25	**14.0**									Pale olive grey very gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint, and occasional white and yellowish brown subrounded to rounded quartzite.	

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC28	12.20 - 12.50	B	30	**24.0**	28	13	15	0.73	Wet Sieved	18 (M)	29.2*	24	Very soft olive grey slightly gravelly sandy silty CLAY with occasional light grey pockets. Gravel is black, brown and white angular to subrounded flint, and occasional subrounded brown and white quartzite.	CL
BHC28	18.00 - 18.45	UT	44	**22.6**	32	16	16	0.41	From Natural	0 (A)		24	Soft dark grey sandy silty CLAY. Sand is fine.	CL
BHC28	21.50 - 21.70	B	52	**46.3**	36	21	15	1.69	Wet Sieved	2 (M)	47.2*	28	Dark grey slightly sandy silty slightly organic CLAY with rare dark olive mottling and fine to medium angular flint gravel	CIO
BHC28	22.30 - 22.75	UT	54	**25.3**	58	24	34	0.04	From Natural	0 (A)		24	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	CH
BHC28	23.00 - 23.50	B	58	**58.5**	34	17	17	2.44	Wet Sieved	1 (M)	59.1*	24	Dark grey sandy silty organic CLAY. Sand is fine to medium.	CLO
BHC28	26.50 - 27.00	B	65	**28.6**									Dark grey silty slightly clayey silty slightly organic SAND with rare dark olive mottling.	
BHC28	30.40	D	72	**31.3**	40	19	21	0.59	From Natural	0 (A)		24	Very soft dark grey sandy silty CLAY. Sand is fine.	CI
BHC28	36.50 - 37.00	B	86	**24.9**									Grey slightly silty SAND with occasional olive pockets, and slightly clayey lumps.	

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC28	46.50 - 47.00	B	106	**27.8**									Grey silty SAND with occasional olive pockets and shell fragments.	

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

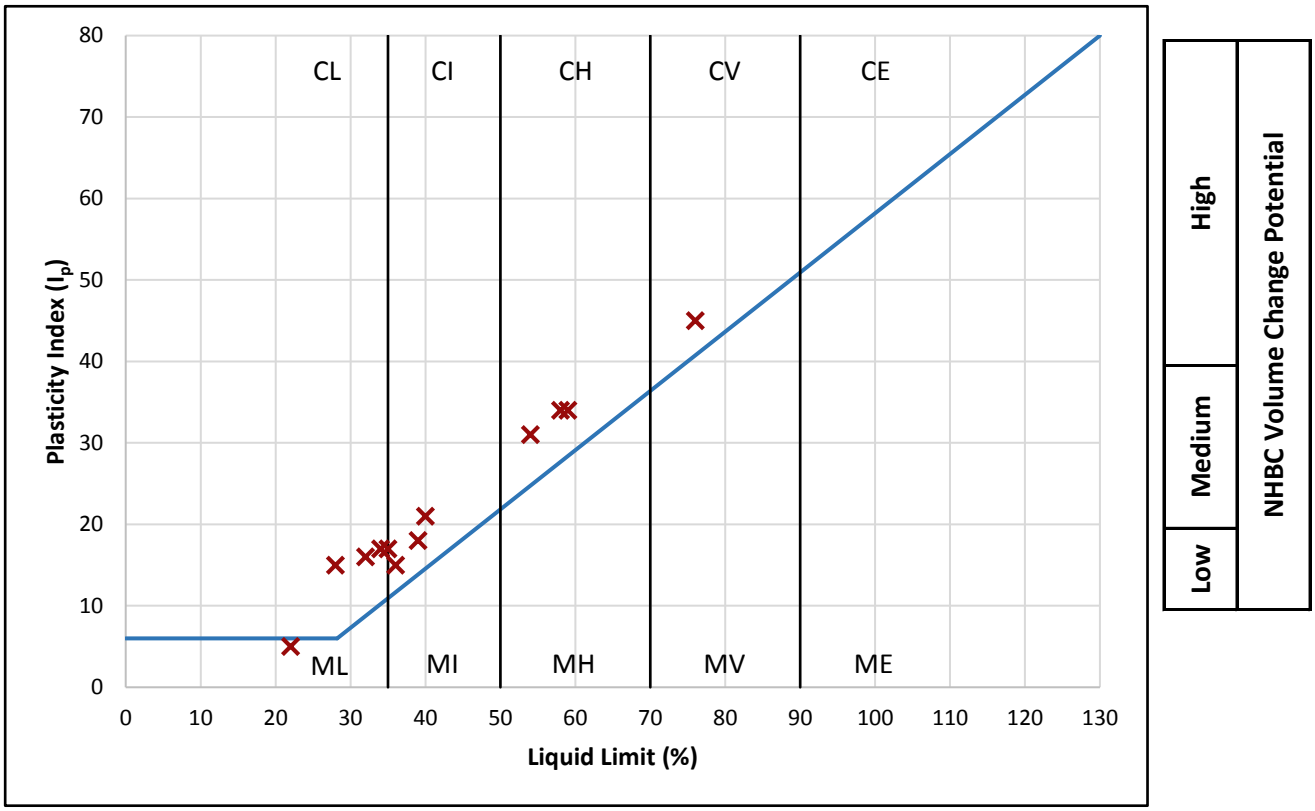
DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

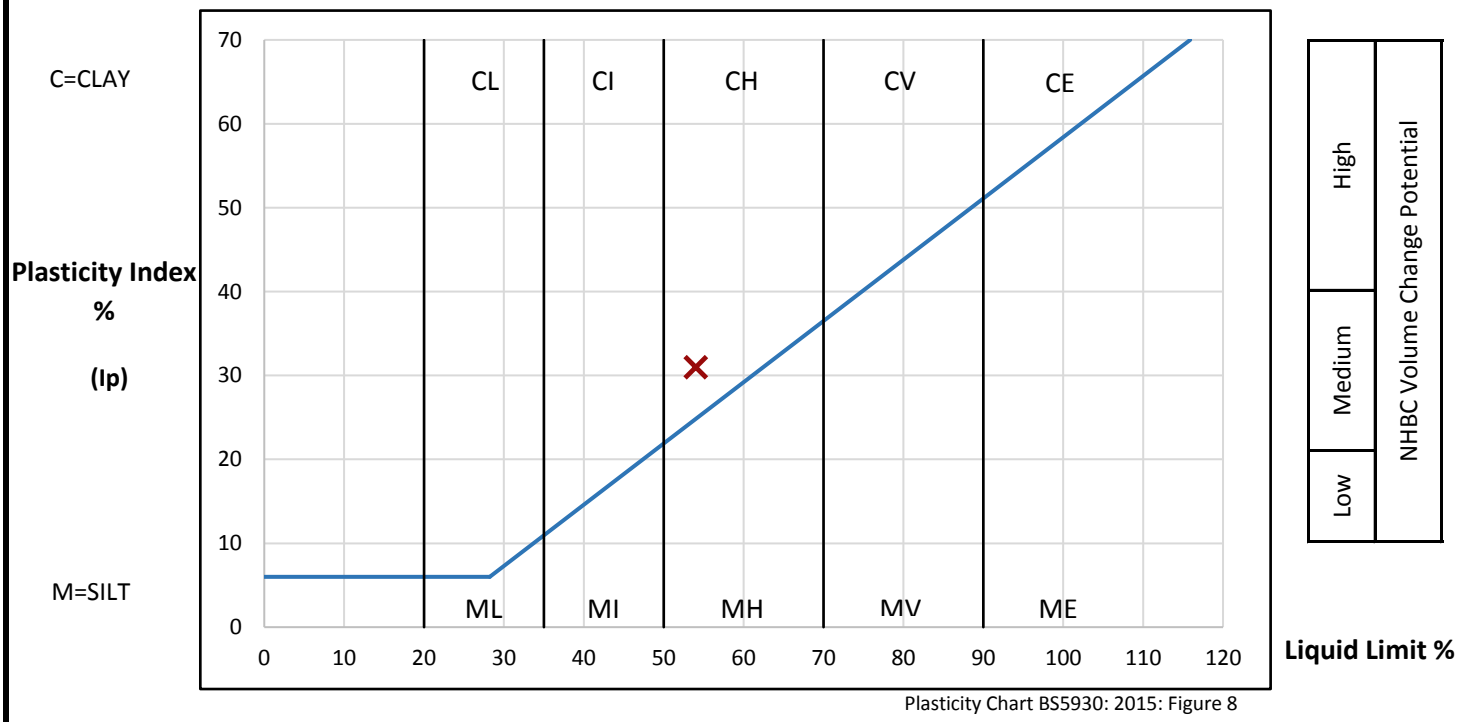
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC103	22.00 - 22.45	UT	40	30.0	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	

PREPARATION				Liquid Limit	54 %
Method of preparation		From natural		Plastic Limit	23 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	31 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.23
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

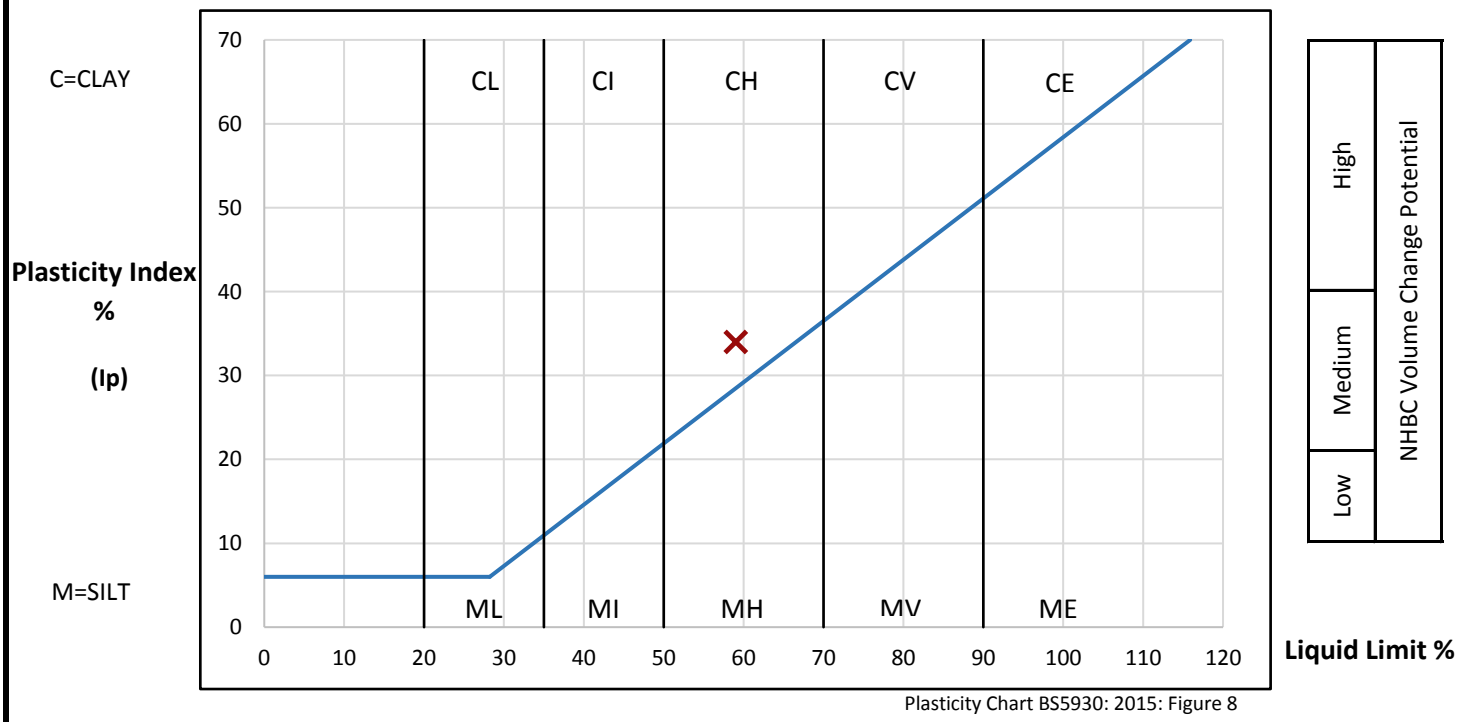
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC103	23.00 - 23.50	B	44	44.2	Very soft dark grey slightly sandy CLAY. Sand is fine.	

PREPARATION				Liquid Limit	59 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	34 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.56
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	25 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

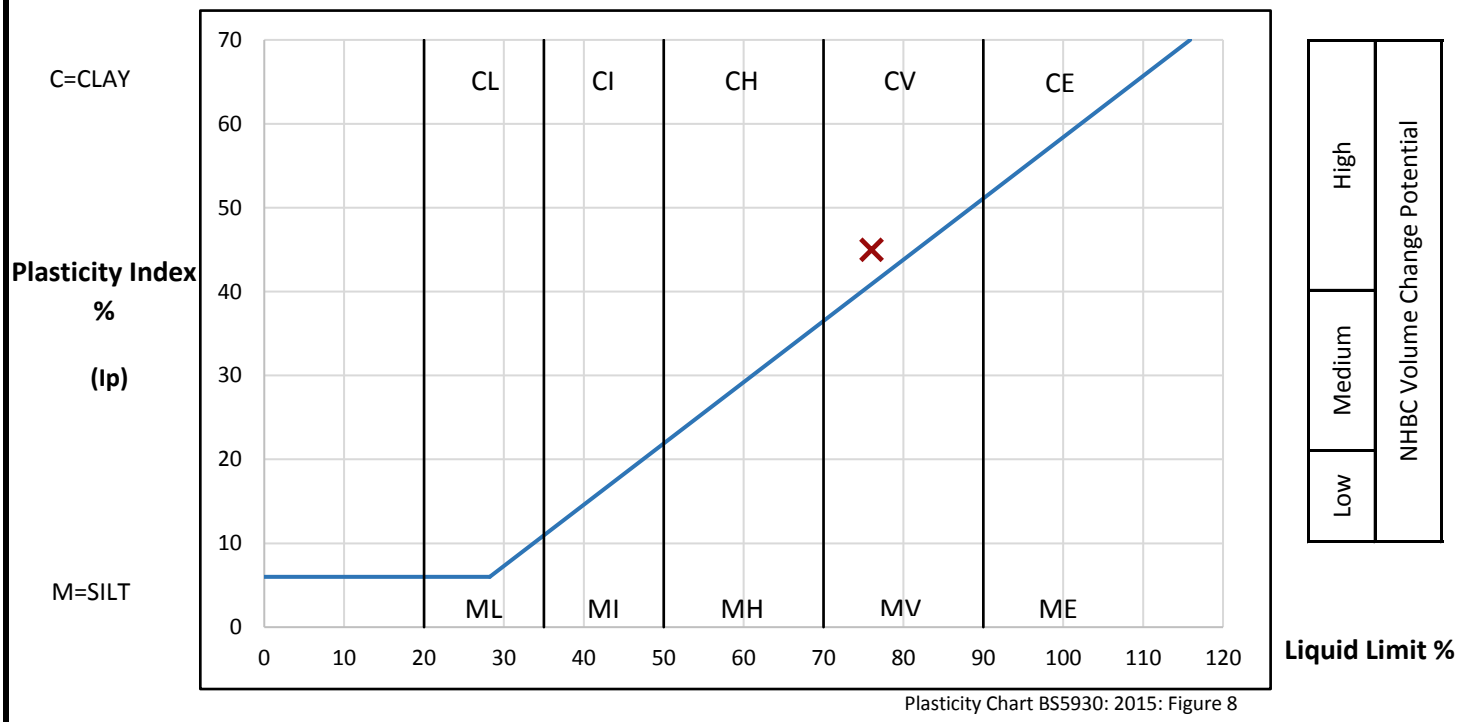
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC103	24.00 - 24.45	UT	45	31.9	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	

PREPARATION				Liquid Limit	76 %
Method of preparation		From natural		Plastic Limit	31 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	45 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.02
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

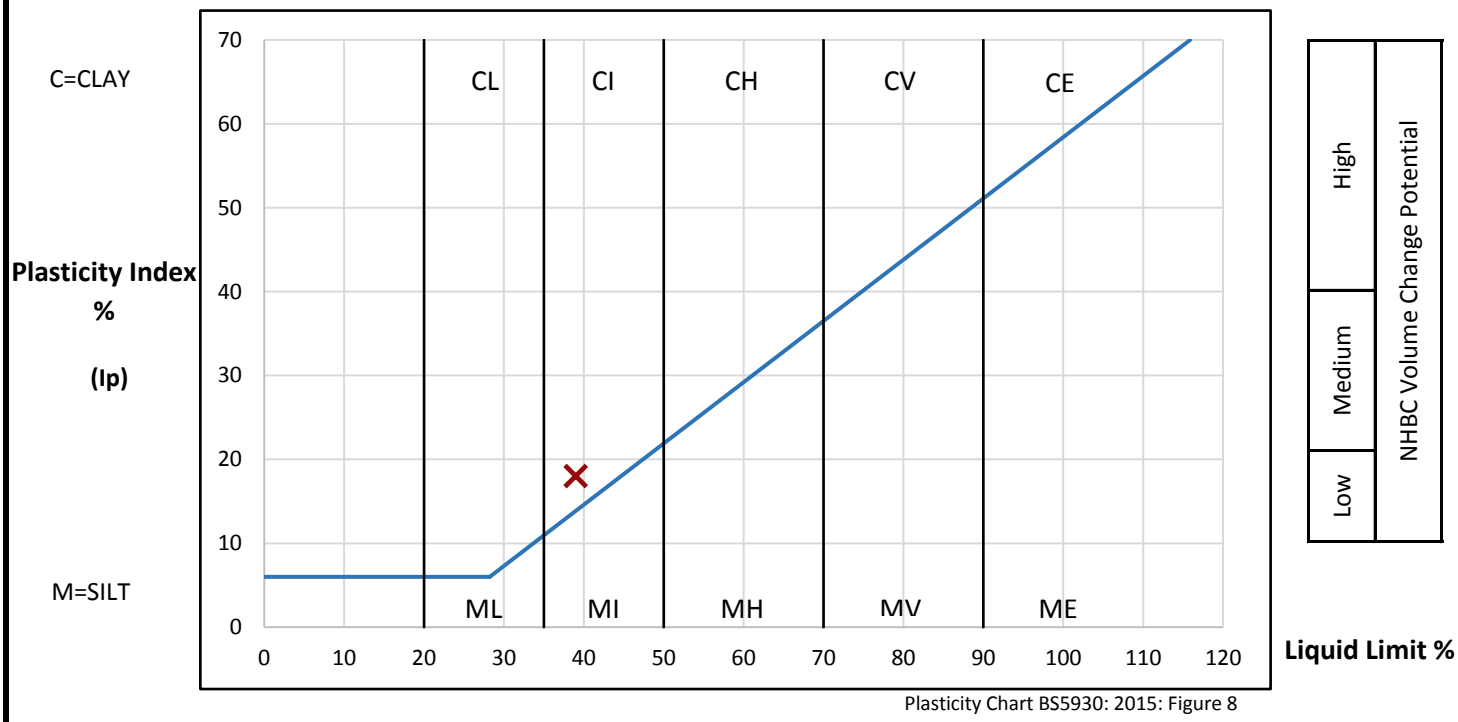
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	1.00	D	2	24.0	Firm brown slightly gravelly slightly sandy silty CLAY with occasional shell debris. Gravel is black and white angular to subangular flint and rare lignite	

PREPARATION				Liquid Limit	39 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	21 %
Sample retained 0.425mm sieve	(Measured)	11 %		Plasticity Index	18 %
Corrected water content for material passing 0.425mm		26.9		Liquidity Index	0.17
Sample retained 2mm sieve	(Measured)	6 %		NHBC Modified (I'p)	16 %
Curing time	26 hrs	Clay Content	27 %	Derived Activity	0.67



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

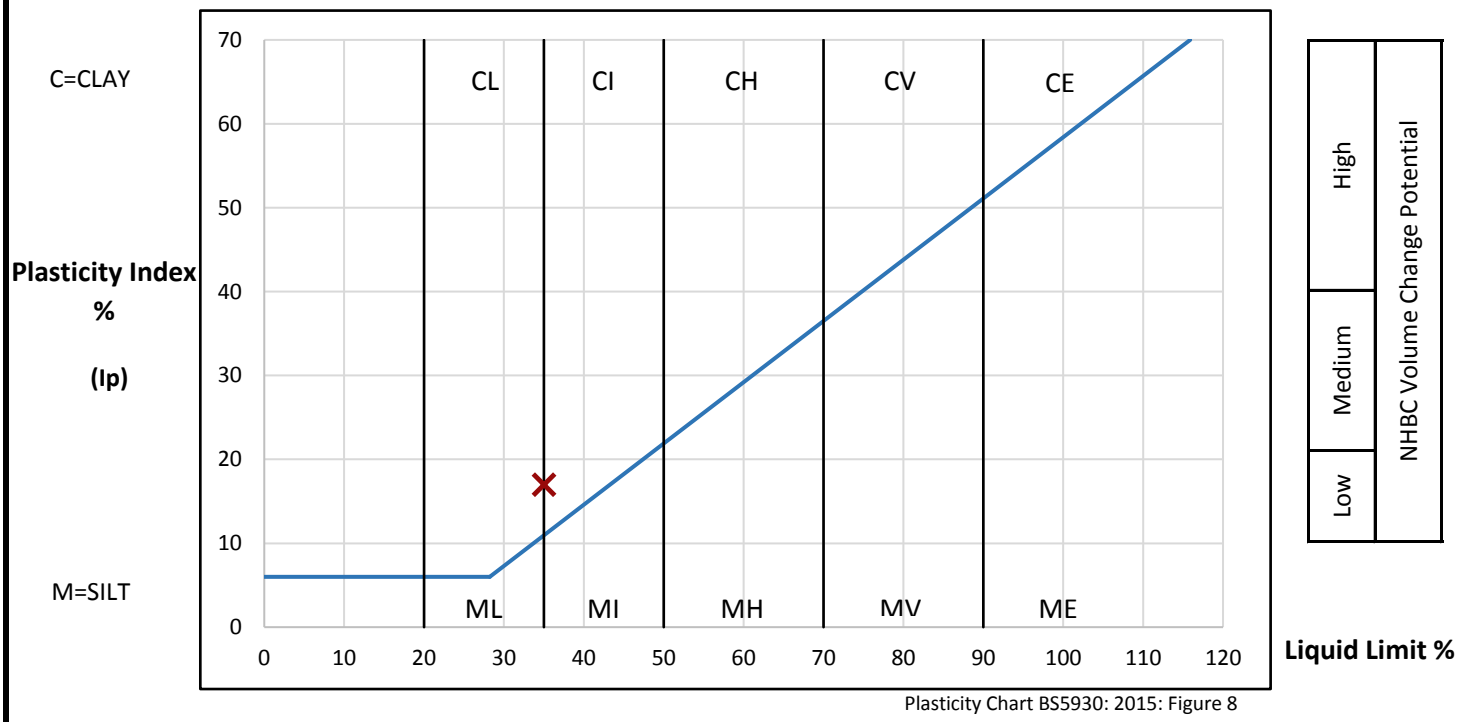
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	1.70	D	5	21.1	Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black and white fine to coarse angular to subrounded flint and quartzite.	

PREPARATION				Liquid Limit	35 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	39 %		Plasticity Index	17 %
Corrected water content for material passing 0.425mm		34.7 %		Liquidity Index	0.18
Sample retained 2mm sieve	(Measured)	19 %		NHBC Modified (I'p)	10 %
Curing time	27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

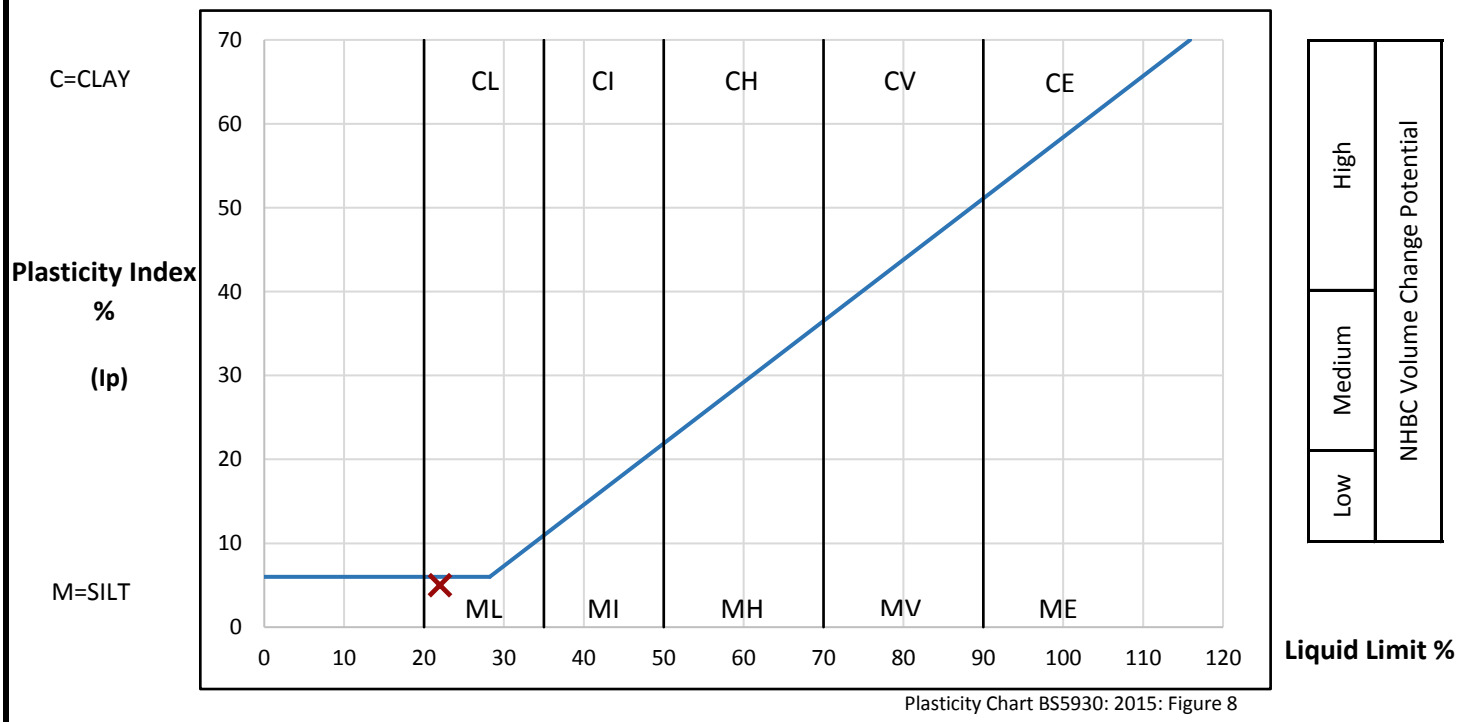
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	3.00 - 3.30	B	10	19.2	Dark greyish brown gravelly silty slightly clayey SAND. Gravel is black, brown and white angular to subangular flint.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	35 %		Plasticity Index	5 %
Corrected water content for material passing 0.425mm		29.3		Liquidity Index	0.44
Sample retained 2mm sieve	(Measured)	15 %		NHBC Modified (I'p)	3 %
Curing time	24 hrs	Clay Content	5 %	Derived Activity	1.00



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

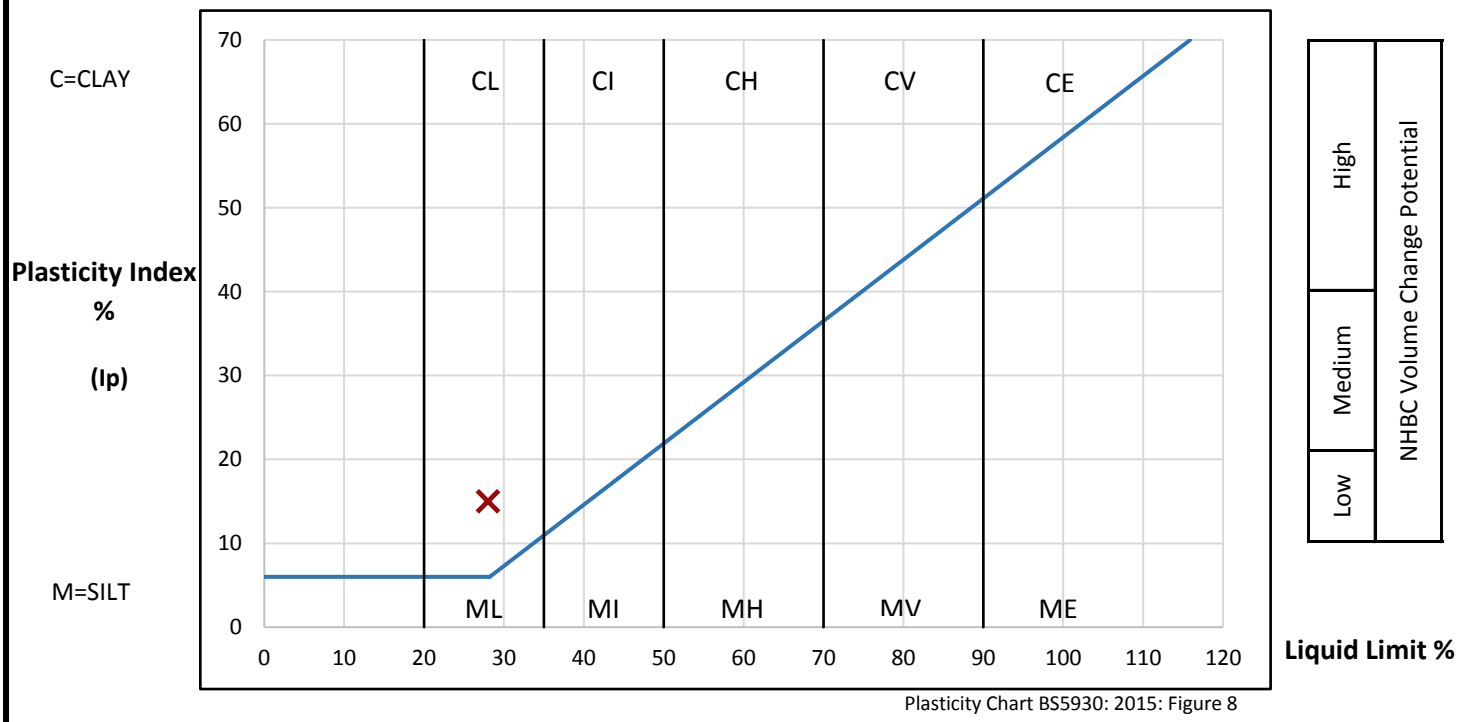
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	12.20 - 12.50	B	30	24.0	Very soft olive grey slightly gravelly sandy silty CLAY with occasional light grey pockets. Gravel is black, brown and white angular to subrounded flint, and occasional subrounded brown and white quartzite.	

PREPARATION					
Method of preparation	Wet sieved over 0.425mm sieve			Liquid Limit	28 %
Sample retained 0.425mm sieve	(Measured)	18 %		Plastic Limit	13 %
Corrected water content for material passing 0.425mm		29.2		Plasticity Index	15 %
Sample retained 2mm sieve	(Measured)	12 %		Liquidity Index	0.73
Curing time	24 hrs	Clay Content	17 %	NHBC Modified (I'p)	12 %
				Derived Activity	0.88



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

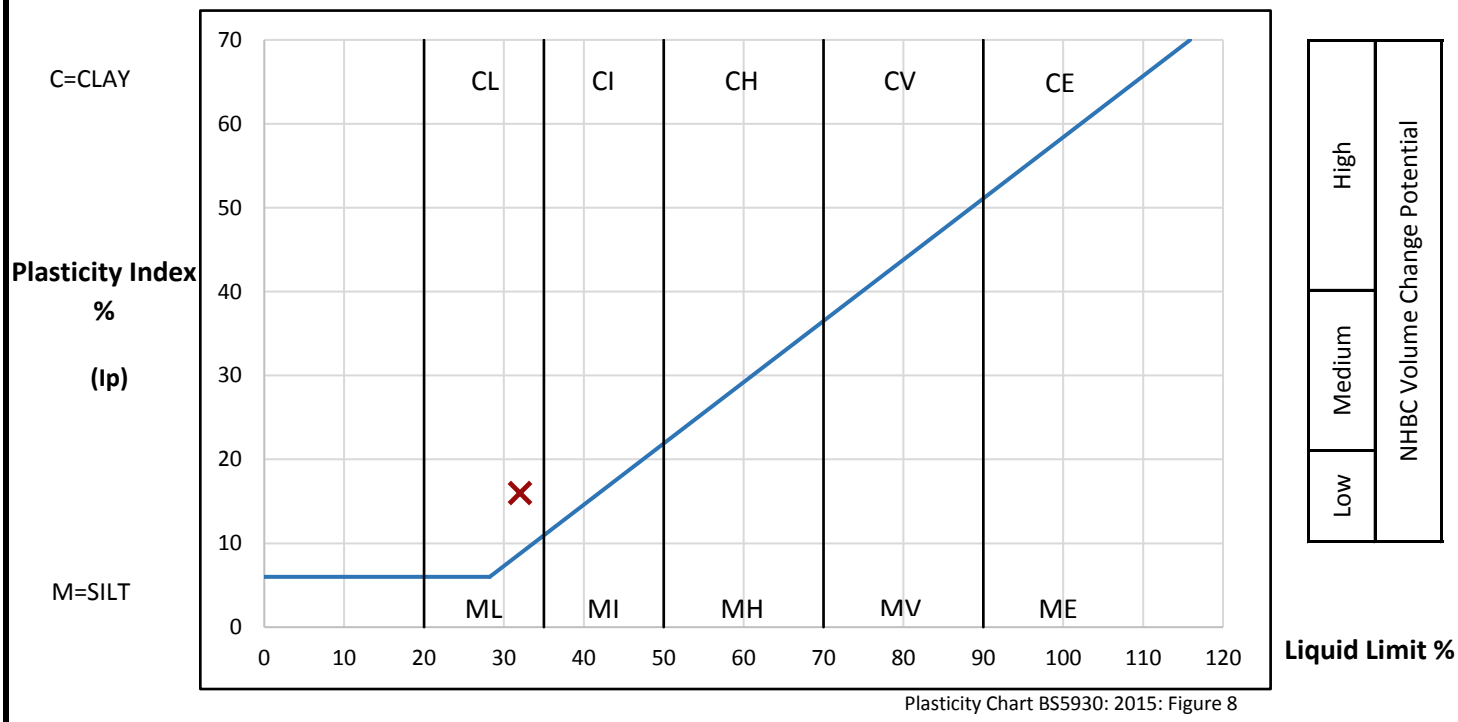
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	18.00 - 18.45	UT	44	22.6	Soft dark grey sandy silty CLAY. Sand is fine.	

PREPARATION				Liquid Limit	32 %
Method of preparation		From natural		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	16 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.41
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

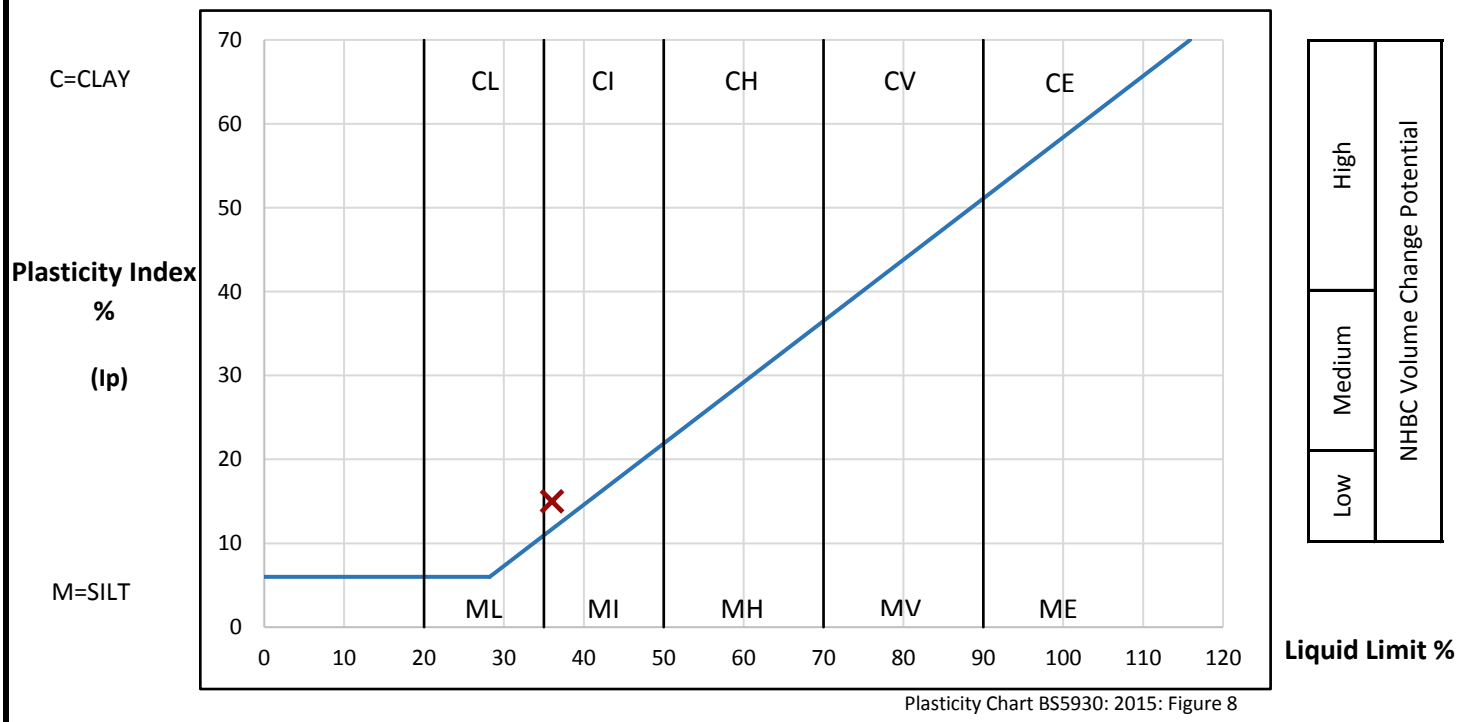
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	21.50 - 21.70	B	52	46.3	Dark grey slightly sandy silty slightly organic CLAY with rare dark olive mottling and fine to medium angular flint gravel	

PREPARATION				Liquid Limit	36 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	21 %
Sample retained 0.425mm sieve	(Measured)	2 %		Plasticity Index	15 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	
Sample retained 2mm sieve	(Measured)	<1 %		NHBC Modified (I'p)	15 %
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content and liquidity index not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

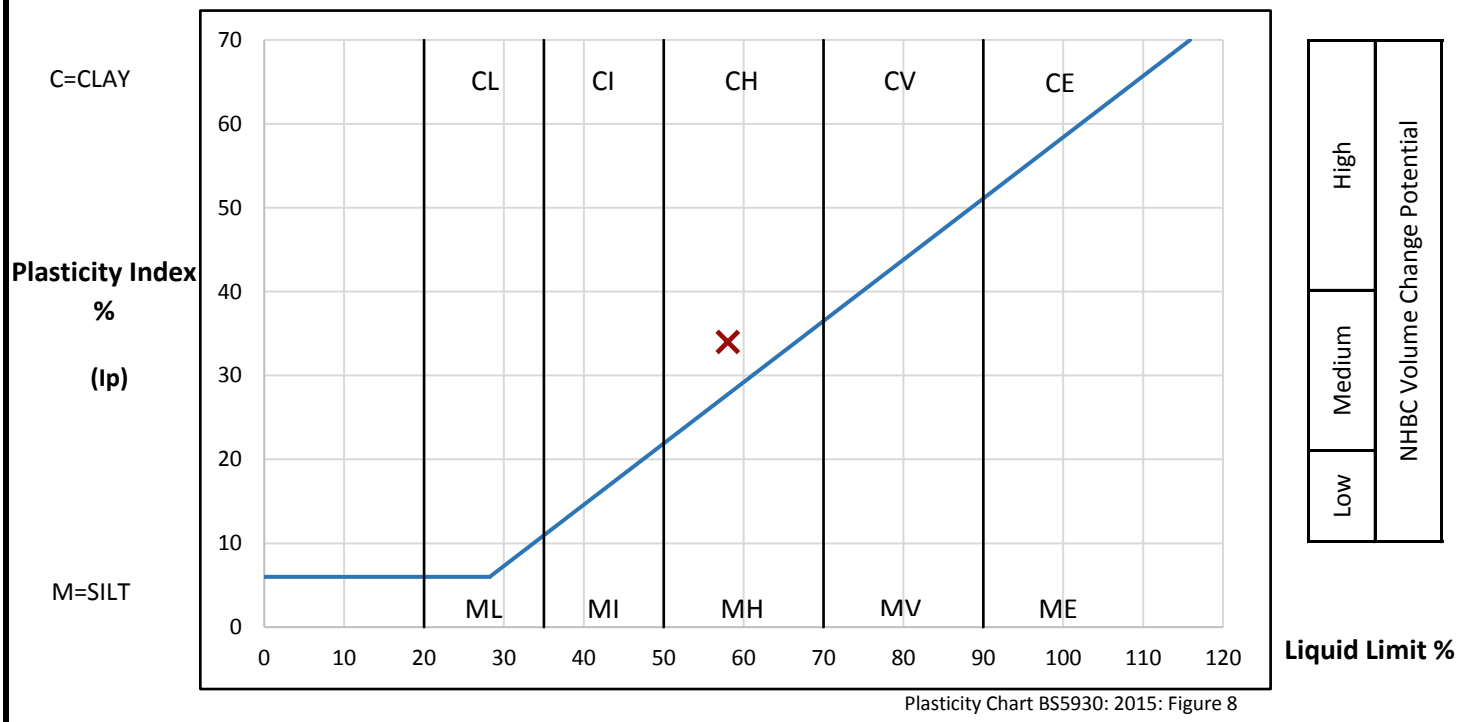
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	22.30 - 22.75	UT	54	25.3	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	

PREPARATION				Liquid Limit	58 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	34 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.04
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

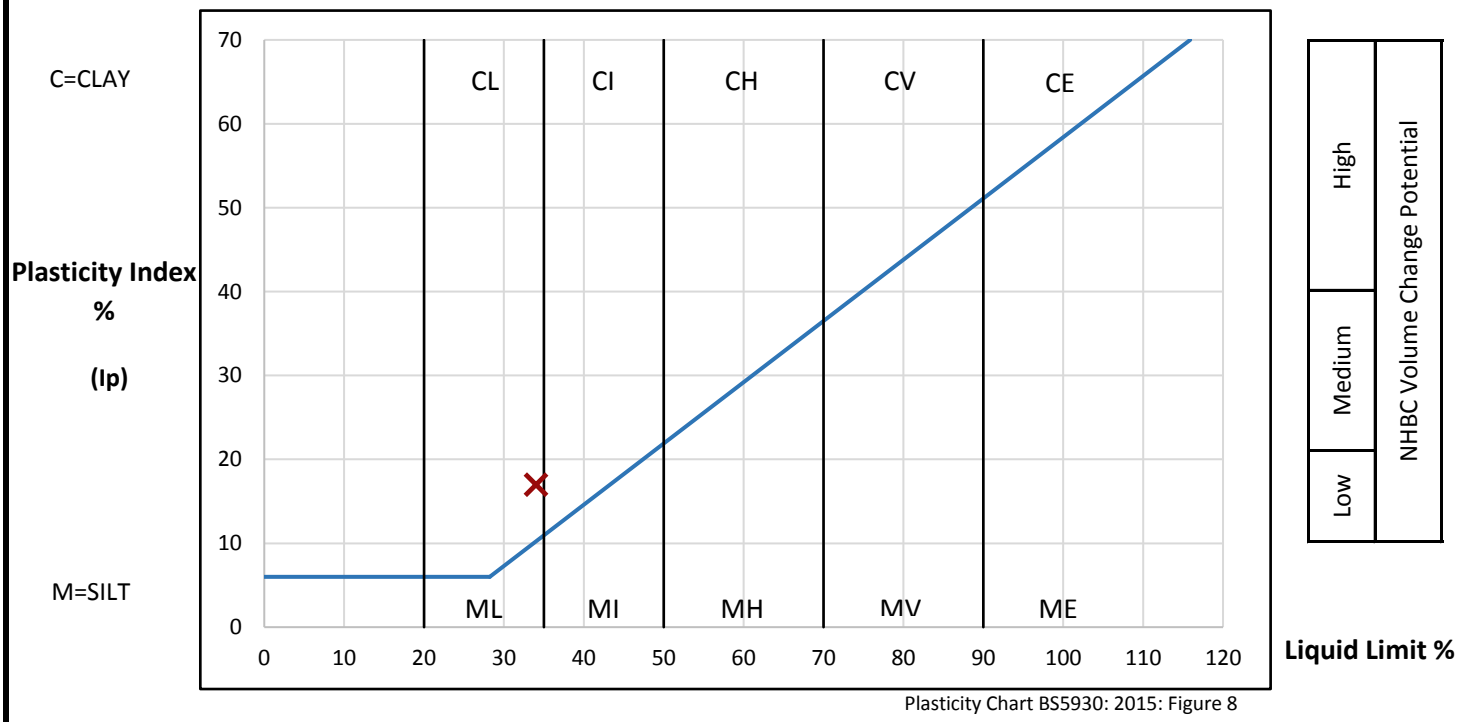
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	23.00 - 23.50	B	58	58.5	Dark grey sandy silty organic CLAY. Sand is fine to medium.	

PREPARATION				Liquid Limit	34 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	1 %		Plasticity Index	17 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	
Sample retained 2mm sieve	(Measured)	<1 %		NHBC Modified (I'p)	17 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content and liquidity index not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

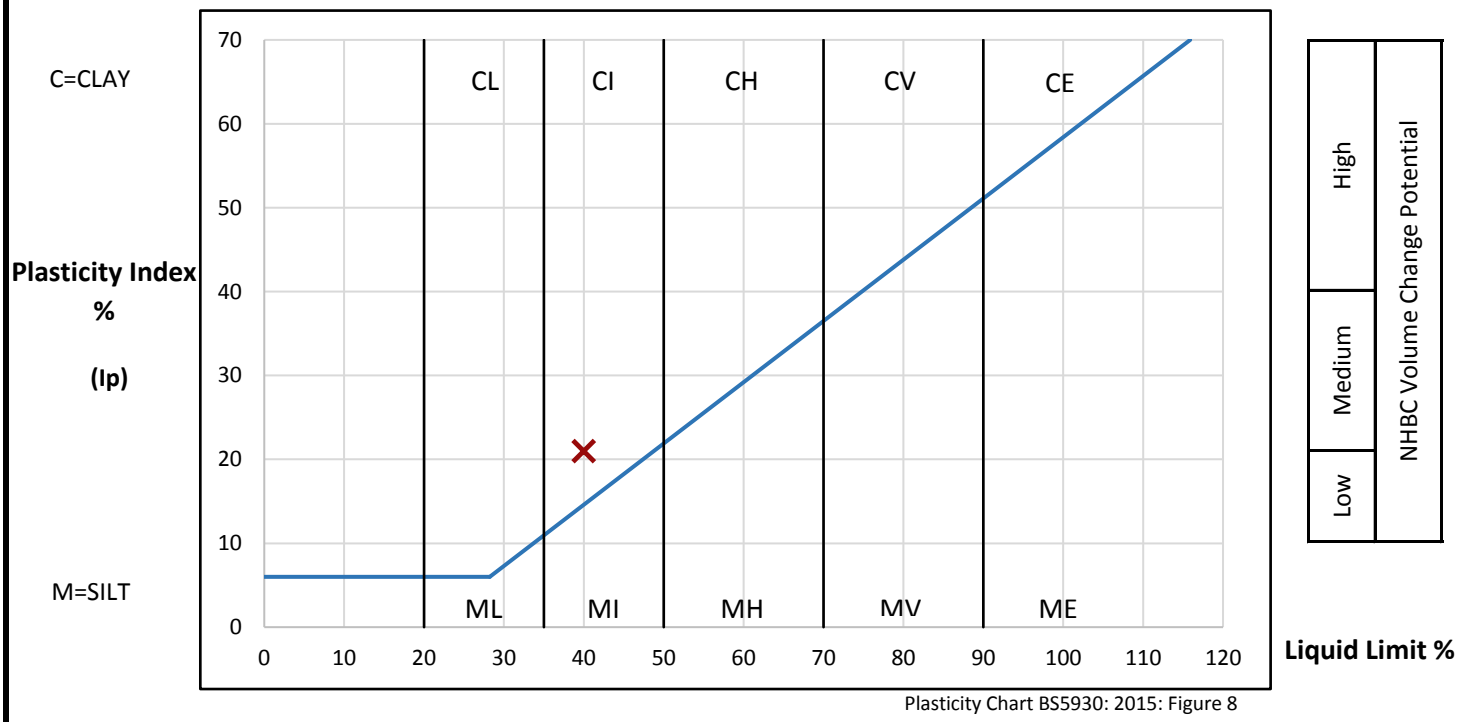
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC28	30.40	D	72	31.3	Very soft dark grey sandy silty CLAY. Sand is fine.	

PREPARATION				Liquid Limit	40 %
Method of preparation		From natural		Plastic Limit	19 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	21 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.59
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

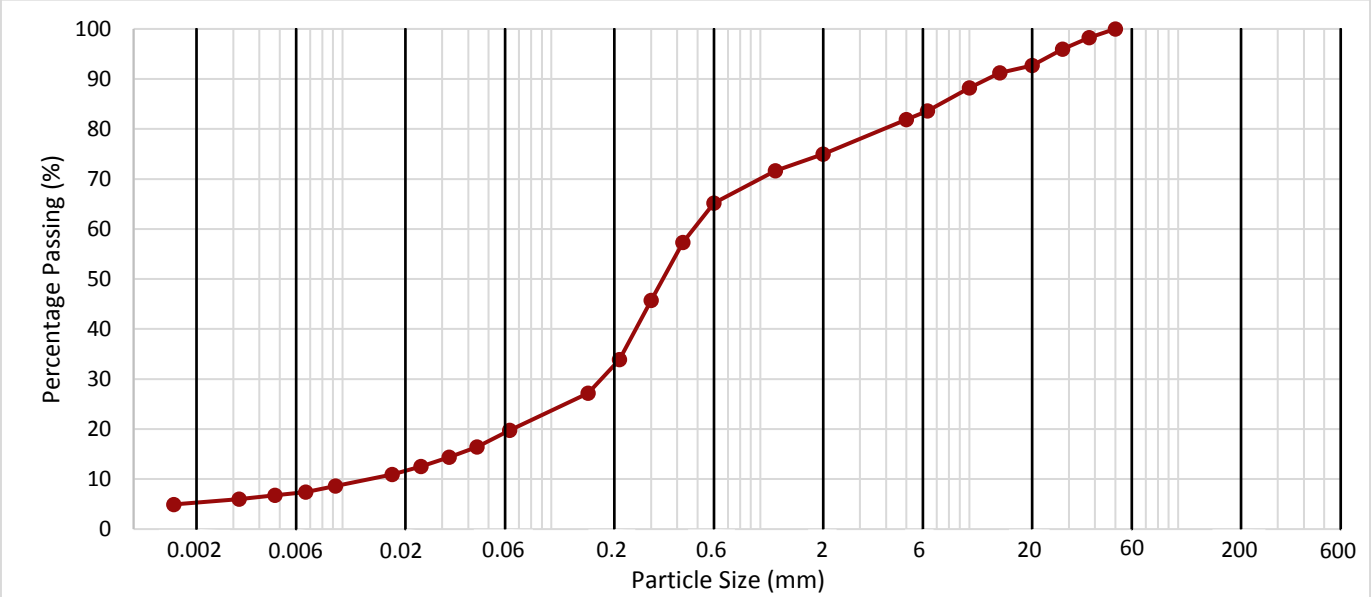
0998

Contract	Lake Lothing, Lowestoft
Serial No.	S31644-3

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	0.50 - 0.70	B	1	Black very gravelly silty clayey SAND with occasional brick, cinder, asphalt and glass fragments. Gravel is black, white and brown angular to subangular flint, and rare brown and white subrounded quartzite.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0440	16	15	
	0.0324	14		
	0.0237	13		
	0.0173	11		
	0.0093	9		
	0.0067	7		
	0.0048	7		5
	0.0032	6		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	75	55
1.18	72	
0.600	65	
0.425	57	
0.300	46	
0.212	34	
0.150	27	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		25
125		
90		
63		
50	100	
37.5	98	
28	96	
20	93	
14	91	
10	88	
6.3	84	
5	82	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

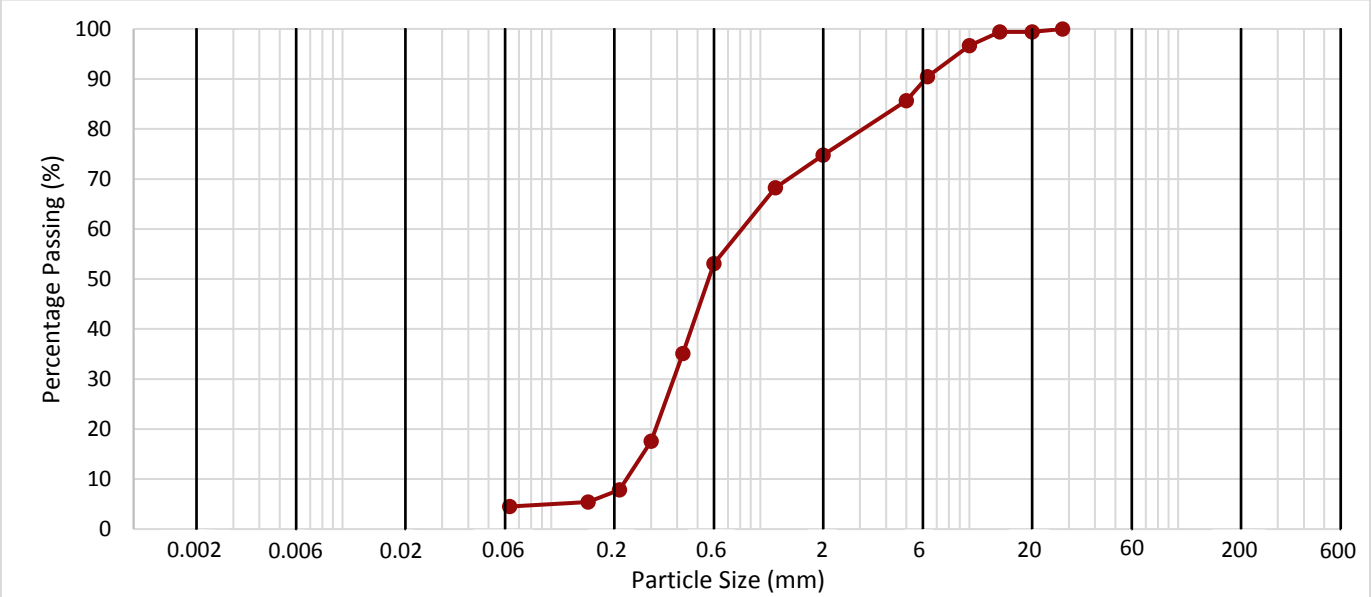
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	1.50 - 2.00	B	4	Light greyish brown very gravelly silty SAND. Gravel is black, white and brown angular flint, and occasional brown and white subrounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	75	**70**
1.18	68	
0.600	53	
0.425	35	
0.300	18	
0.212	8	
0.150	5	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	**5**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**25**
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	99	
10	97	
6.3	90	
5	86	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

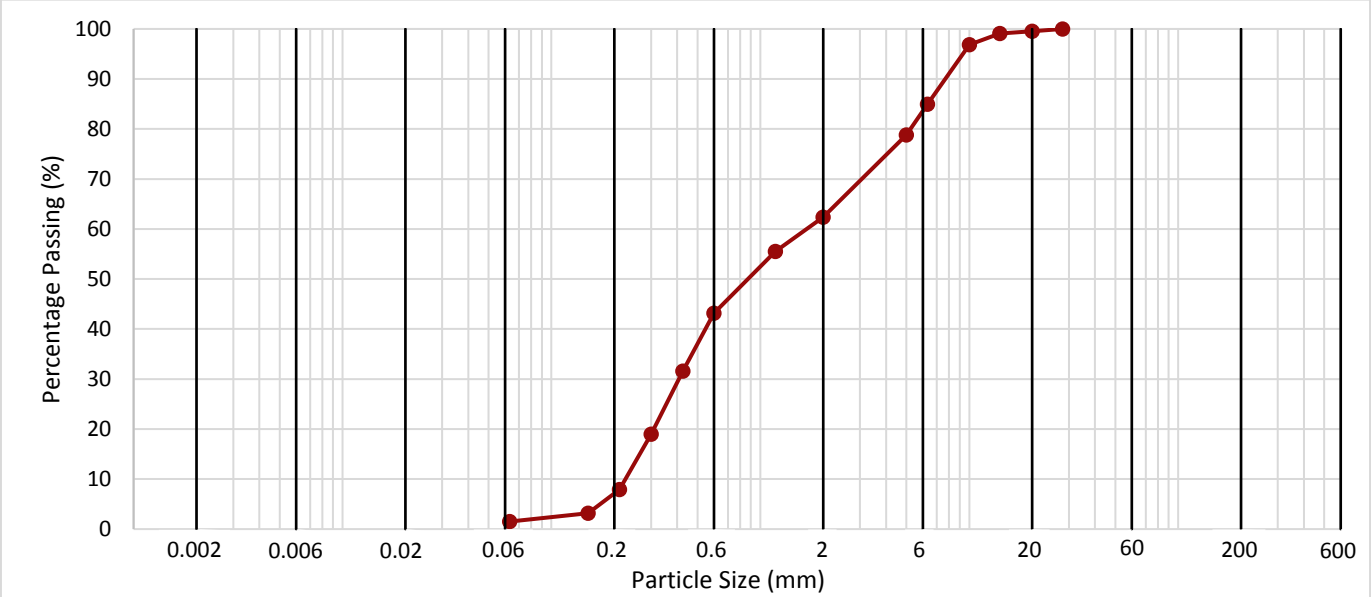
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	3.50 - 4.00	B	6	Dark yellowish brown very gravelly slightly silty SAND. Gravel is black, white and brown angular to subrounded flint, and occasional white and yellowish brown subrounded to rounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	62	60
1.18	56	
0.600	43	
0.425	32	
0.300	19	
0.212	8	
0.150	3	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		38
125		
90		
63		
50		
37.5		
28	100	
20	100	
14	99	
10	97	
6.3	85	
5	79	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

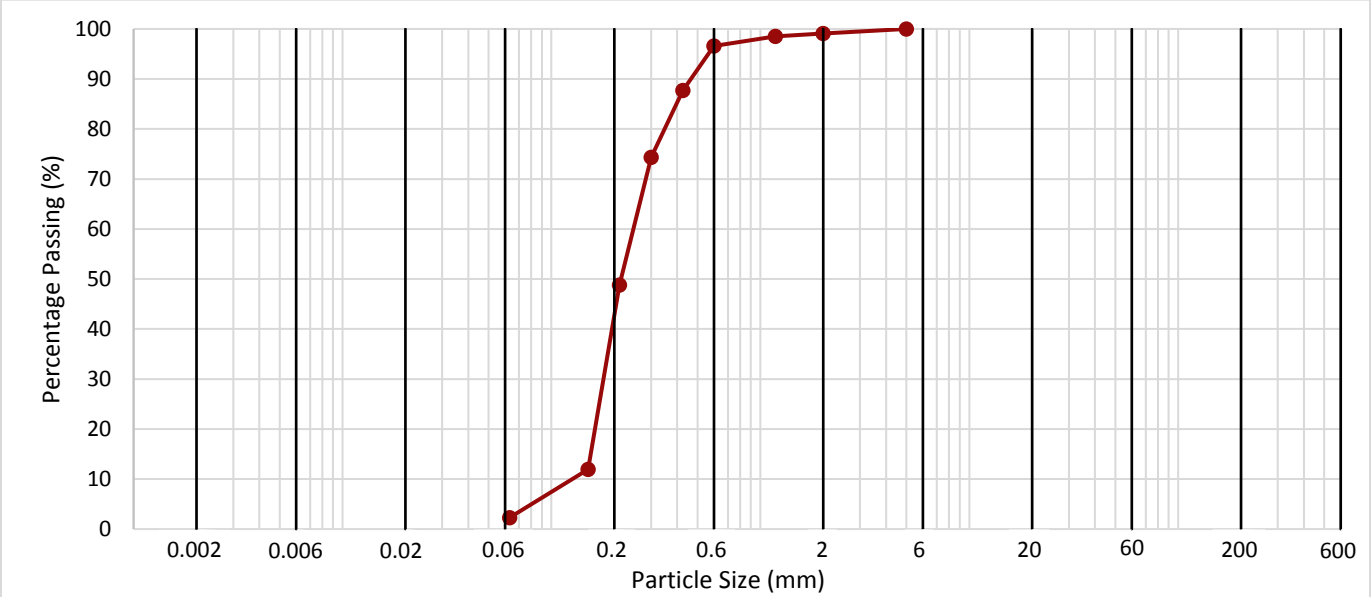
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	8.00 - 8.50	B	15	Dark orangish brown slightly silty SAND with rare fine gravel.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	97
1.18	99	
0.600	97	
0.425	88	
0.300	74	
0.212	49	
0.150	12	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

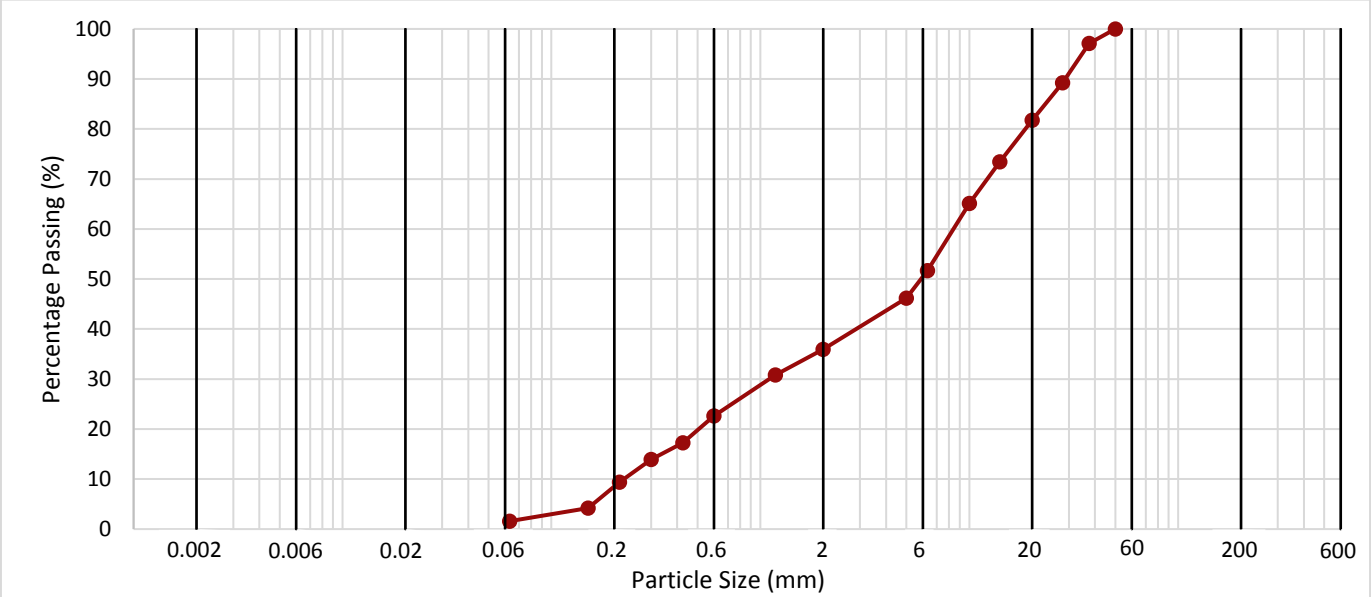
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	14.00 - 14.50	B	24	Black, brown and white very sandy slightly silty subangular to subrounded flint GRAVEL with occasional white and yellowish brown subrounded to rounded quartzite. Sand is dark yellowish brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	36	**34**
1.18	31	
0.600	23	
0.425	17	
0.300	14	
0.212	9	
0.150	4	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	**2**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**64**
125		
90		
63		
50	100	
37.5	97	
28	89	
20	82	
14	73	
10	65	
6.3	52	
5	46	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

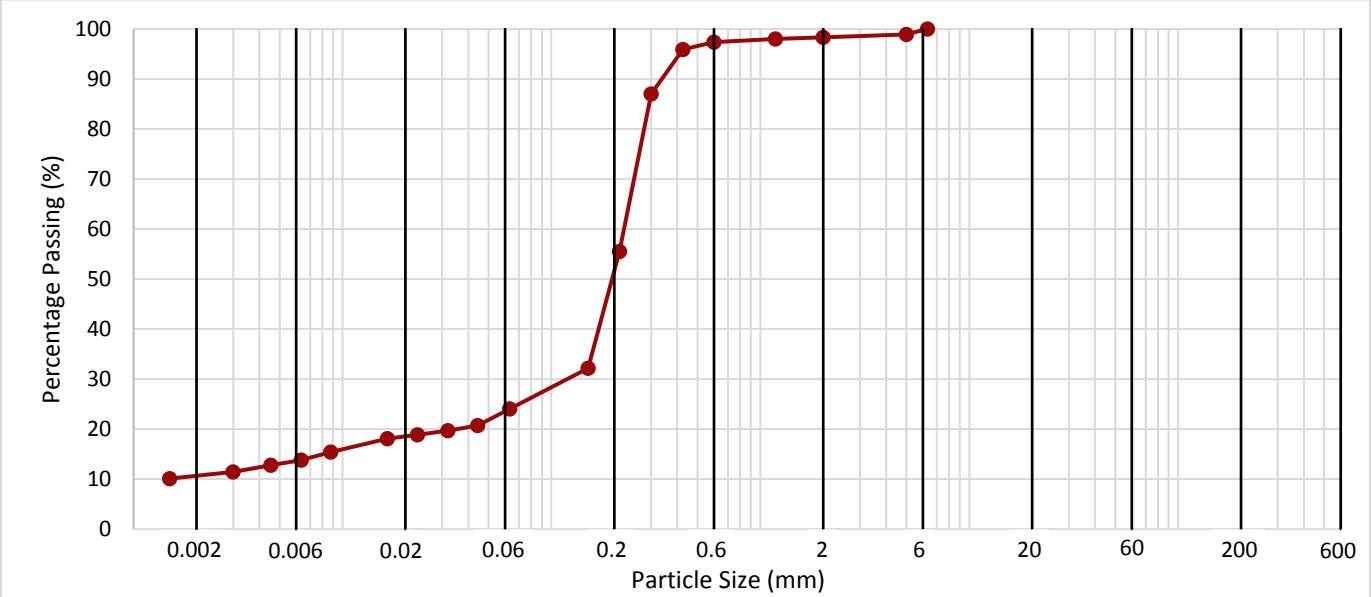
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	17.00 - 17.50	B	29	Dark grey slightly gravelly silty clayey slightly organic SAND with occasional dark olive mottling. Gravel is angular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0444	21	**13**
0.0319	20	
0.0229	19	
0.0164	18	**Clay by Dry Mass (%)**
0.0088	15	
0.0063	14	
0.0045	13	**11**
0.0030	11	
0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	**74**
1.18	98	
0.600	97	
0.425	96	
0.300	87	
0.212	56	
0.150	32	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	**24**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**2**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

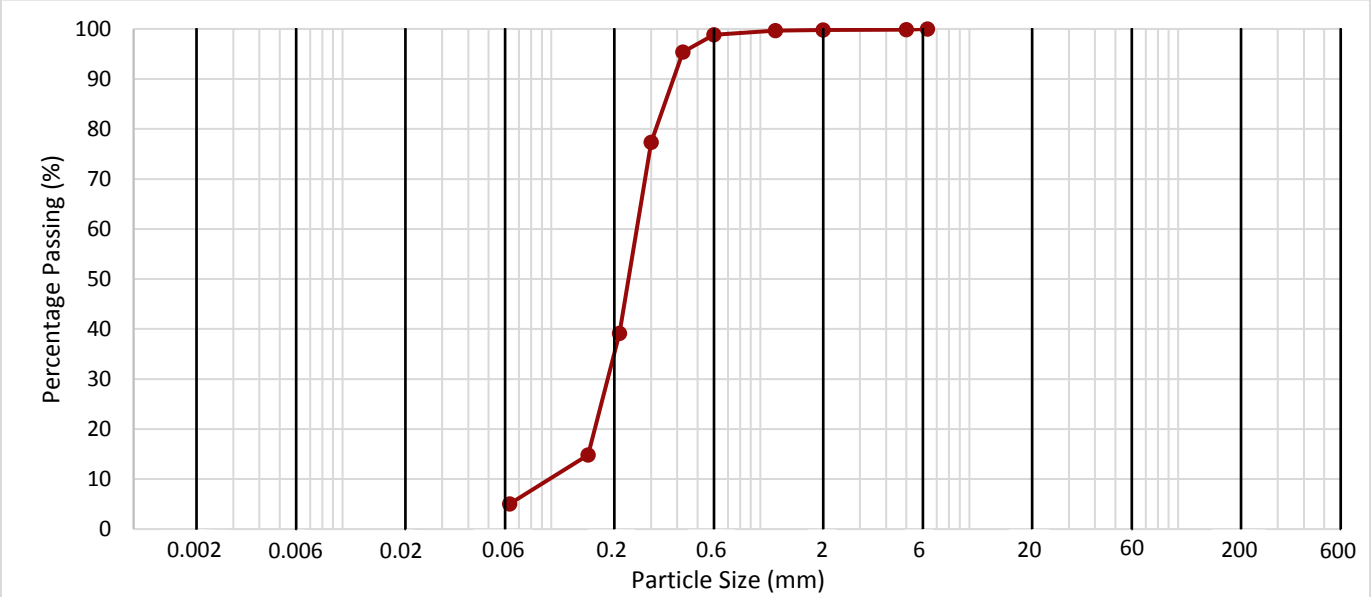
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	21.00 - 21.50	B	38	Grey silty SAND with occasional olive pockets.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	95
1.18	100	
0.600	99	
0.425	95	
0.300	77	
0.212	39	
0.150	15	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

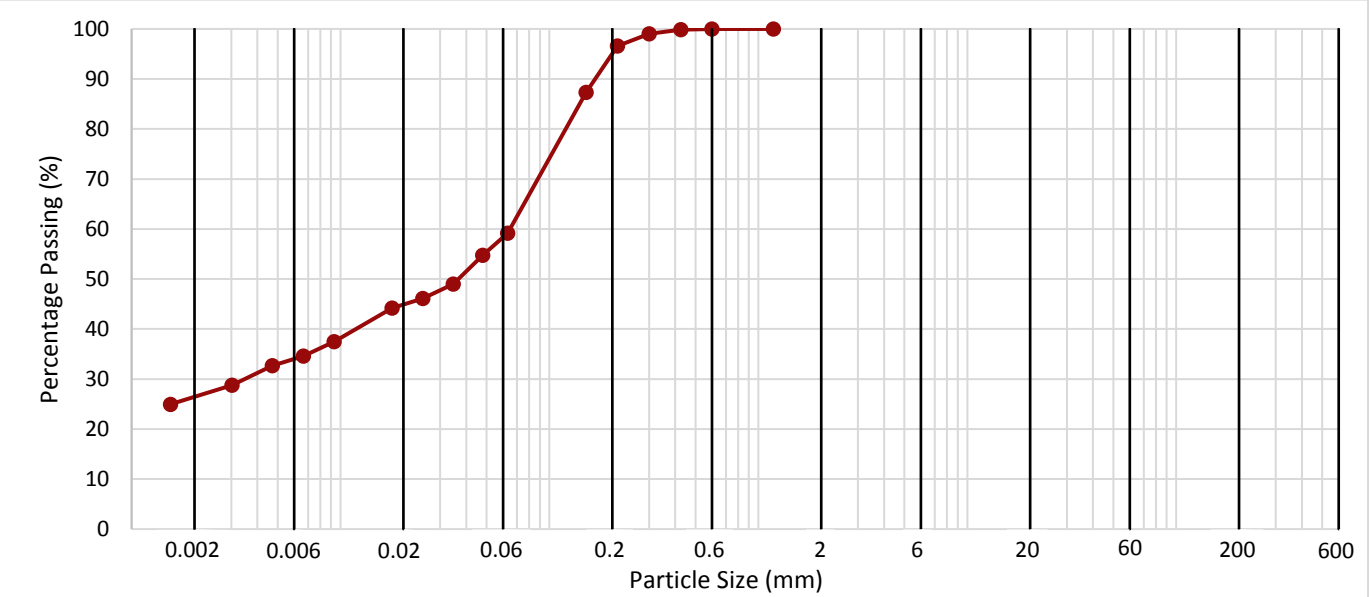
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	22.60	D	41	Stiff dark grey sandy silty CLAY with rare dark olive mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0480	55	33	
	0.0347	49		
	0.0248	46		
	0.0176	44		26
	0.0093	37		
	0.0066	35		
	0.0047	33		
	0.0030	29		
	0.0015	25		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00		41
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	97	
0.150	87	
0.063	59	

Fines By Dry Mass (%)	
<0.063mm	59

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

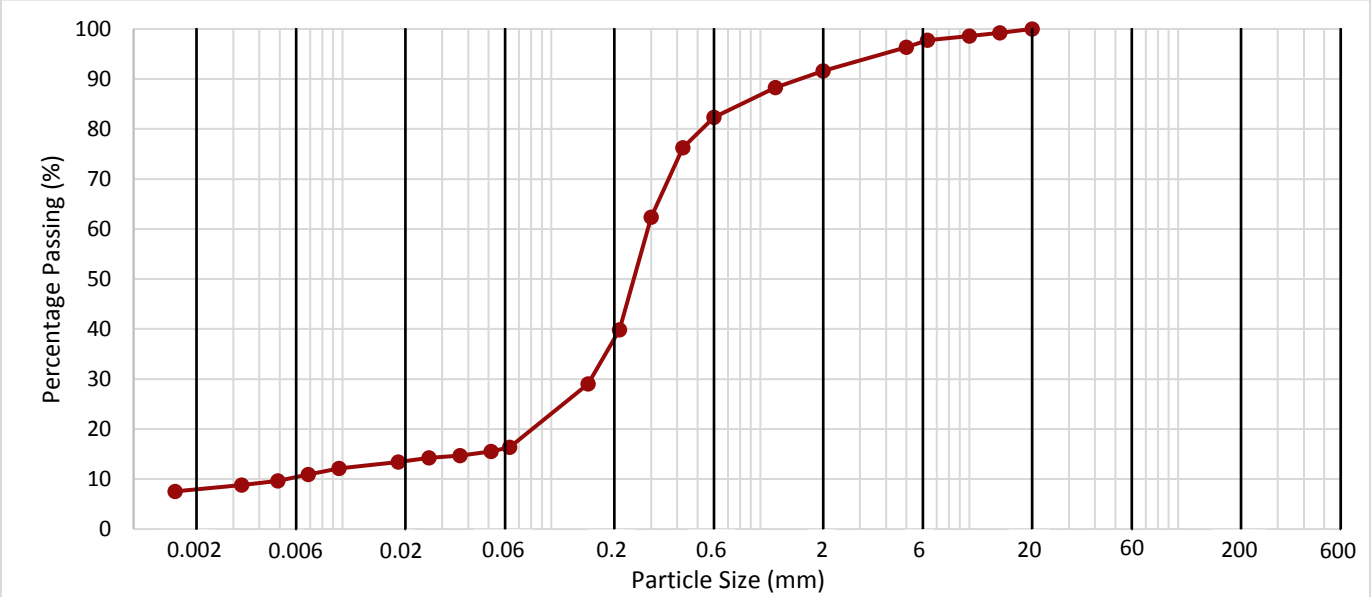
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	24.60	D	46	Dark grey silty clayey SAND with occasional shell fragments of fine and medium gravel size.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0514	16	8	
	0.0366	15		
	0.0259	14		
	0.0185	13		
	0.0096	12		
	0.0069	11		
	0.0049	10		8
	0.0033	9		
	0.0016	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	92	76
1.18	88	
0.600	82	
0.425	76	
0.300	62	
0.212	40	
0.150	29	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		8
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	99	
6.3	98	
5	96	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

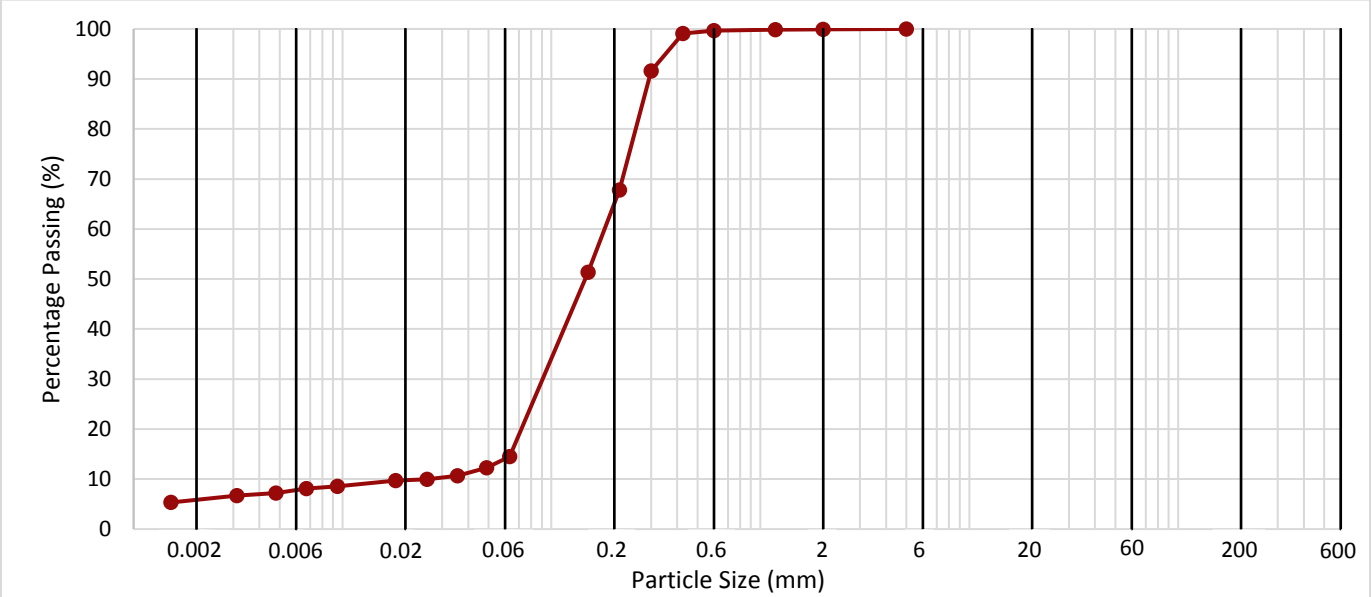
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	29.00 - 29.50	B	57	Dark bluish grey silty clayey organic SAND oxidised to olive brown on surfaces.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0490	12	9	
	0.0355	11		
	0.0254	10		
	0.0180	10		
	0.0094	9		
	0.0067	8		
	0.0048	7	6	
	0.0031	7		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	85
1.18	100	
0.600	100	
0.425	99	
0.300	92	
0.212	68	
0.150	51	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

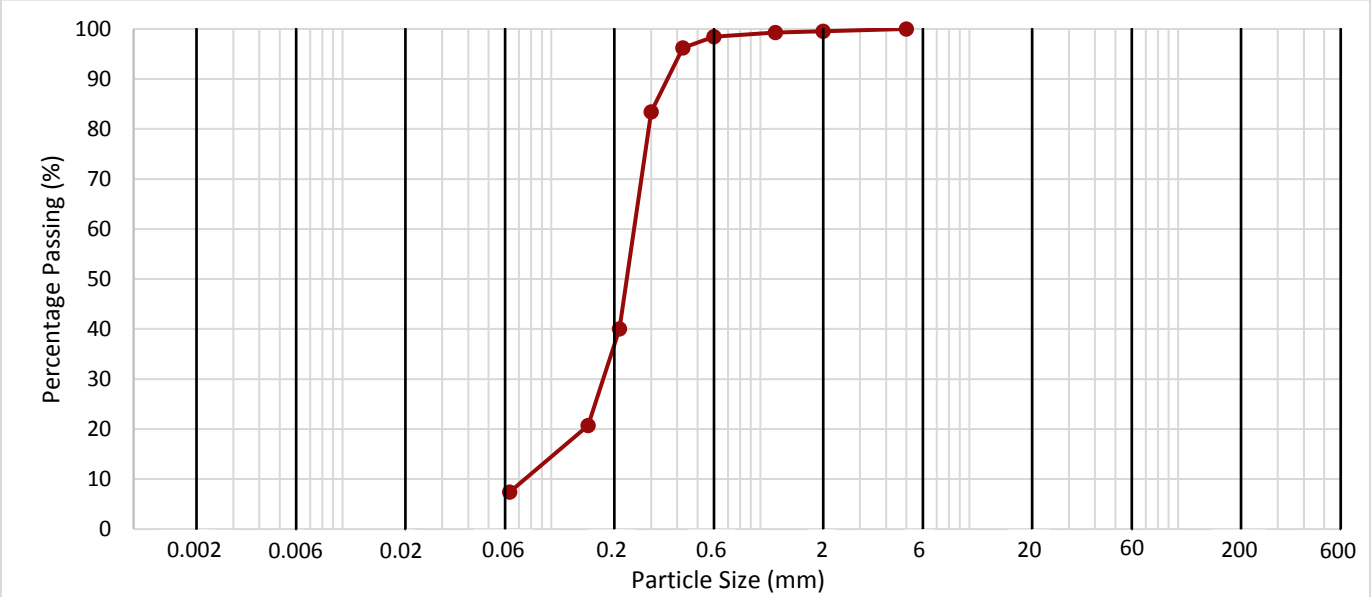
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	34.50 - 35.00	B	67	Grey and olive silty SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	93
1.18	99	
0.600	98	
0.425	96	
0.300	83	
0.212	40	
0.150	21	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

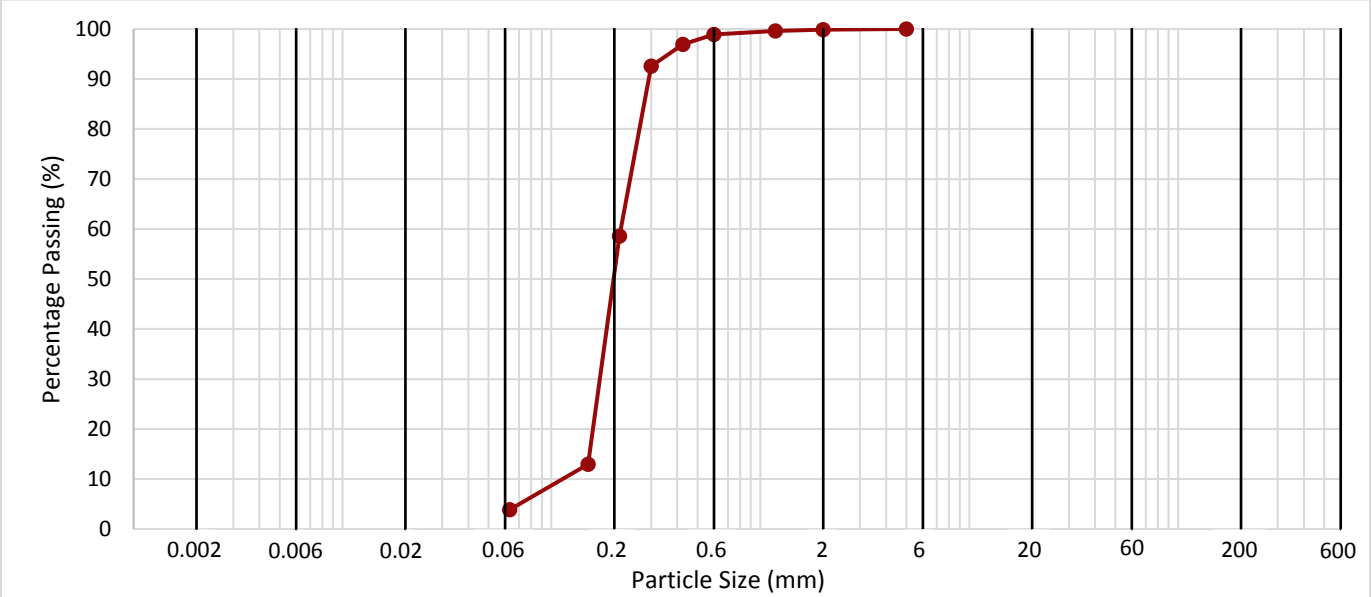
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC103	40.00	D	78	Olive grey slightly silty SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	96
1.18	100	
0.600	99	
0.425	97	
0.300	93	
0.212	59	
0.150	13	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	4

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

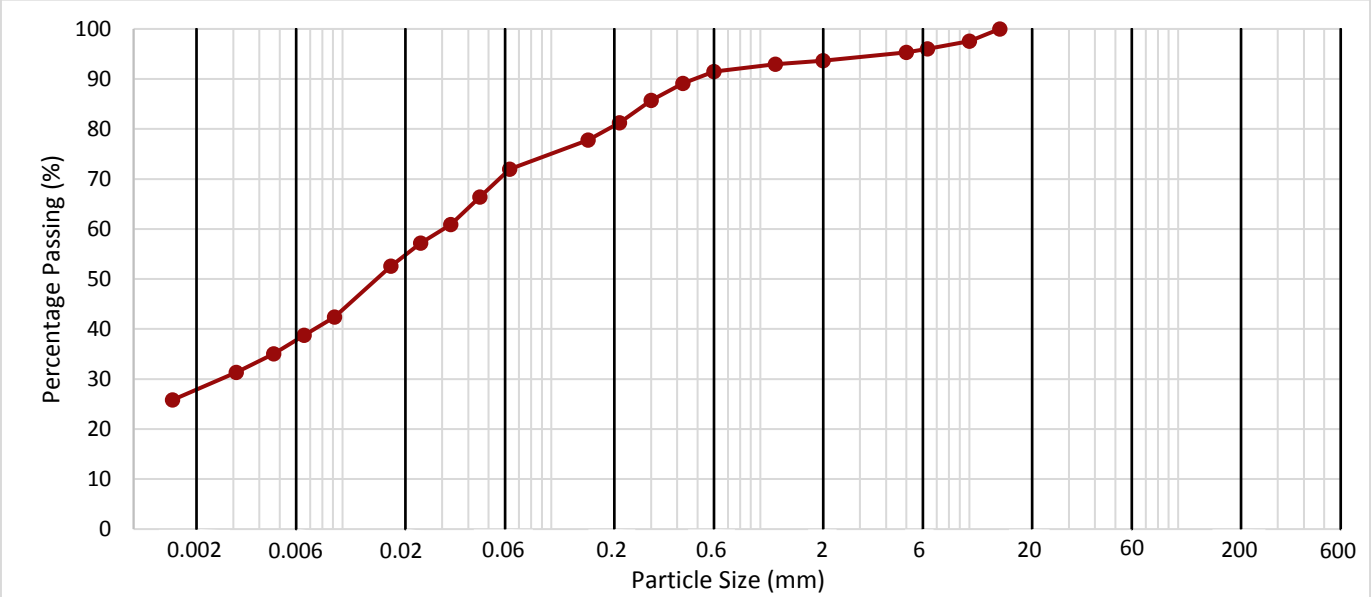
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	1.00	D	2	Firm brown slightly gravelly slightly sandy silty CLAY with occasional shell debris. Gravel is black and white angular to subangular flint and rare lignite	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0455	66	45
	0.0330	61	
	0.0237	57	
	0.0171	53	Clay by Dry Mass (%)
	0.0091	42	
	0.0065	39	
	0.0047	35	27
	0.0031	31	
	0.0015	26	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	94	22
1.18	93	
0.600	91	
0.425	89	
0.300	86	
0.212	81	
0.150	78	
0.063	72	

Fines By Dry Mass (%)	
<0.063mm	72

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		6
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	98	
6.3	96	
5	95	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

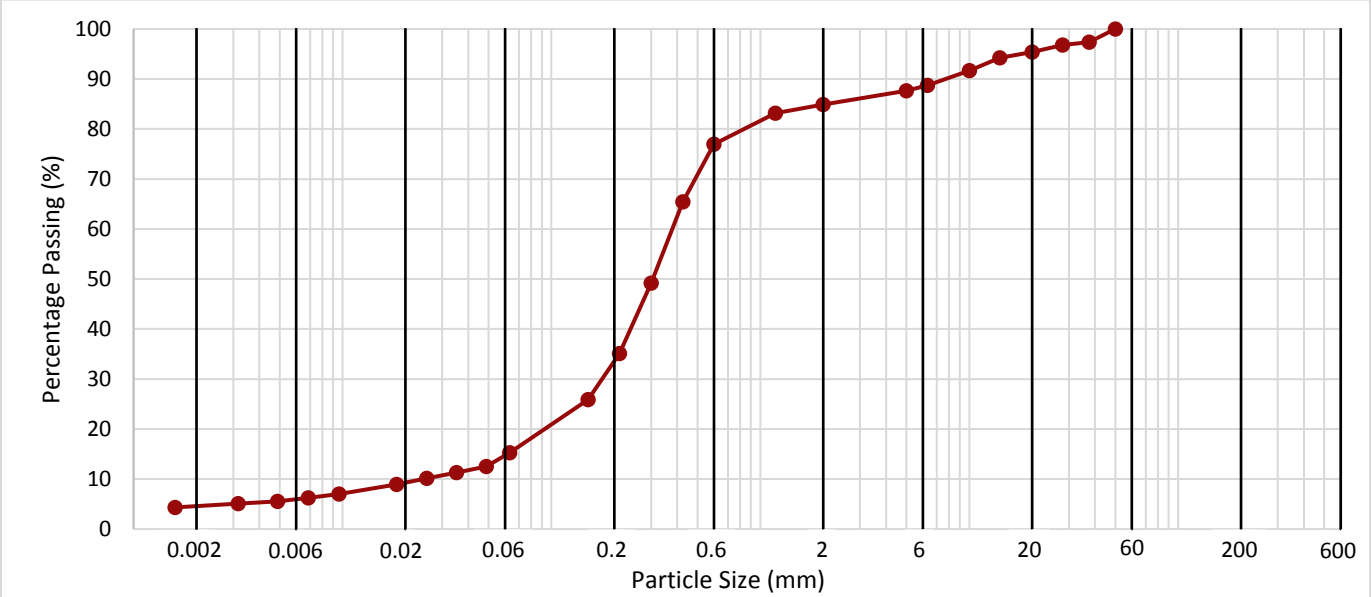
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	3.00 - 3.30	B	10	Dark greyish brown gravelly silty slightly clayey SAND. Gravel is black, brown and white angular to subangular flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0489	13	10
	0.0351	11	
	0.0253	10	
	0.0182	9	Clay by Dry Mass (%)
	0.0096	7	
	0.0069	6	
	0.0049	6	5
	0.0032	5	
	0.0016	4	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	85	70
1.18	83	
0.600	77	
0.425	65	
0.300	49	
0.212	35	
0.150	26	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		15
125		
90		
63		
50	100	
37.5	97	
28	97	
20	95	
14	94	
10	92	
6.3	89	
5	88	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

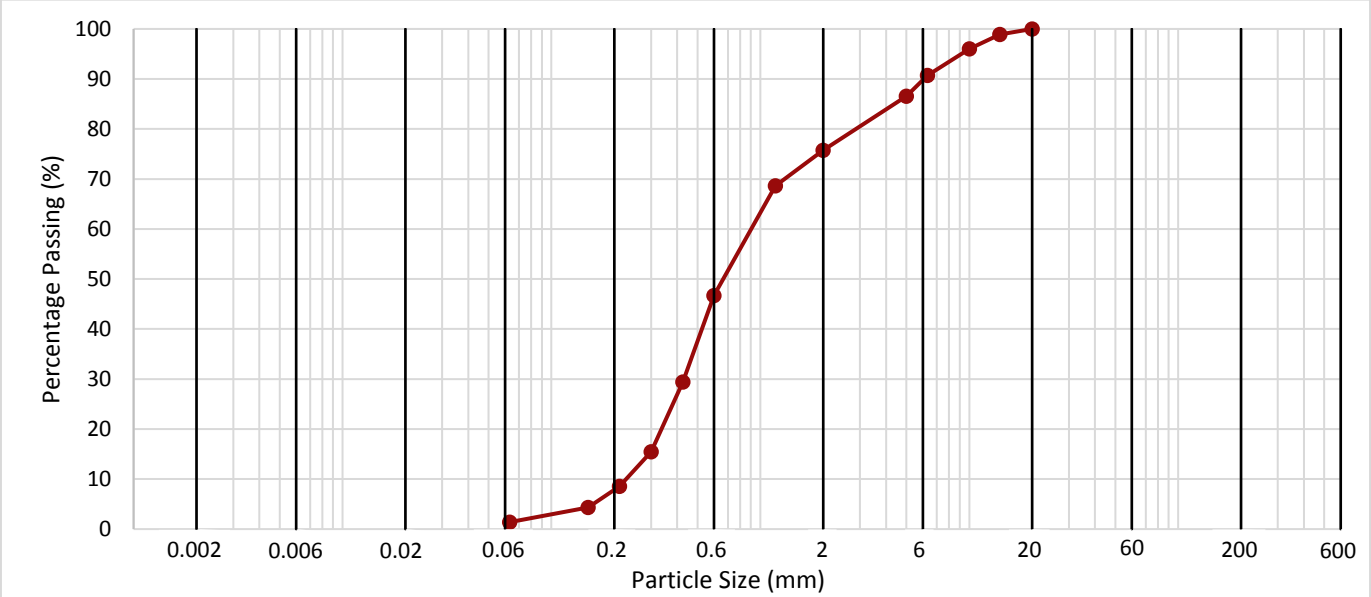
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	6.40 - 6.60	B	17	Light olive grey very gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint, and occasional white subangular to subrounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	76	75
1.18	69	
0.600	47	
0.425	29	
0.300	15	
0.212	9	
0.150	4	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		24
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	96	
6.3	91	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

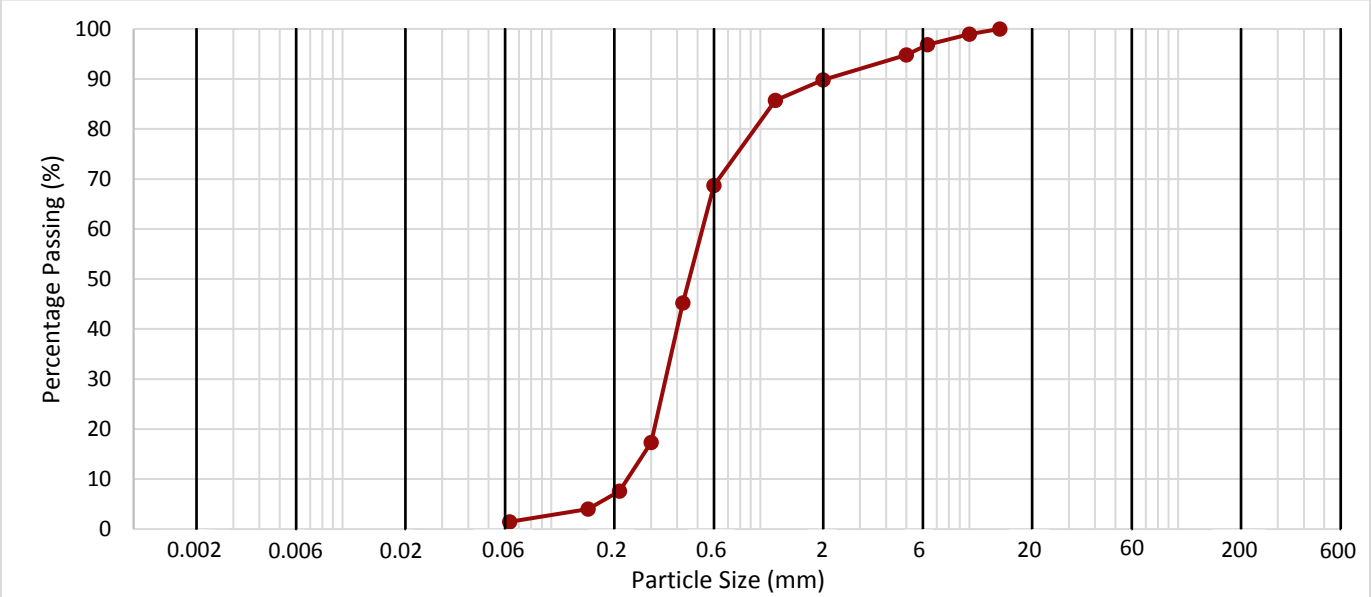
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	8.50 - 8.80	B	21	Light grey gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint, and occasional white and yellowish brown subrounded to rounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	90	89
1.18	86	
0.600	69	
0.425	45	
0.300	17	
0.212	8	
0.150	4	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		10
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	99	
6.3	97	
5	95	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

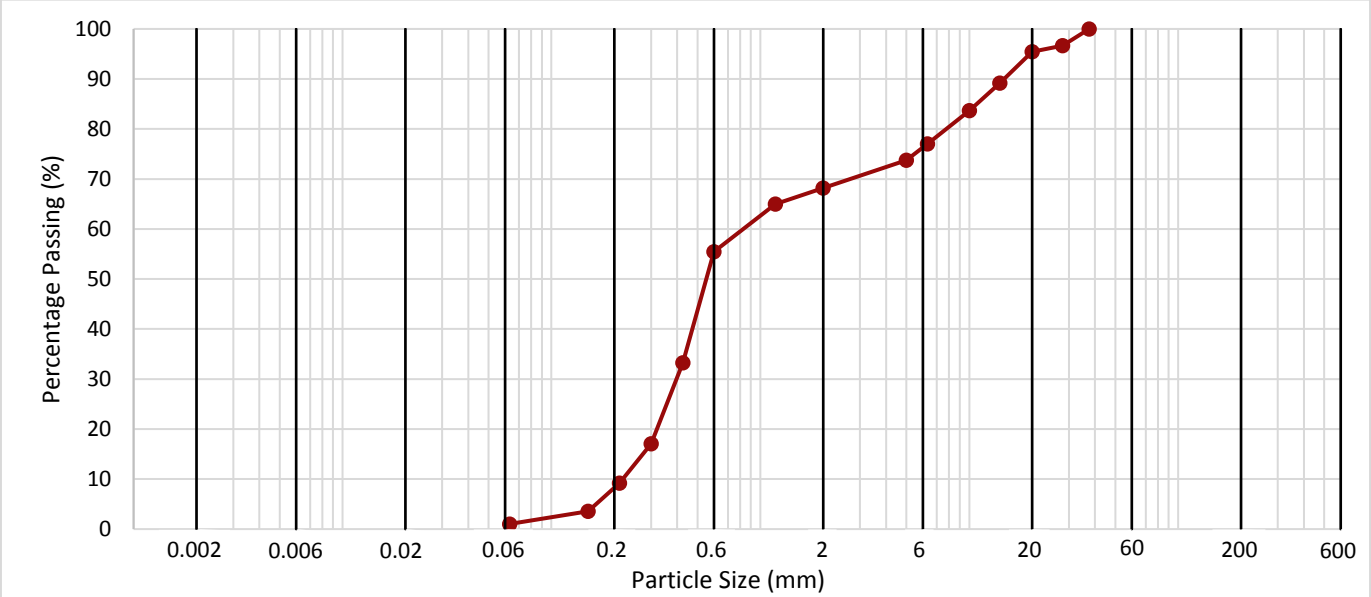
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	10.50 - 11.00	B	25	Pale olive grey very gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint, and occasional white and yellowish brown subrounded to rounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	68	**67**
1.18	65	
0.600	55	
0.425	33	
0.300	17	
0.212	9	
0.150	4	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	**1**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**32**
125		
90		
63		
50		
37.5	100	
28	97	
20	95	
14	89	
10	84	
6.3	77	
5	74	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

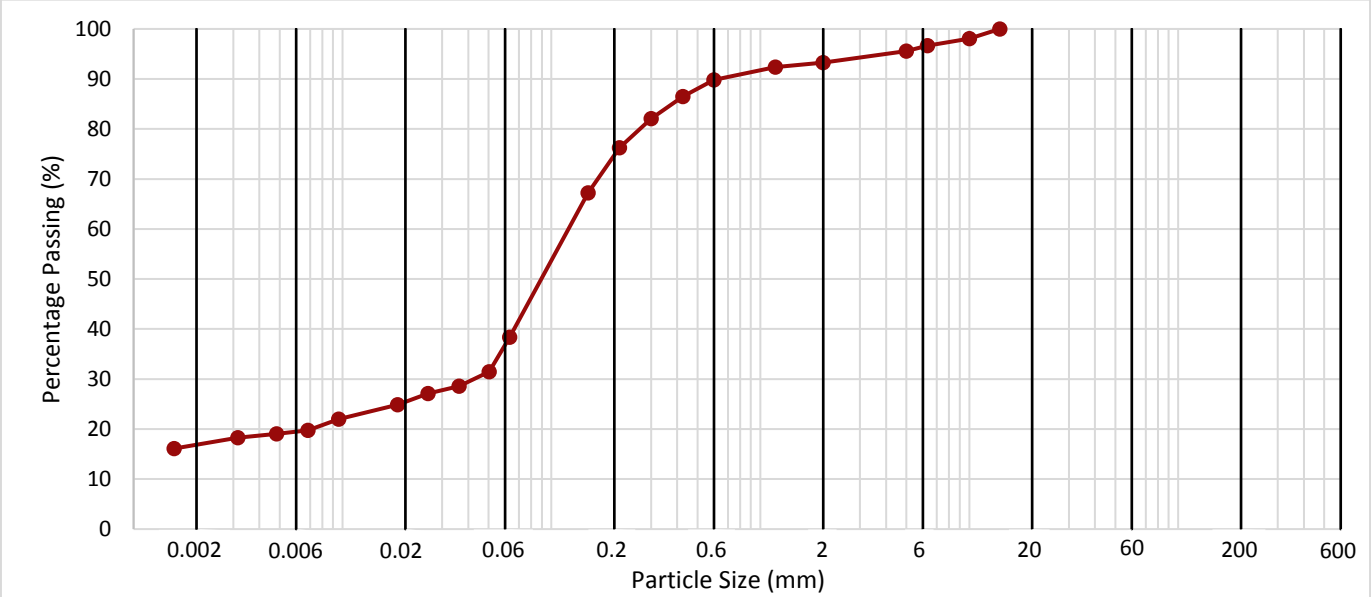
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	12.10	D	29	Soft locally firm slightly gravelly sandy silty CLAY, Gravel is brown, white and black angular to subangular flint, and occasional subangular to subrounded quartzite.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0504	31	21	
	0.0361	29		
	0.0257	27		
	0.0183	25		17
	0.0096	22		
	0.0068	20		
	0.0048	19		
	0.0032	18		
	0.0016	16		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	93	55
1.18	92	
0.600	90	
0.425	86	
0.300	82	
0.212	76	
0.150	67	
0.063	38	

Fines By Dry Mass (%)	
<0.063mm	38

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		7
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	98	
6.3	97	
5	96	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

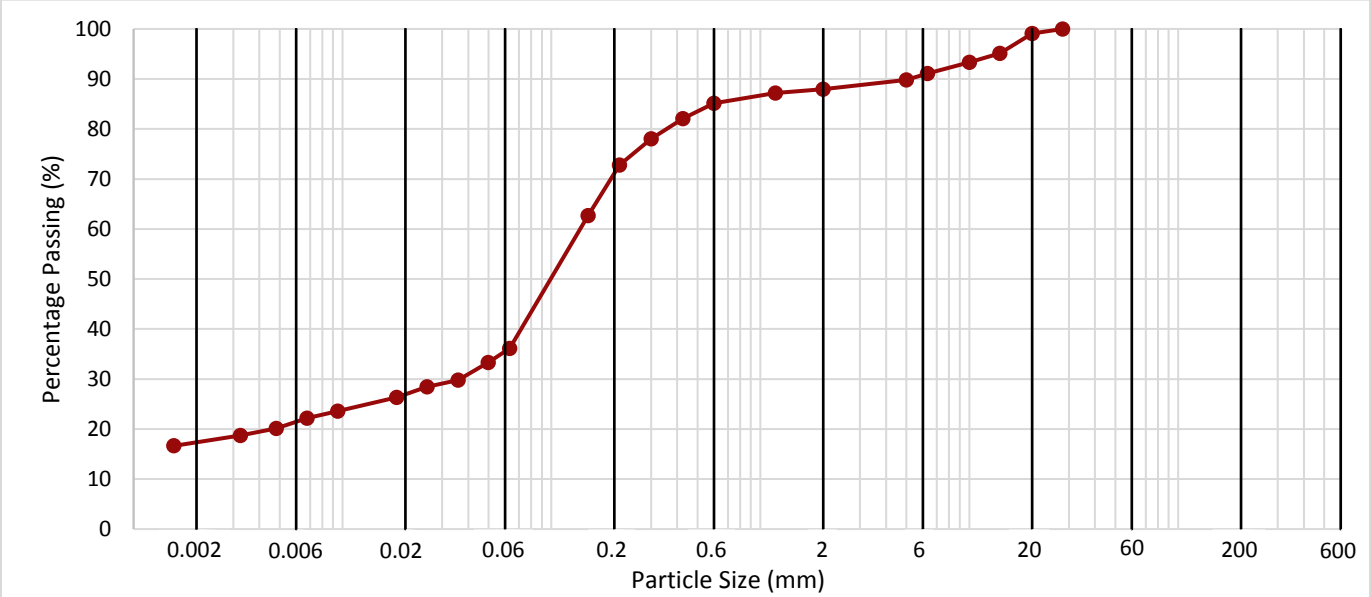
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	12.20 - 12.50	B	30	Very soft olive grey slightly gravelly sandy silty CLAY with occasional light grey pockets. Gravel is black, brown and white angular to subrounded flint, and occasional subrounded brown and white quartzite.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0498	33	19	
0.0358	30		
0.0254	28		
0.0182	26		17
0.0095	24		
0.0068	22		
0.0048	20		
0.0032	19		
0.0016	17		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	88	52
1.18	87	
0.600	85	
0.425	82	
0.300	78	
0.212	73	
0.150	63	
0.063	36	

Fines By Dry Mass (%)	
<0.063mm	36

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		12
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	95	
10	93	
6.3	91	
5	90	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

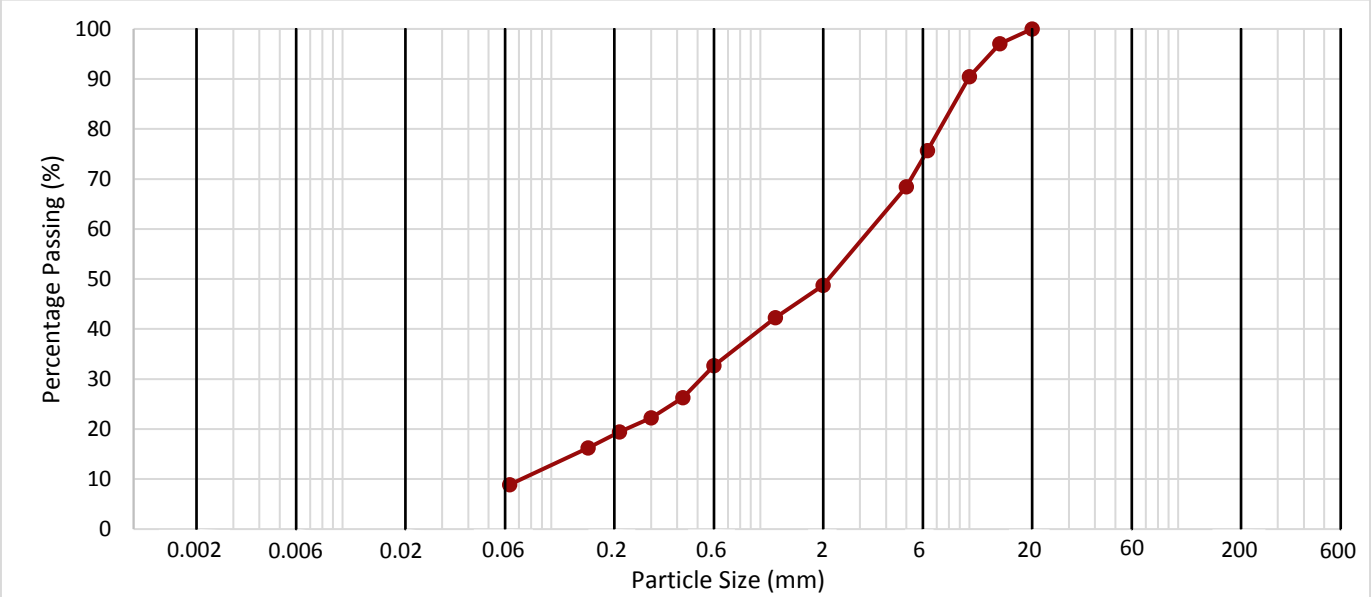
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	14.20	D	34	Black brown and white silty very sandy angular to rounded flint GRAVEL with occasional brown and white subrounded quartzite gravel. Sand is olive brown	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	49	**40**
1.18	42	
0.600	33	
0.425	26	
0.300	22	
0.212	19	
0.150	16	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	**9**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**51**
125		
90		
63		
50		
37.5		
28		
20	100	
14	97	
10	90	
6.3	76	
5	68	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

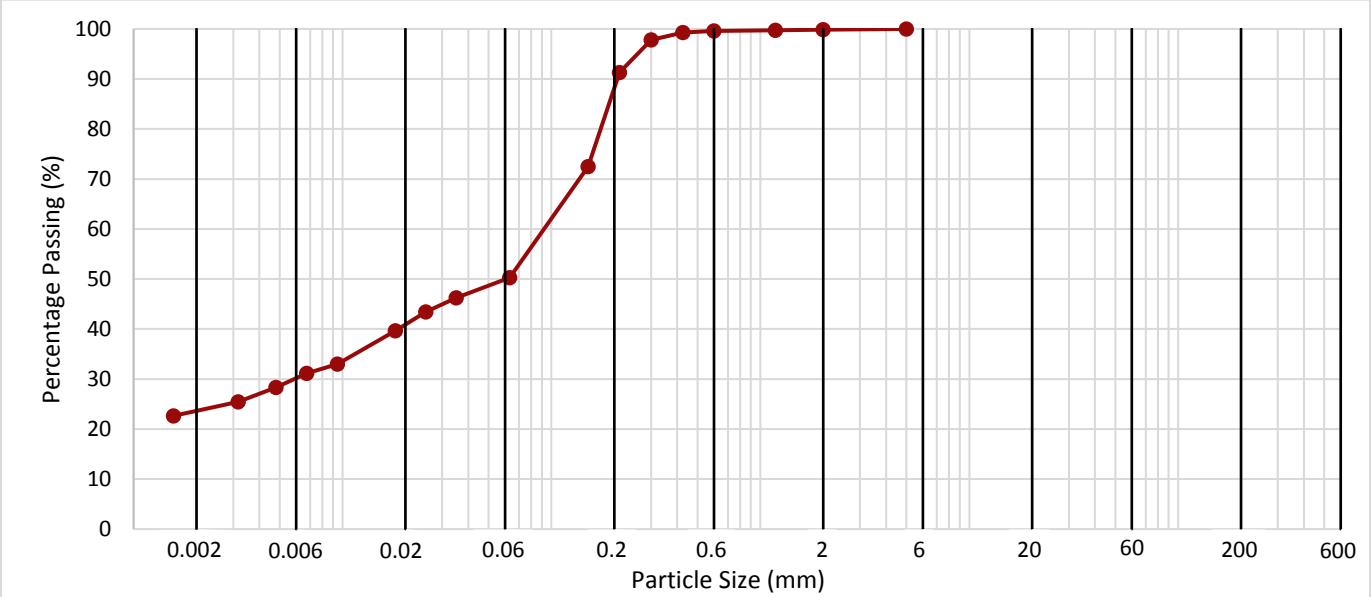
0998

Contract	Lake Lothing, Lowestoft
Serial No.	S31644-3

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	17.90	D	43	Soft dark bluish grey sandy silty slightly organic CLAY locally oxidised to olive	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0351	46	27	
	0.0250	43		
	0.0179	40		
	0.0095	33		
	0.0067	31		
	0.0048	28		
	0.0032	25		23
	0.0016	23		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	50
1.18	100	
0.600	100	
0.425	99	
0.300	98	
0.212	91	
0.150	72	
0.063	50	

Fines By Dry Mass (%)	
<0.063mm	50

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

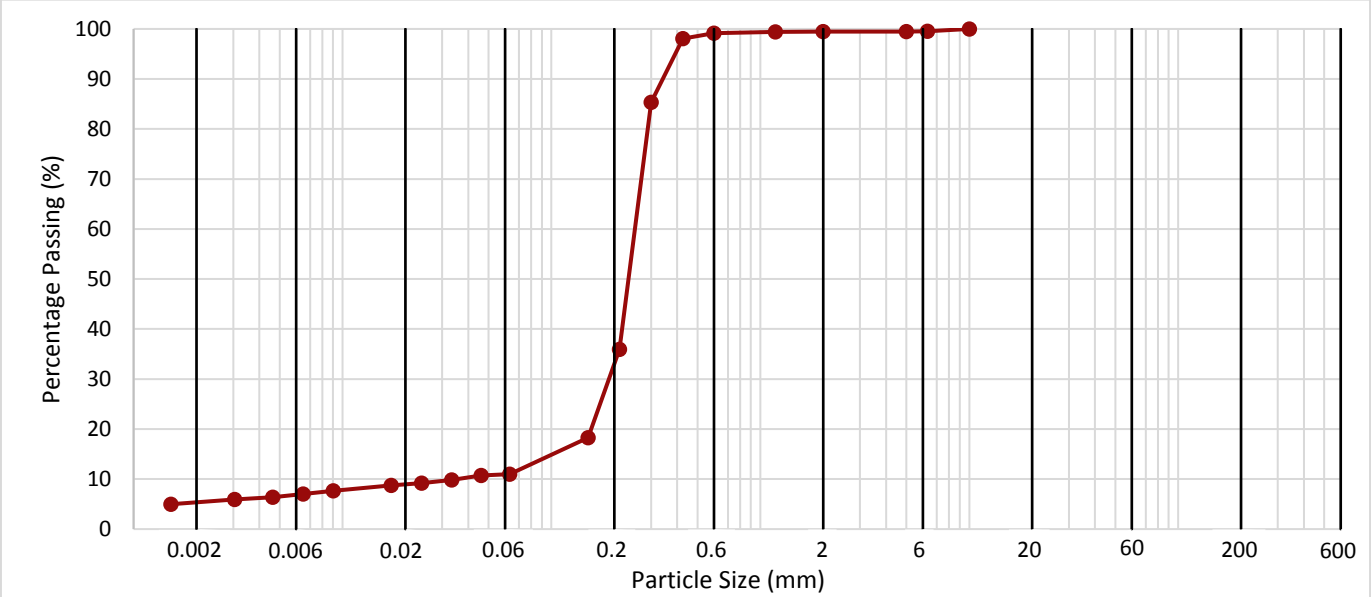
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	20.00 - 20.50	B	50	Dark olive grey slightly gravelly silty clayey organic SAND locally oxidised to brown. Gravel is black angular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0460	11	6	
	0.0333	10		
	0.0239	9		
	0.0171	9		
	0.0090	8		
	0.0065	7		
	0.0046	6		5
	0.0030	6		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	88
1.18	99	
0.600	99	
0.425	98	
0.300	85	
0.212	36	
0.150	18	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

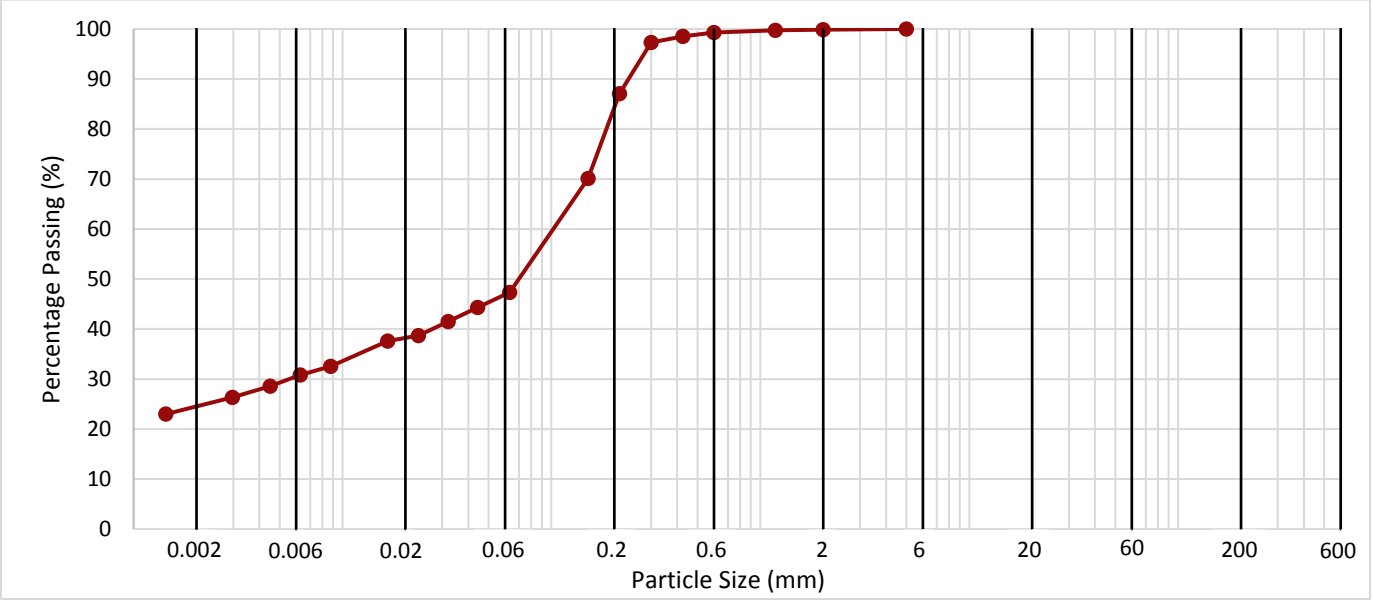
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	22.70 - 23.00	B	56	Dark grey sandy silty organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0443	44	23	
	0.0320	42		
	0.0231	39		
	0.0165	38		
	0.0088	33		
	0.0063	31		
	0.0045	29		24
	0.0030	26		
	0.0014	23		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	53
1.18	100	
0.600	99	
0.425	99	
0.300	97	
0.212	87	
0.150	70	
0.063	47	

Fines By Dry Mass (%)	
<0.063mm	47

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

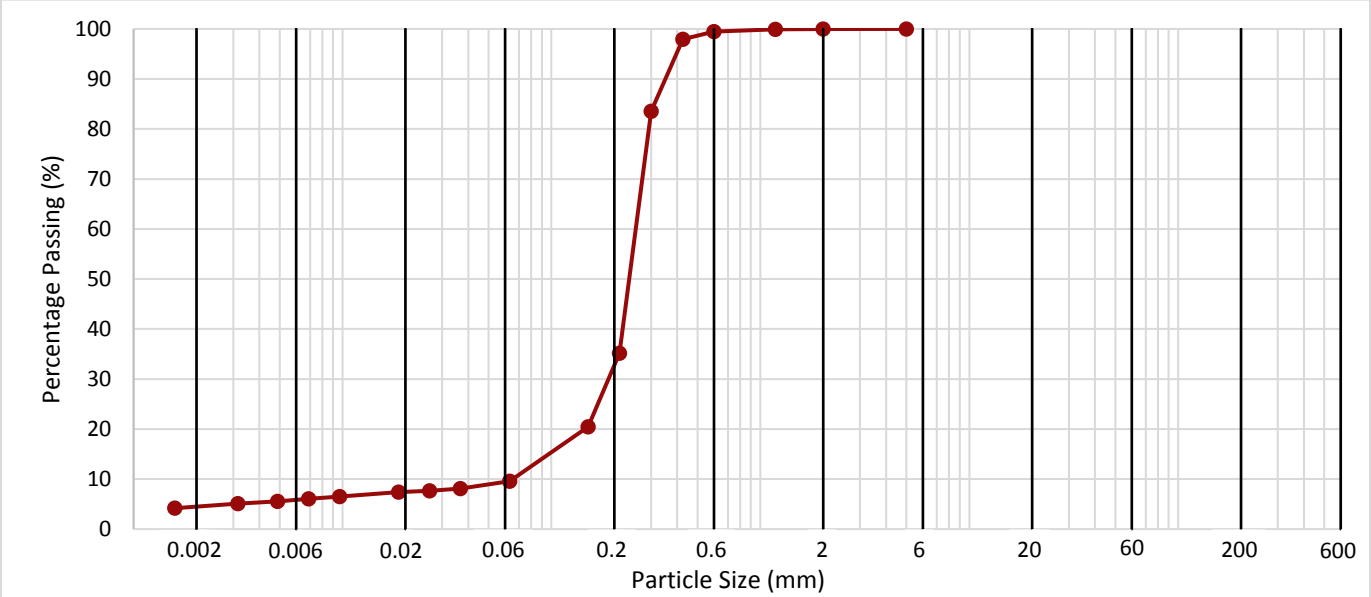
0998

Contract	Lake Lothing, Lowestoft
Serial No.	S31644-3

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	26.50 - 27.00	B	65	Dark grey silty slightly clayey silty slightly organic SAND with rare dark olive mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0367	8	6
	0.0261	8	
	0.0185	7	
	0.0097	6	Clay by Dry Mass (%)
	0.0069	6	
	0.0049	6	
	0.0032	5	4
	0.0016	4	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	90
1.18	100	
0.600	99	
0.425	98	
0.300	84	
0.212	35	
0.150	20	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

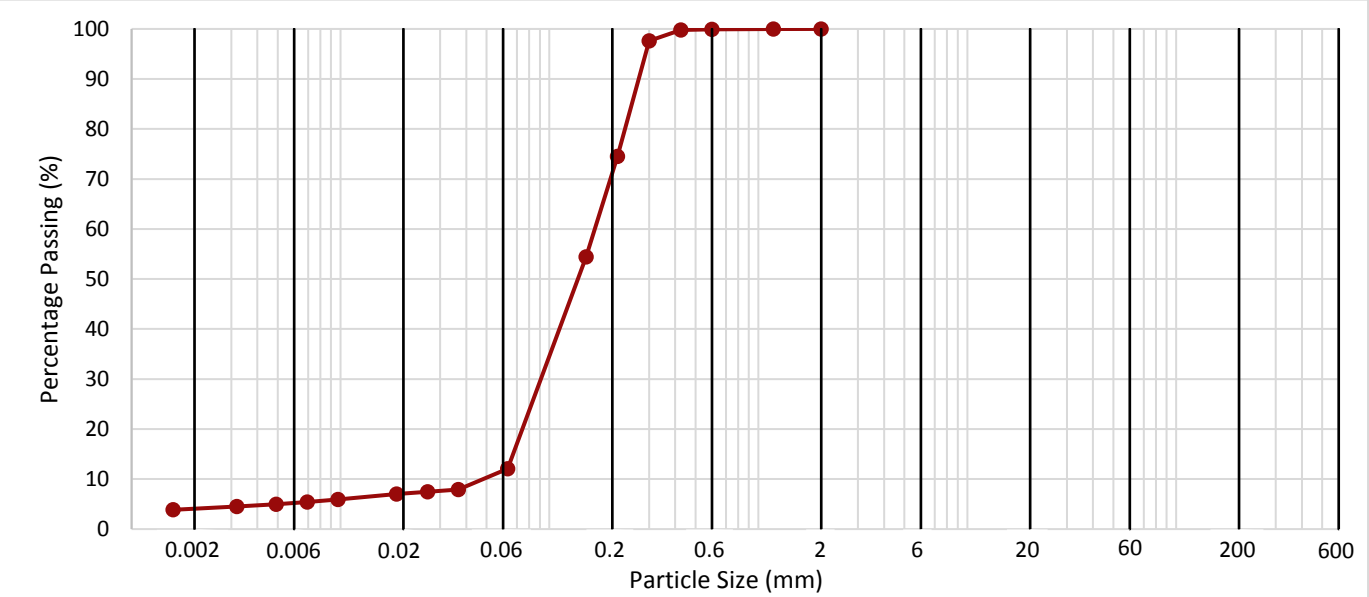
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	31.50 - 31.95	UT	75	Grey slightly clayey silty SAND with rare olive mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0367	8	8	
0.0261	7		
0.0186	7		
0.0097	6		
0.0069	5		4
0.0049	5		
0.0032	5		
0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	100	
0.600	100	
0.425	100	
0.300	98	
0.212	74	
0.150	54	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: , 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

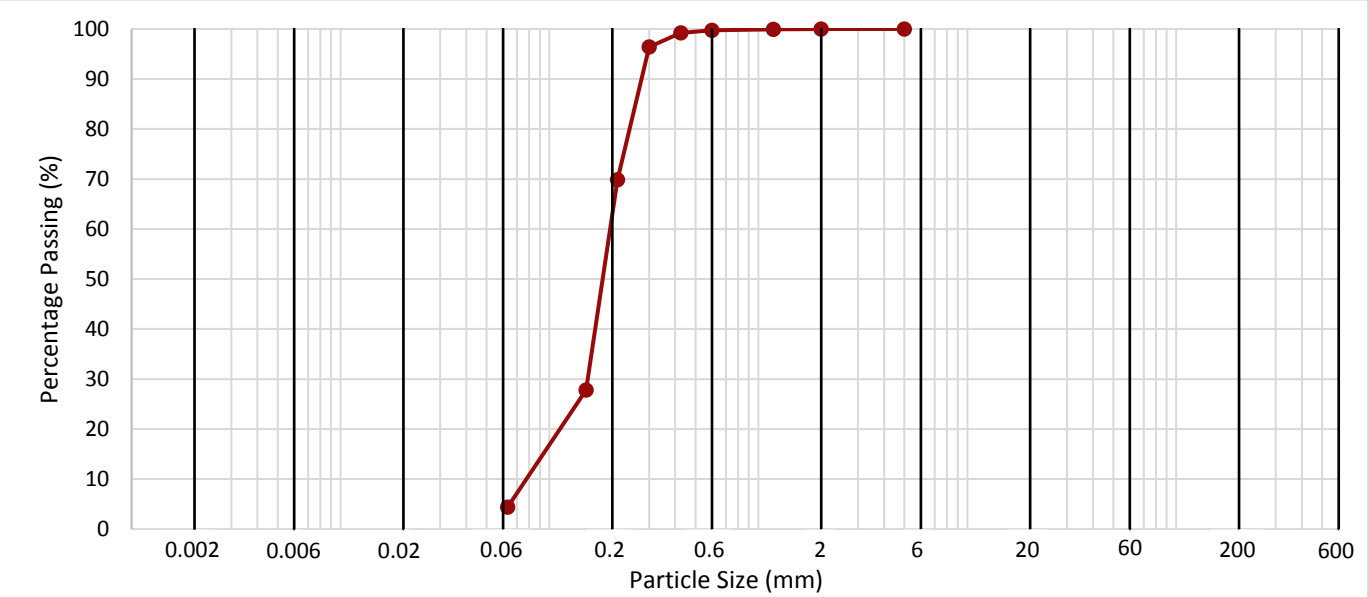
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	36.50 - 37.00	B	86	Grey slightly silty SAND with occasional olive pockets, and slightly clayey lumps.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**96**
1.18	100	
0.600	100	
0.425	99	
0.300	96	
0.212	70	
0.150	28	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	**4**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

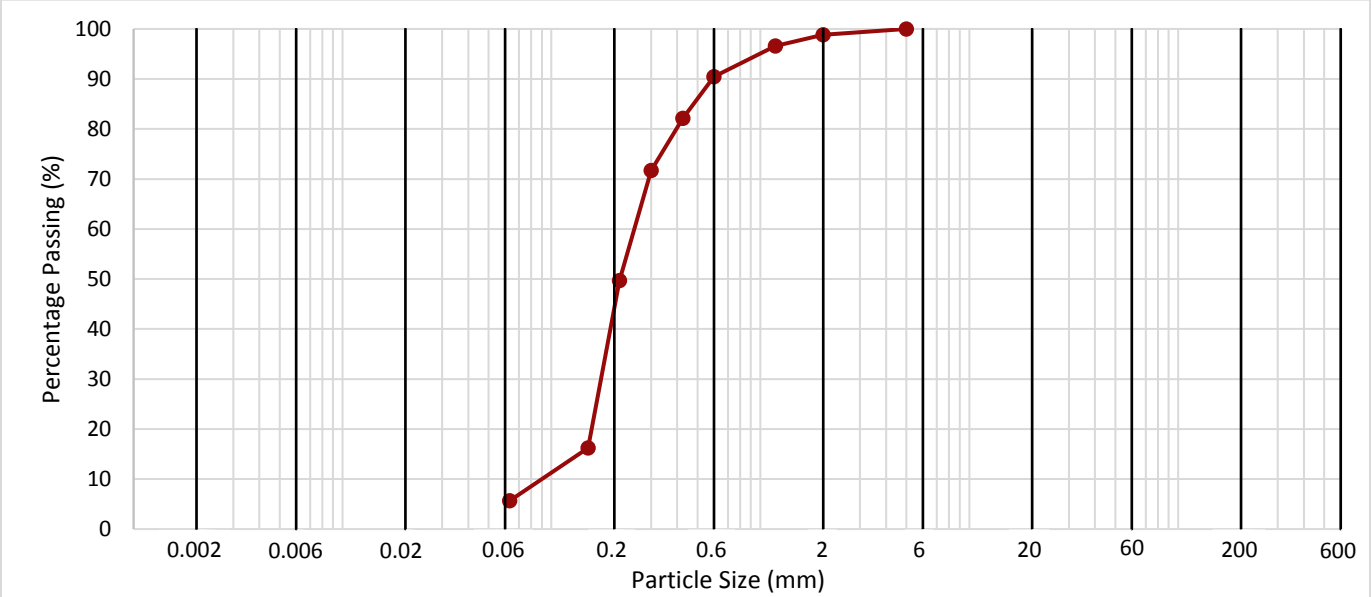
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	46.50 - 47.00	B	106	Grey silty SAND with occasional olive pockets and shell fragments.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	93
1.18	97	
0.600	90	
0.425	82	
0.300	72	
0.212	50	
0.150	16	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

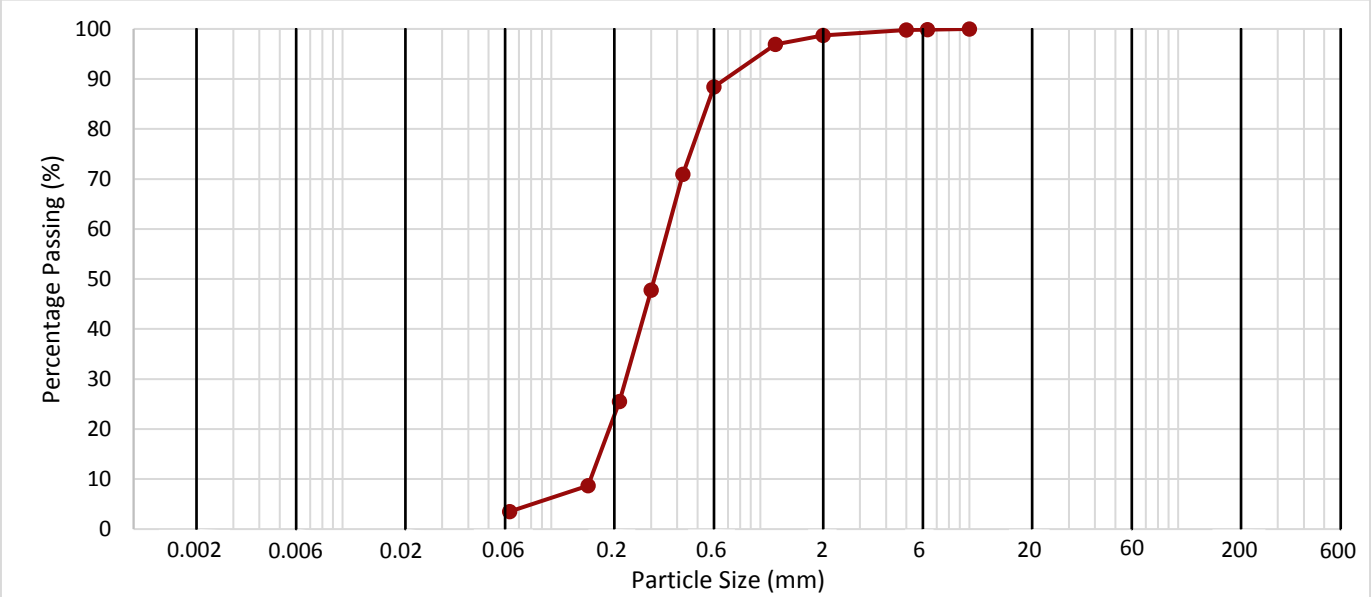
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC28	50.00	D	113	Grey slightly silty SAND with occasional shell fragments.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	95
1.18	97	
0.600	88	
0.425	71	
0.300	48	
0.212	26	
0.150	9	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	4

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2,
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC103	22.00 - 22.45	UT	40	30.0	1.94	1.49	397	218	109			Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.
BHC103	22.00 - 22.45	UT	40	31.1	1.93	1.47	796	214	107			Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.
BHC103	24.00 - 24.45	UT	45	31.9	1.93	1.46	500	158	79			Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.
BHC103	24.00 - 24.45	UT	45	32.4	1.92	1.45	747	254	127			Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.
BHC28	22.30 - 22.75	UT	54	25.3	1.95	1.56	400	155	78			Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

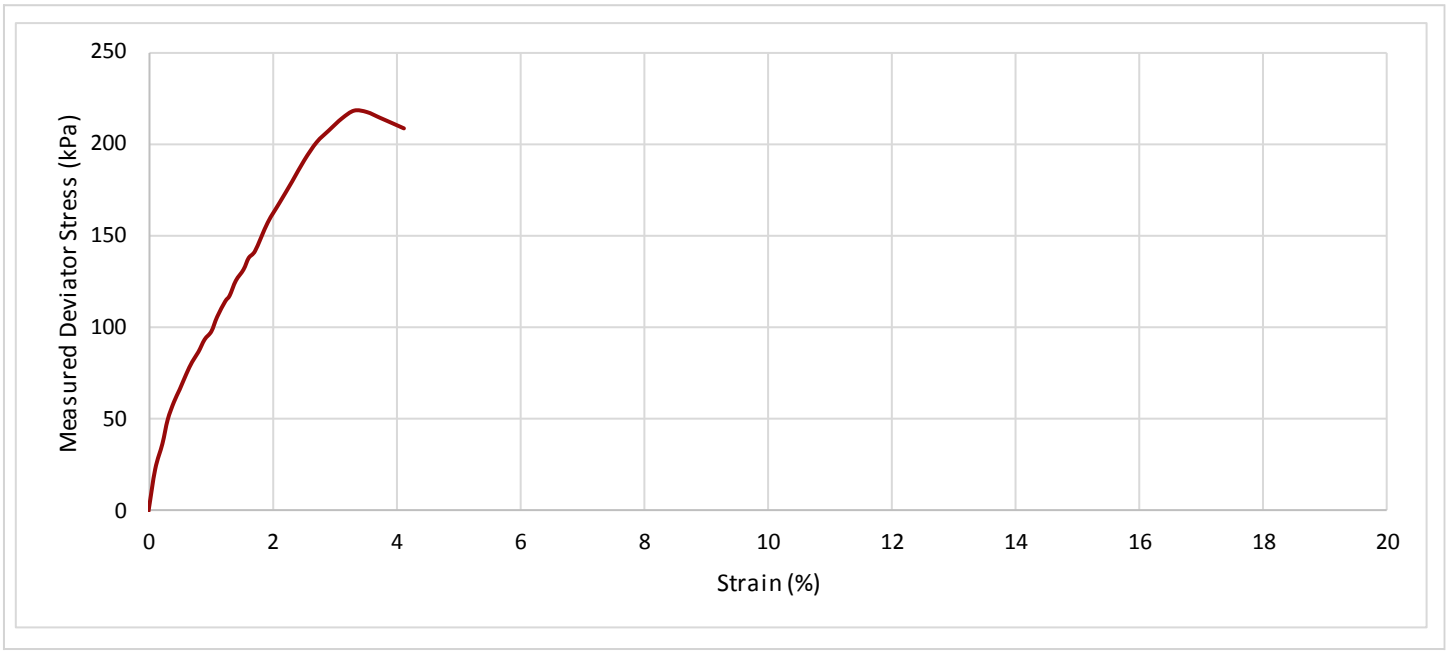
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC103	22.00 - 22.45	UT	40	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	Premature failure at 3.3% strain

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.05	169.8	103.4	2766	30.0	1.94	1.49

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	397	3.3	0.3	\	218	109		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

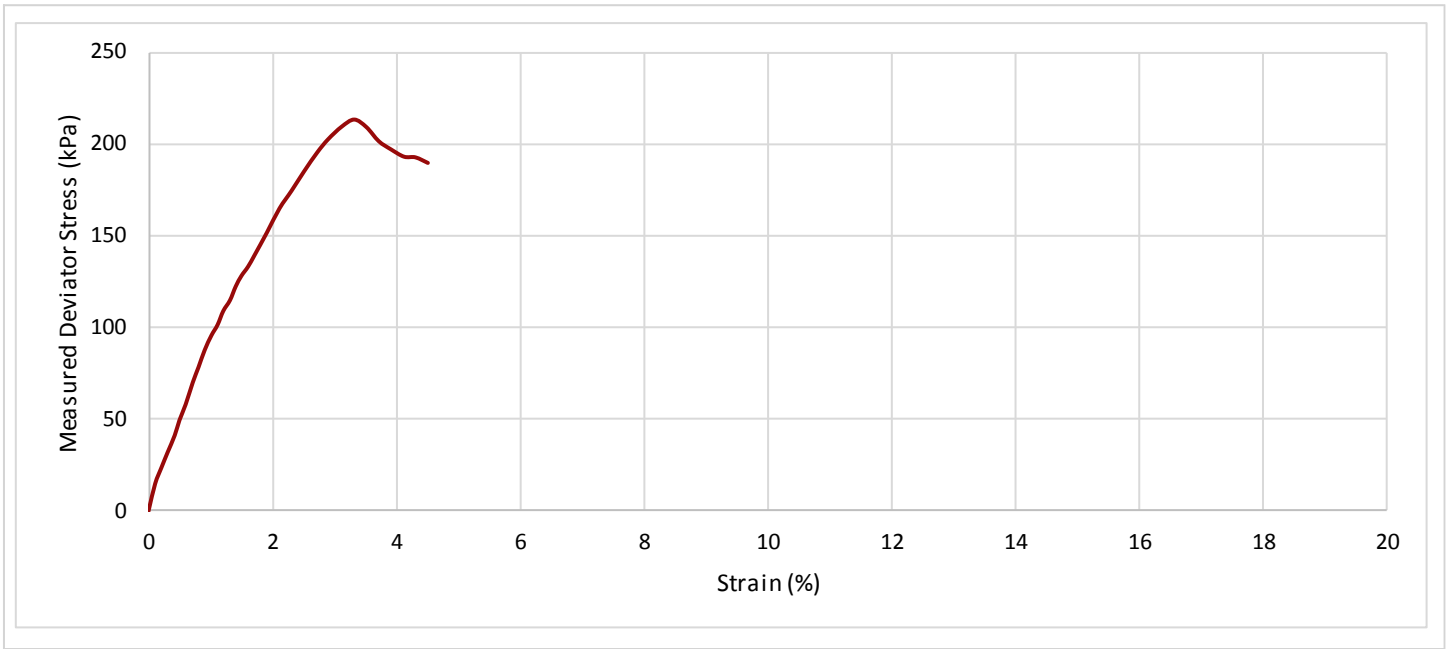
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC103	22.00 - 22.45	UT	40	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	Premature failure at 3.3% strain

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.22	170.2	103.0	2732	31.1	1.93	1.47

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	796	3.3	0.3	\	214	107		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

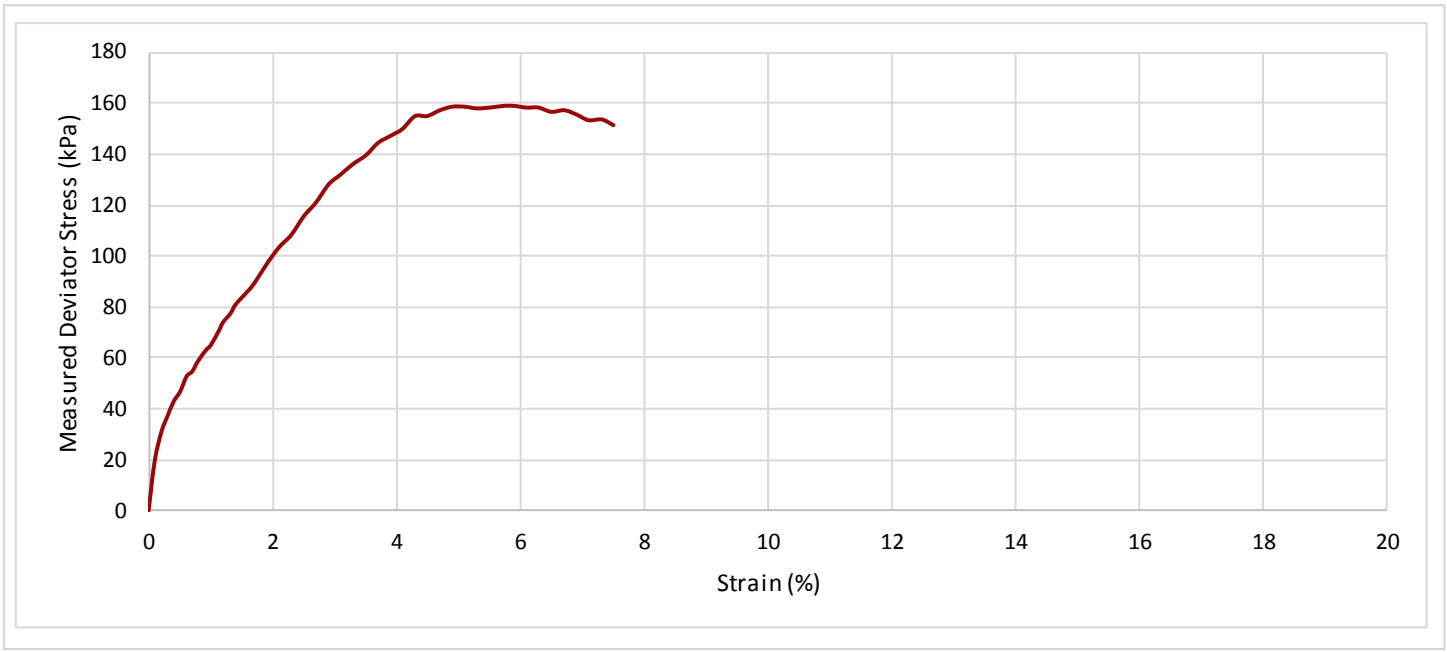
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC103	24.00 - 24.45	UT	45	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.05	169.7	103.2	2739	31.9	1.93	1.46

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	500	5.9	0.5	\	158	79		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

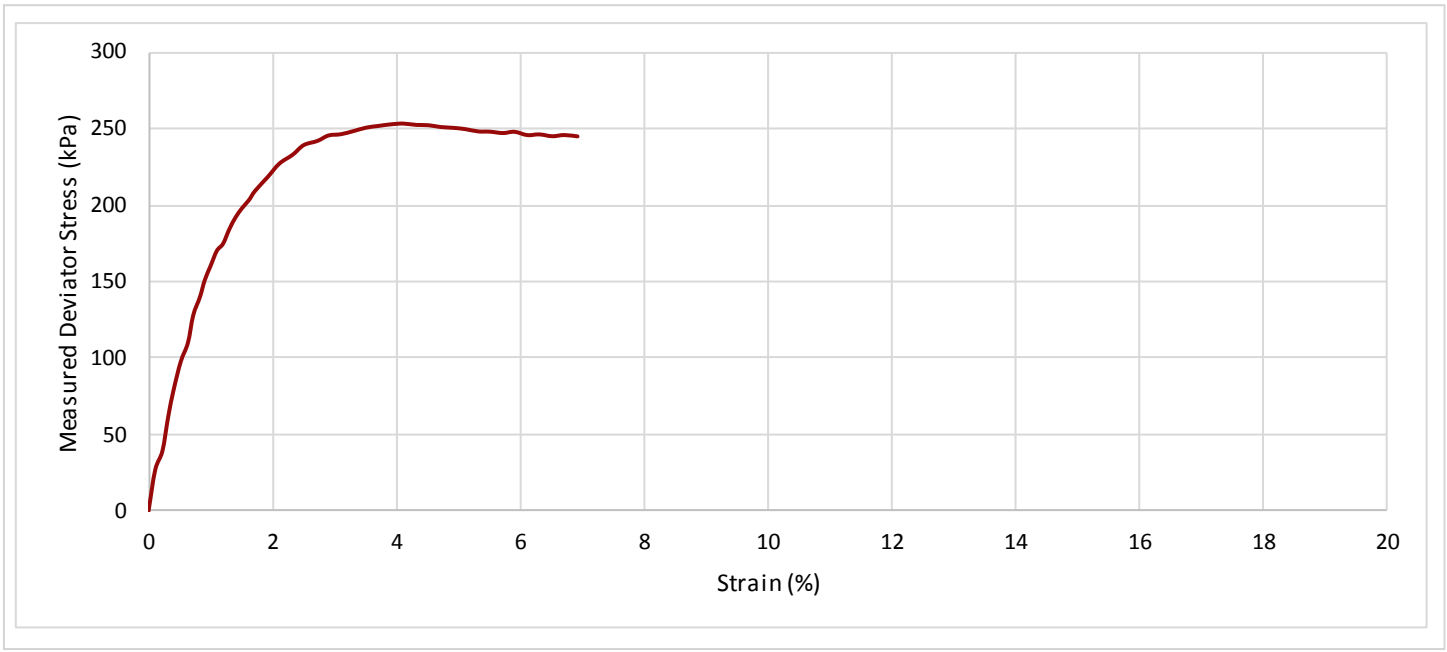
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC103	24.00 - 24.45	UT	45	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	Premature failure at 4.1% strain

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.22	170.1	103.3	2737	32.4	1.92	1.45

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	747	4.1	0.3	\	254	127		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

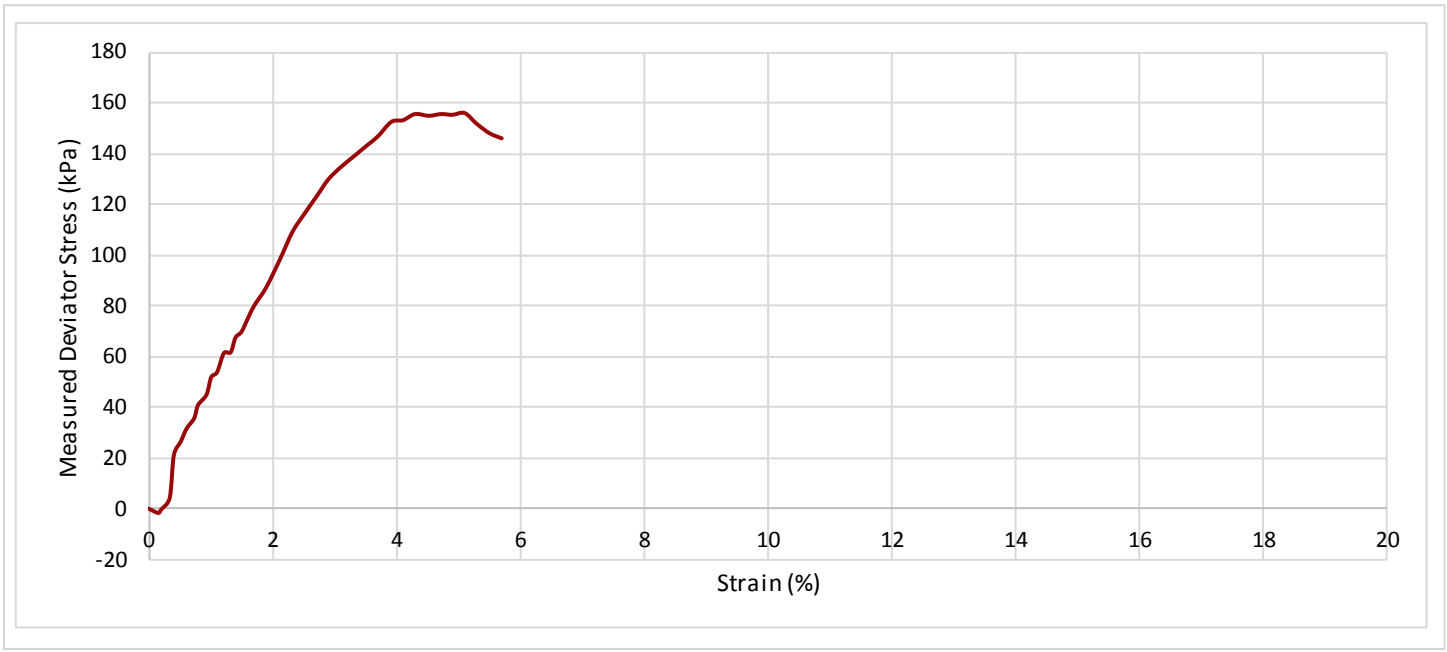
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC28	22.30 - 22.75	UT	54	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.40	198.8	103.1	3233	25.3	1.95	1.56

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	400	5.1	0.4	\	155	78		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 16/02/2018

0998

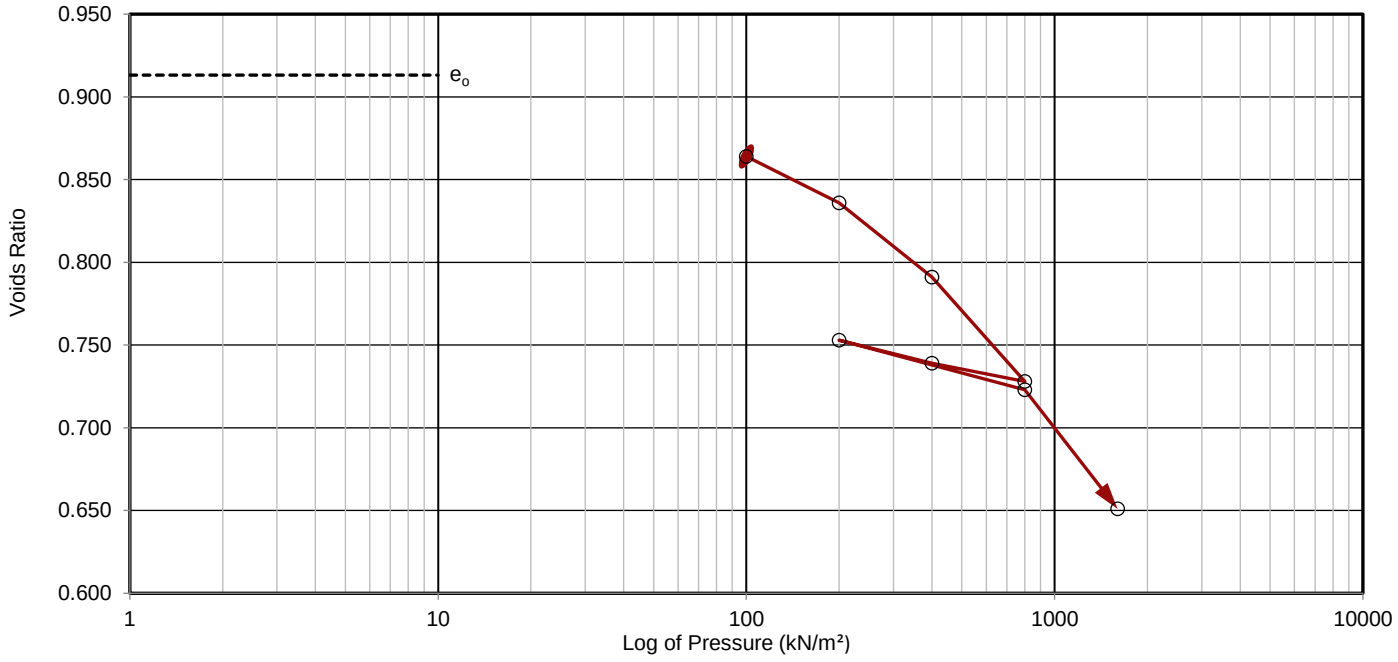
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-3**

DETERMINATION OF THE ONE-DIMESIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC28	22.30 - 22.75	UT	54	22.34 Horizontal	32.6	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand and silt pockets.	

Initial Conditions			
Height	mm	18.93	
Diameter	mm	75.02	
Wet Weight	g	162.97	
Water Content	%	32.6	
Bulk Density	Mg/m³	1.95	
Particle Density		Assumed	2.81
Voids Ratio		0.913	
Degree of Saturation	%	100	
Swelling Pressure	kN/m²	<100	
Dry Density	Mg/m³	1.47	

Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
1	100	0.483	0.864	2.07	0.26	21	2.00
2	200	0.765	0.836	1.34	0.15	21	1.30
3	400	1.213	0.791	1.55	0.12	21	1.50
4	800	1.828	0.728	1.65	0.09	21	1.60
5	400	1.726	0.739		0.02	21	
6	200	1.581	0.753		0.04	21	
7	800	1.879	0.723	2.50	0.03	20	2.50
8	1600	2.597	0.651	1.55	0.05	21	1.50



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-03548-1
Initial Date of Issue:	12-Feb-2018
Client	Soil Property Testing
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG
Contact(s):	Jon Garner
Project	S31644-3 Lake Lothing

Quotation No.:	Q17-10468	**Date Received:**	07-Feb-2018
Order No.:	S31644-3	**Date Instructed:**	07-Feb-2018
No. of Samples:	12		
Turnaround (Wkdays):	5	**Results Due:**	13-Feb-2018
Date Approved:	12-Feb-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-3 Lake Lothing

Client: Soil Property Testing				**Chemtest Job No.:**	18-03548	18-03548	18-03548	18-03548	18-03548	18-03548	18-03548	18-03548	18-03548	18-03548	18-03548
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	575314	575315	575316	575317	575318	575319	575320	575321	575322	575323	575324
Order No.: S31644-3				Client Sample Ref.:	BHC103	BHC103	BHC103	BHC103	BHC103	BHC28	BHC28	BHC28	BHC28	BHC28	BHC28
				Client Sample ID.:	B4	B5	B19	D41	B75	B7	D2	D8	B10	B21	D34
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.50	2.50	10.0	22.60	38.5	2.00	1.00	2.60	3.00	8.50	14.20
				Bottom Depth (m):						2.5				8.8	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020	5.2	6.4	11	16	12	25	< 0.020	12	17	10	7.1
pH (2.5:1)	N	2010		N/A		[A] 8.8	[A] 8.2	[A] 8.1	[A] 9.4	[A] 8.5				[A] 8.5	[A] 6.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		0.077	< 0.010	1.7	0.099	0.046				< 0.010	< 0.010
Total Sulphur	U	2175	%	0.010		[A] 0.034		[A] 1.6		[A] 0.044				[A] < 0.010	[A] 0.012
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.031		[A] 0.79		[A] 0.054				[A] < 0.010	[A] < 0.010
LOI	U	2610	%	0.10		0.42							1.3		
Organic Matter BS1377	N	2930	%	0.10	[A] 0.60						[A] 2.4	[A] 0.90			

Results - Soil

Project: S31644-3 Lake Lothing

Client: Soil Property Testing			**Chemtest Job No.:**		18-03548
Quotation No.: Q17-10468			**Chemtest Sample ID.:**		575325
Order No.: S31644-3			Client Sample Ref.:		BHC28
			Client Sample ID.:		D72
			Sample Type:		SOIL
			Top Depth (m):		30.40
			Bottom Depth (m):		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	24
pH (2.5:1)	N	2010		N/A	[A] 7.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.36
Total Sulphur	U	2175	%	0.010	[A] 1.1
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.12
LOI	U	2610	%	0.10	
Organic Matter BS1377	N	2930	%	0.10	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
575314	BHC103	B4		A	Plastic Bag
575315	BHC103	B5		A	Plastic Bag
575316	BHC103	B19		A	Plastic Bag
575317	BHC103	D41		A	Plastic Tub 500g
575318	BHC103	B75		A	Plastic Bag
575319	BHC28	B7		A	Plastic Bag
575320	BHC28	D2		A	Plastic Bag
575321	BHC28	D8		A	Plastic Tub 500g
575323	BHC28	B21		A	Plastic Bag
575324	BHC28	D34		A	Plastic Bag
575325	BHC28	D72		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

[redacted]

Date Received: 22/01/2018

Samples Tested Between: 22/01/2018 **and** 01/03/2018

Remarks:

For the attention of Mr S Gilchrist
Your Reference No: 2543,GI

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-4**	**Target Date**	12/02/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve & Hydrom.	Hydrometer inc. pre-sieve	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage	Consolidation	Consol Extra 24 hr Increment	Soaked CBR Test + compacti	Soaked CBR Swelling Measu	Compaction 2.5kg	Loss on Ignition	Organic Content (Dichromat	Brownfield Site-Pyrite absen	Brownfield Site-Pyrite prese	Sample Remarks
BHC04	B	2	0.60	1		1									1	1		1		
BHC04	B	5	3.00	1				1	1											
BHC04	B	6	4.00	1			1													
BHC04	B	7	5.00	1				1	1											
BHC04	UT	1	6.00					1		1	1	3								
BHC04	B	9	7.00	1			1													
BHC04	B	11	9.00				1											1		
TPC07	B	1	1.00	1	1								1	1	1			1		
TPC07	D	1	1.50	1				1	1									1		
TPC08	B	1	1.00	1		1							1	1	1			1		
TPC08	B	2	2.00	1	1											1	1			
TPC10	B	1	0.50	1		1							1	1	1					
Totals				**10**	**2**	**3**	**3**	**4**	**3**	**1**	**1**	**3**	**3**	**3**	**3**	**2**	**2**	**1**	**5**	**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC04	0.60	B	2	**16.2**									Black very gravelly silty slightly clayey SAND with occasional brick, cinder, blast furnace slag, wood, glass and metal fragments. Gravel is light grey angular limestone, and brown, black and white subangular flint.	
BHC04	3.00	B	5	**20.3**	23	17	6	0.55	Wet Sieved	8 (M)	22.1*	75	Very dark grey organic slightly gravelly sandy silty CLAY/silty very clayey SAND locally oxidised to brown. Gravel is fine to medium angular flint. Sand is fine to medium.	CLO/MLO
BHC04	4.00	B	6	**32.3**									Very dark grey gravelly silty clayey organic SAND locally oxidised to brown. Gravel is black and brown angular fine to medium flint.	
BHC04	5.00	B	7	**29.9**	29	17	12	1.07	Wet Sieved	2 (M)	30.5*	70	Very soft brownish yellow slightly gravelly slightly sandy silty CLAY with occasional bluish grey and orange mottling. Gravel is fine flint, and weak siltstone/sandstone.	CL
BHC04	6.00	UT	1	**25.2**	26	21	5	0.84	From Natural	0 (A)		76	Yellowish brown silty slightly clayey fine SAND with occasional brownish yellow, orange, and bluish grey mottling.	ML
BHC04	7.00	B	9	**22.6**									Brownish yellow slightly gravelly silty clayey SAND. Gravel is fine to medium sandstone.	
TPC07	1.00	B	1	**11.3**									Yellowish brown gravelly slightly silty SAND with rare dark greyish brown slightly clayey pockets. Gravel is black, brown and white angular to rounded flint.	
TPC07	1.50	D	1	**19.6**	21	13	8	0.82	Wet Sieved	35 (M)	30.1*	75	Very soft dark brownish grey slightly gravelly sandy silty slightly organic CLAY. Sand is fine to medium. Gravel is brown, black and white fine to medium angular to subangular flint.	CLO

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
TPC08	1.00	B	1	**12.6**									Dark brown very gravelly silty SAND with occasional yellowish brown pockets, firm clayey lumps, and concrete fragments. Gravel is brown, black and white angular to rounded flint, and occasional brown and white subrounded quartzite.	
TPC08	2.00	B	2	**12.1**									Dark brown gravelly slightly silty SAND with frequent black organic clayey sand pockets. Gravel is black, white and brown angular to rounded flint, and rare white and brown subrounded quartzite.	
TPC10	0.50	B	1	**8.5**									Black gravelly silty clayey SAND with occasional concrete, and rare brick, ceramic and glass fragments. Gravel is brown, black and white angular to rounded flint.	

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990: Clause 3 Note 1

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

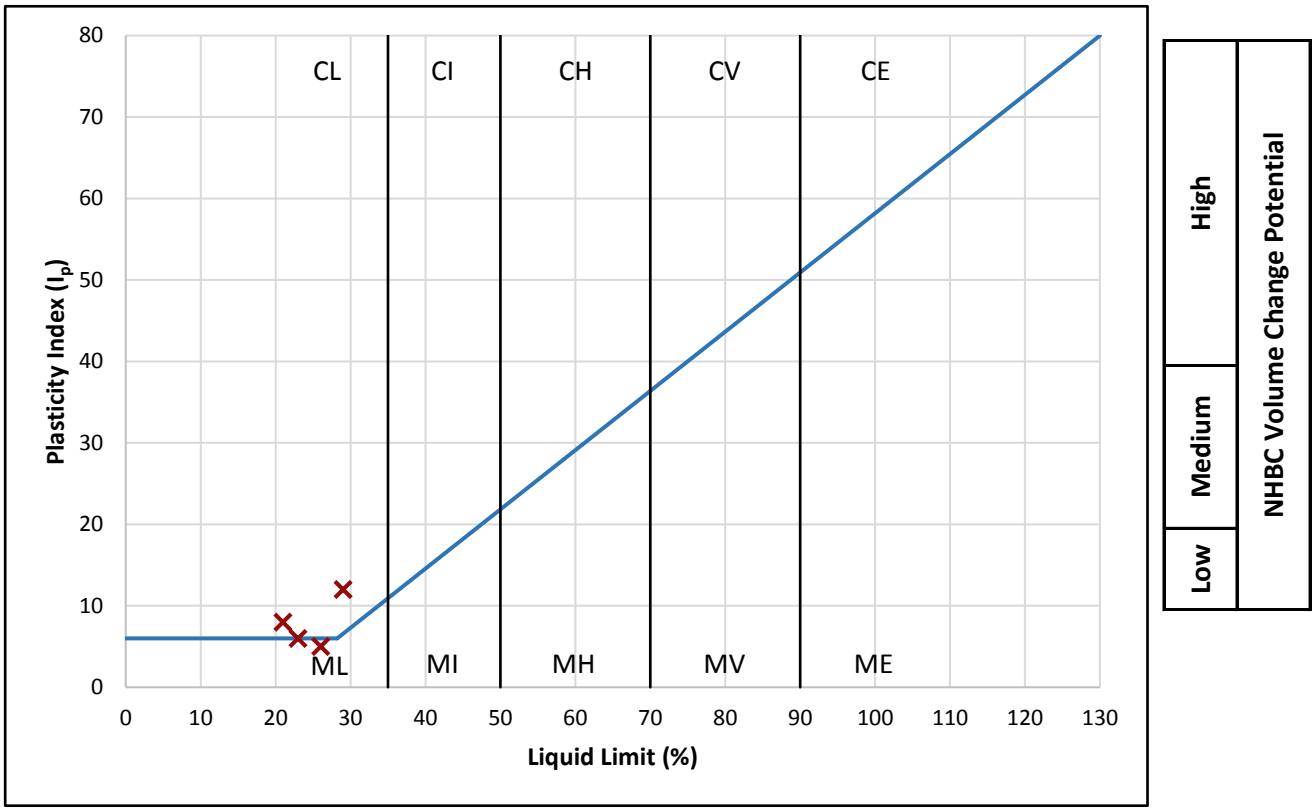
DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

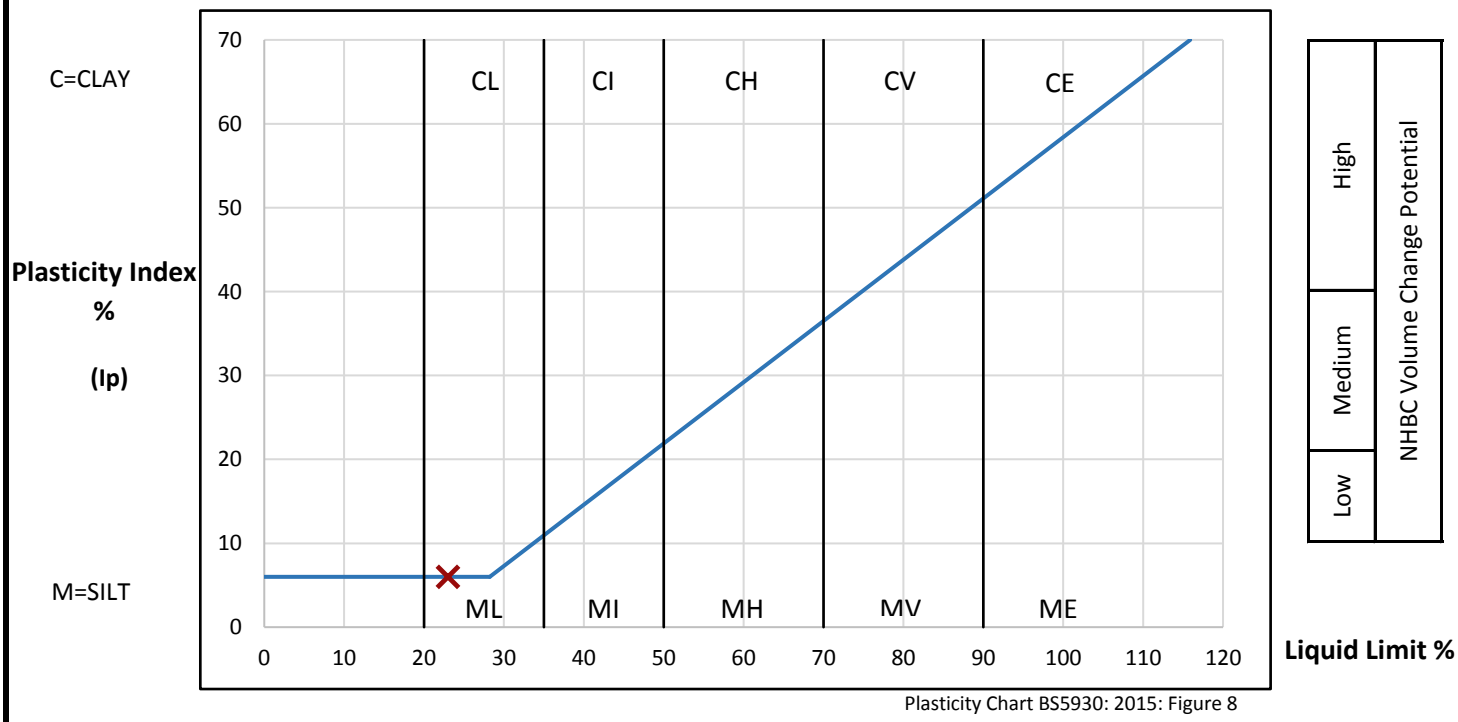
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC04	3.00	B	5	20.3	Very dark grey organic slightly gravelly sandy silty CLAY/silty very clayey SAND locally oxidised to brown. Gravel is fine to medium angular flint. Sand is fine to medium.	Specimen oven dried at 50°C due to high organic content.

PREPARATION				Liquid Limit	23 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	8 %		Plasticity Index	6 %
Corrected water content for material passing 0.425mm		22.1 %		Liquidity Index	0.55
Sample retained 2mm sieve	(Measured)	3 %		NHBC Modified (I'p)	6 %
Curing time	75 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

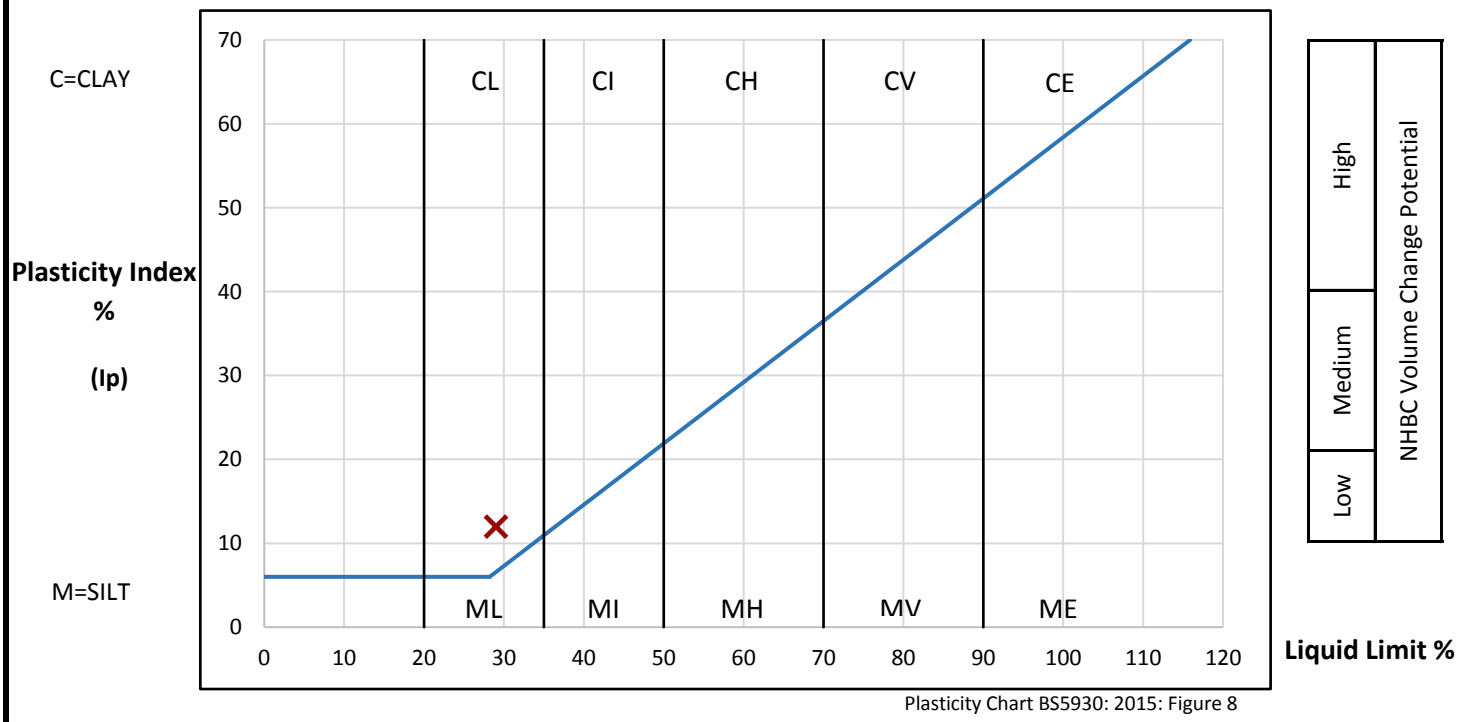
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC04	5.00	B	7	29.9	Very soft brownish yellow slightly gravelly slightly sandy silty CLAY with occasional bluish grey and orange mottling. Gravel is fine flint, and weak siltstone/sandstone.	

PREPARATION			Liquid Limit	29 %
Method of preparation	Wet sieved over 0.425mm sieve		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	2 %	Plasticity Index	12 %
Corrected water content for material passing 0.425mm	Not reported		Liquidity Index	
Sample retained 2mm sieve	(Measured)	2 %	NHBC Modified (I'p)	12 %
Curing time	70 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content and liquidity index not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

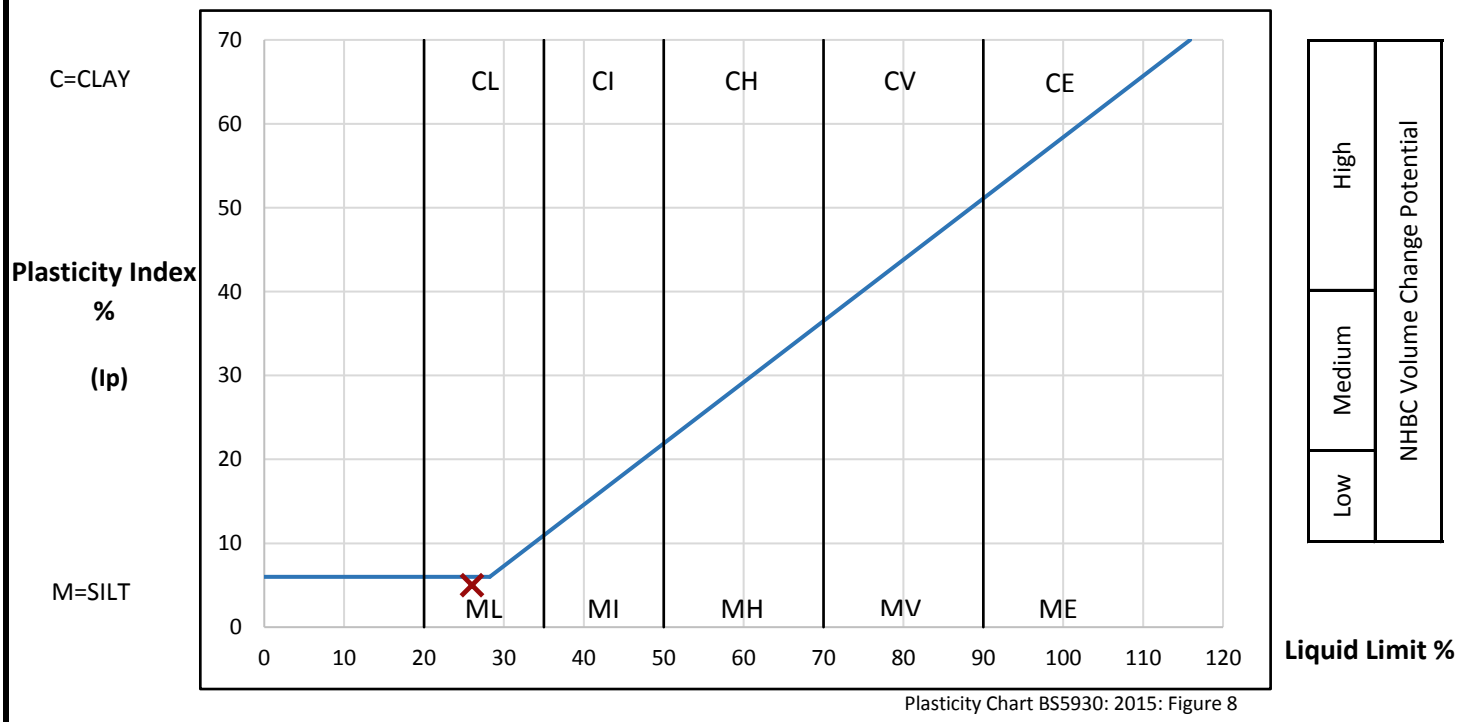
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC04	6.00	UT	1	25.2	Yellowish brown silty slightly clayey fine SAND with occasional brownish yellow, orange, and bluish grey mottling.	

PREPARATION			Liquid Limit	26 %
Method of preparation		From natural	Plastic Limit	21 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	5 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.84
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	76 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

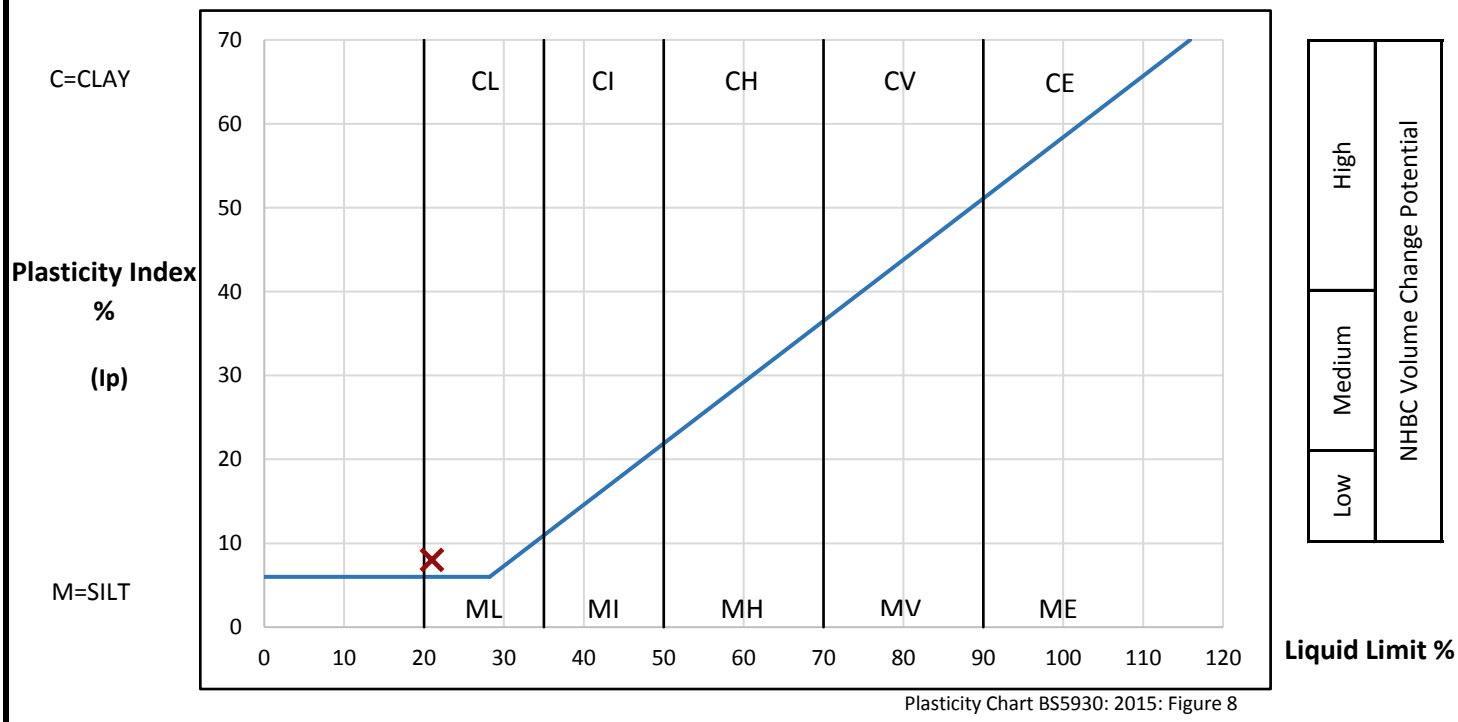
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
TPC07	1.50	D	1	19.6	Very soft dark brownish grey slightly gravelly sandy silty slightly organic CLAY. Sand is fine to medium. Gravel is brown, black and white fine to medium angular to subangular flint.	

PREPARATION					
Method of preparation	Wet sieved over 0.425mm sieve			Liquid Limit	21 %
Sample retained 0.425mm sieve	(Measured)	35 %		Plastic Limit	13 %
Corrected water content for material passing 0.425mm		30.1 %		Plasticity Index	8 %
Sample retained 2mm sieve	(Measured)	5 %		NHBC Modified (I'p)	5 %
Curing time	75 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

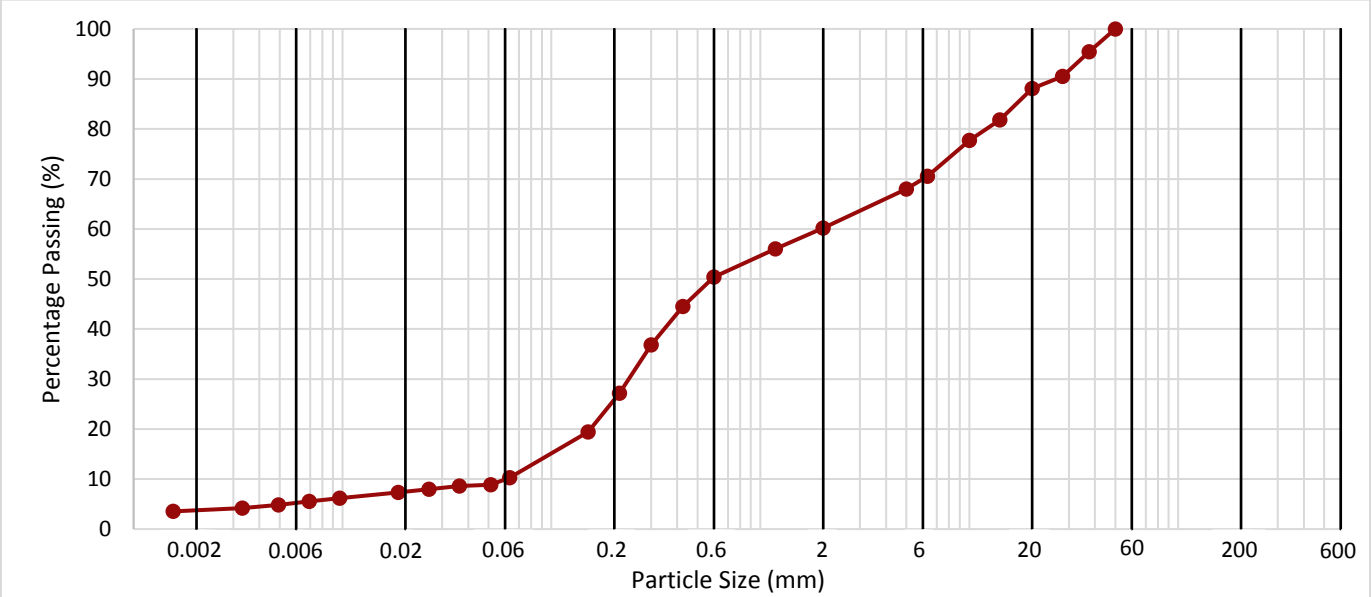
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC04	0.60	B	2	Black very gravelly silty slightly clayey SAND with occasional brick, cinder, blast furnace slag, wood, glass and metal fragments. Gravel is light grey angular limestone, and brown, black and white subangular flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0512	9	6	
	0.0363	9		
	0.0259	8		
	0.0185	7		
	0.0097	6		
	0.0069	6		
	0.0049	5		4
	0.0033	4		
	0.0015	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	60	50
1.18	56	
0.600	50	
0.425	45	
0.300	37	
0.212	27	
0.150	19	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		40
125		
90		
63		
50	100	
37.5	95	
28	90	
20	88	
14	82	
10	78	
6.3	71	
5	68	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

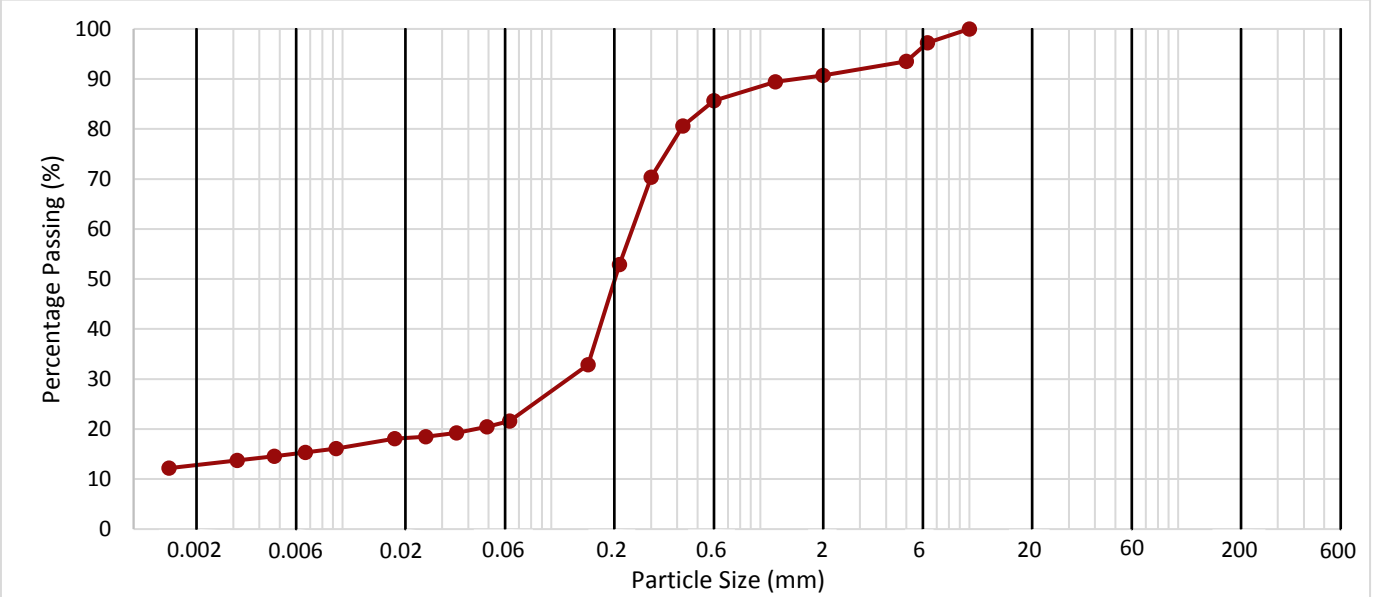
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC04	4.00	B	6	Very dark grey gravelly silty clayey organic SAND locally oxidised to brown. Gravel is black and brown angular fine to medium flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0492	20	9	
	0.0351	19		
	0.0250	18		
	0.0177	18		
	0.0093	16		
	0.0066	15		
	0.0047	15		13
	0.0031	14		
	0.0015	12		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	91	69
1.18	89	
0.600	86	
0.425	81	
0.300	70	
0.212	53	
0.150	33	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		9
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	97	
5	94	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

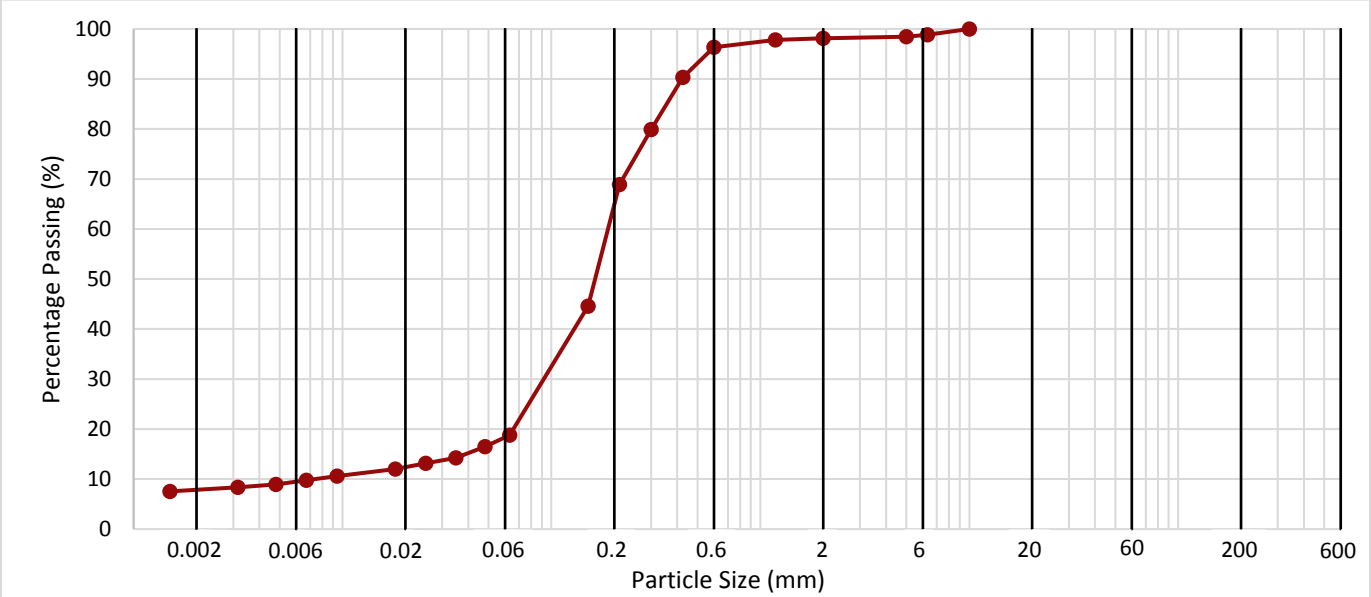
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC04	7.00	B	9	Brownish yellow slightly gravelly silty clayey SAND. Gravel is fine to medium sandstone.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0480	16	11	
0.0349	14		
0.0250	13		
0.0179	12		8
0.0094	11		
0.0067	10		
0.0048	9		
0.0032	8		
0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	79
1.18	98	
0.600	96	
0.425	90	
0.300	80	
0.212	69	
0.150	45	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	98	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

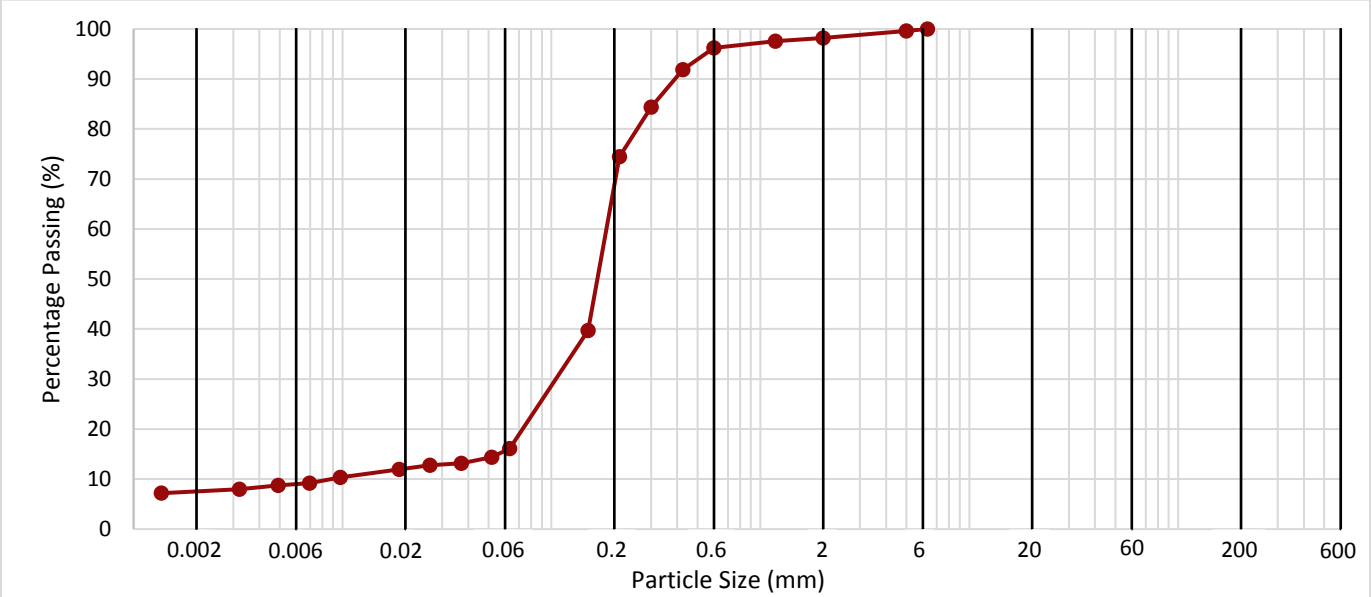
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC04	9.00	B	11	Light olive brown slightly gravelly silty clayey slightly organic SAND with rare dark grey mottling. Gravel is flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0519	14	9
	0.0370	13	
	0.0263	13	
	0.0187	12	Clay by Dry Mass (%)
	0.0098	10	
	0.0070	9	
	0.0049	9	7
	0.0032	8	
	0.0014	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	82
1.18	98	
0.600	96	
0.425	92	
0.300	84	
0.212	74	
0.150	40	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

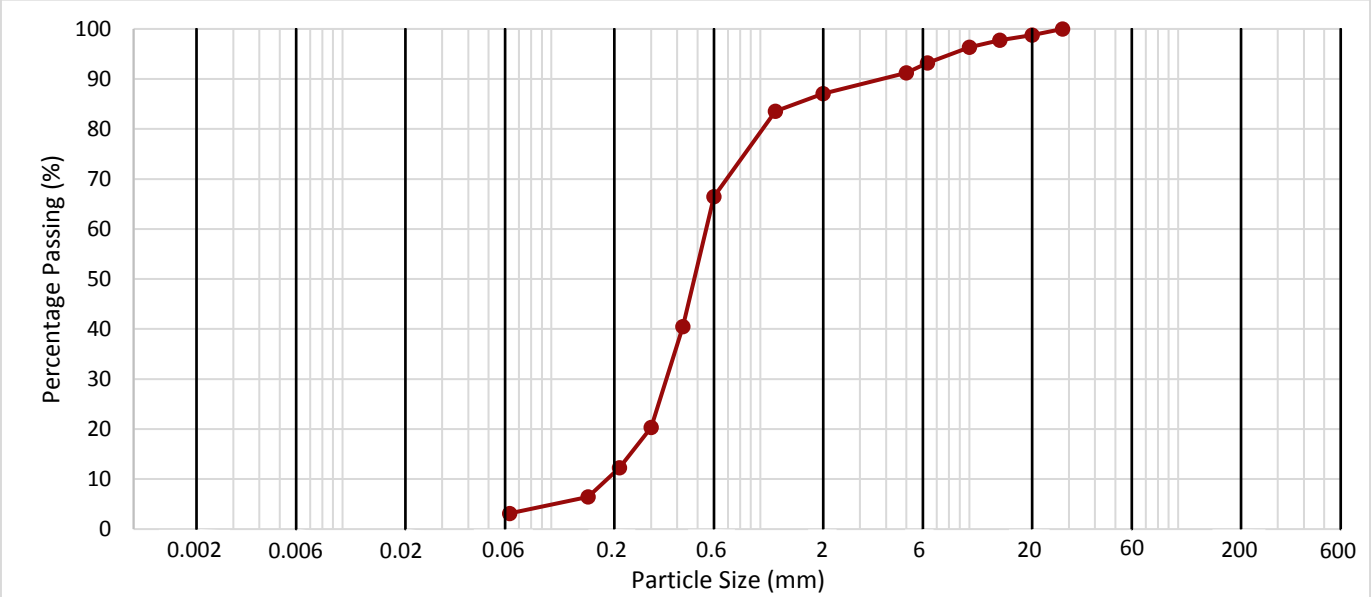
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC07	1.00	B	1	Yellowish brown gravelly slightly silty SAND with rare dark greyish brown slightly clayey pockets. Gravel is black, brown and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	87	84
1.18	84	
0.600	66	
0.425	40	
0.300	20	
0.212	12	
0.150	6	
0.063	3	

Fines By Dry Mass (%)	
<0.063mm	3

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		13
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	98	
10	96	
6.3	93	
5	91	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

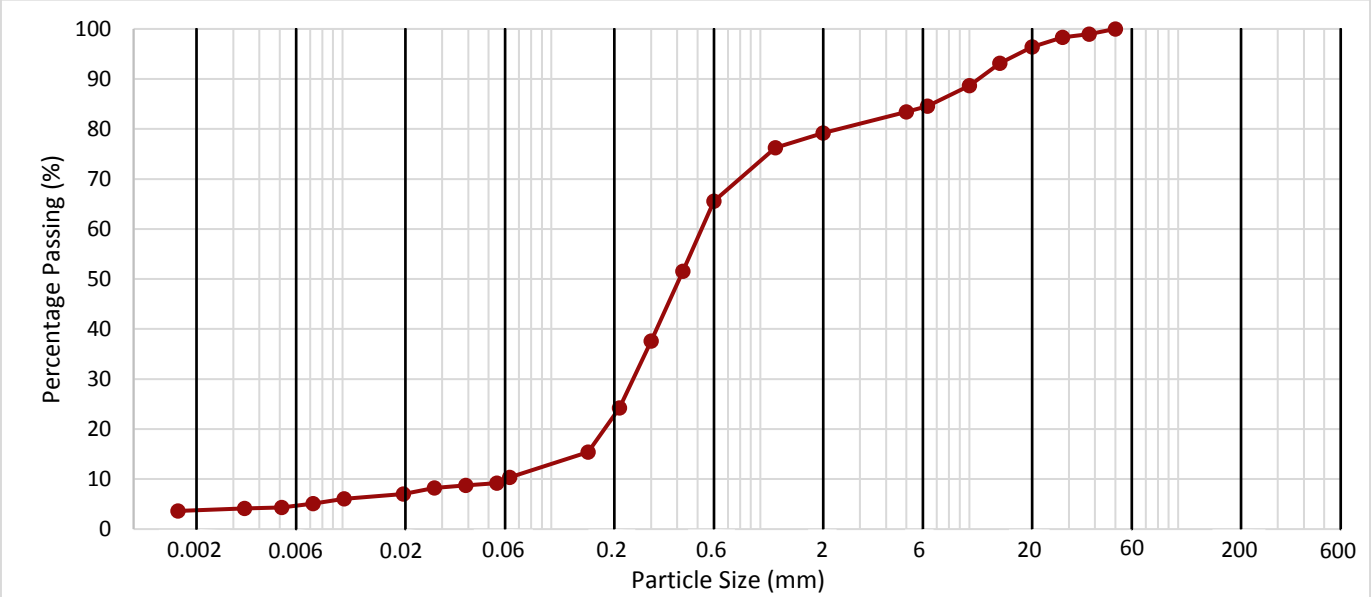
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC08	1.00	B	1	Dark brown very gravelly silty SAND with occasional yellowish brown pockets, firm clayey lumps, and concrete fragments. Gravel is brown, black and white angular to rounded flint, and occasional brown and white subrounded quartzite.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0548	9	6	
	0.0389	9		
	0.0275	8		
	0.0196	7		
	0.0102	6		
	0.0072	5		
	0.0051	4	4	
	0.0034	4		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	79	69
1.18	76	
0.600	66	
0.425	52	
0.300	38	
0.212	24	
0.150	15	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		21
125		
90		
63		
50	100	
37.5	99	
28	98	
20	96	
14	93	
10	89	
6.3	85	
5	83	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

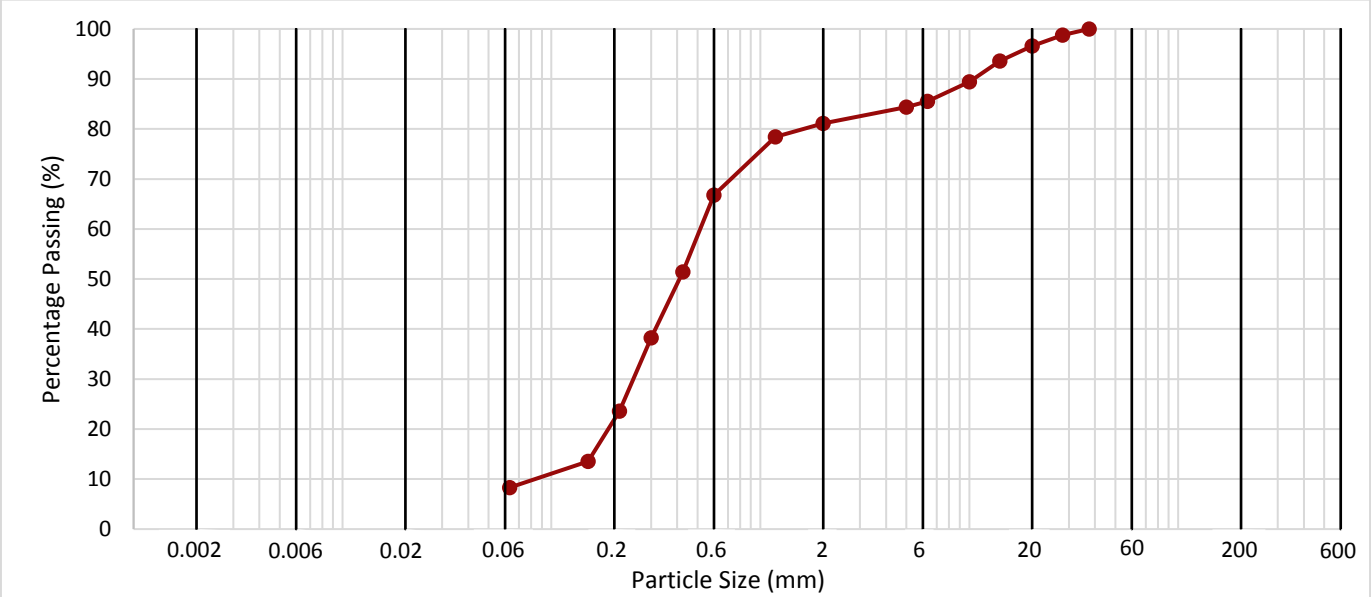
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC08	2.00	B	2	Dark brown gravelly slightly silty SAND with frequent black organic clayey sand pockets. Gravel is black, white and brown angular to rounded flint, and rare white and brown subrounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	81	**73**
1.18	78	
0.600	67	
0.425	51	
0.300	38	
0.212	24	
0.150	14	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	**8**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**19**
125		
90		
63		
50		
37.5	100	
28	99	
20	97	
14	94	
10	89	
6.3	86	
5	84	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

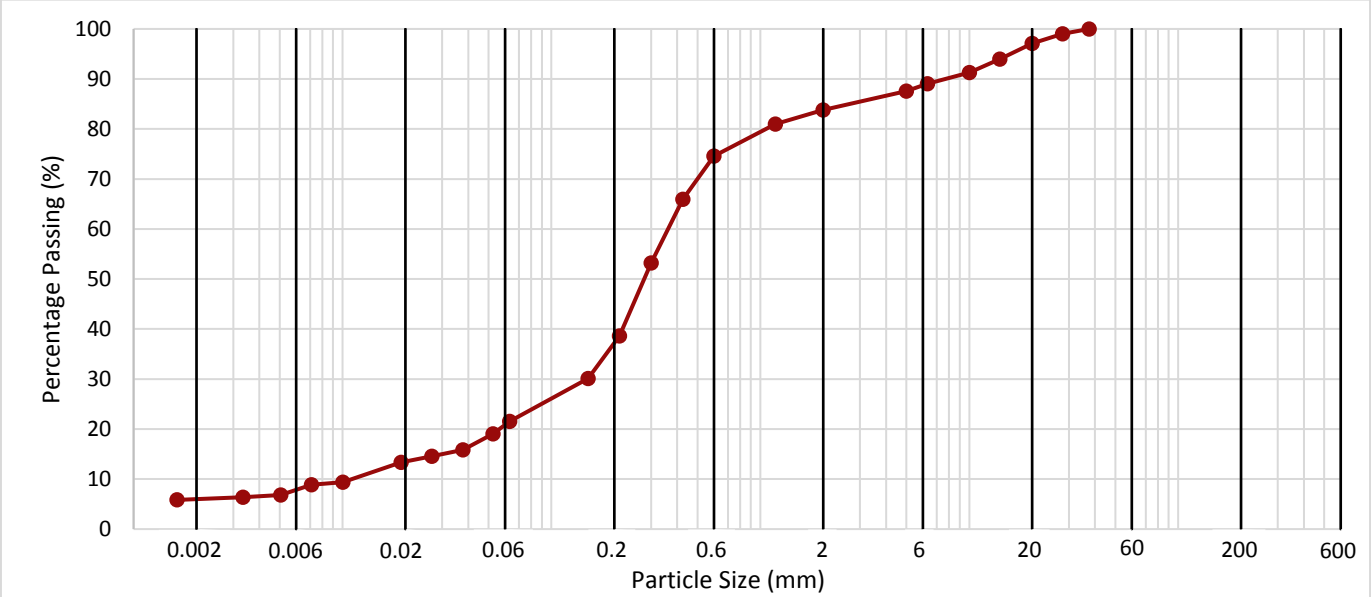
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC10	0.50	B	1	Black gravelly silty clayey SAND with occasional concrete, and rare brick, ceramic and glass fragments. Gravel is brown, black and white angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0525	19	16	
0.0377	16		
0.0268	15		
0.0191	13		6
0.0100	9		
0.0071	9		
0.0051	7		
0.0033	6		
0.0016	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	84	62
1.18	81	
0.600	75	
0.425	66	
0.300	53	
0.212	39	
0.150	30	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		16
125		
90		
63		
50		
37.5	100	
28	99	
20	97	
14	94	
10	91	
6.3	89	
5	88	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

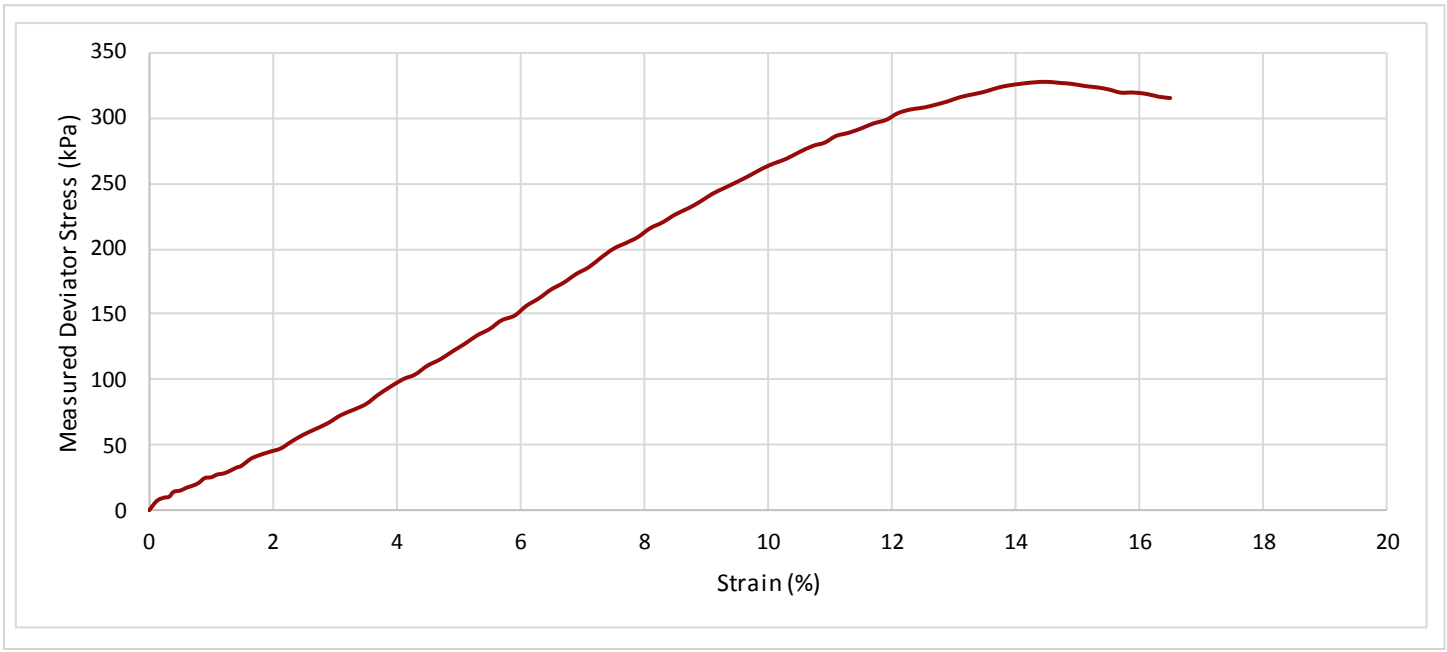
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC04	6.00	UT	1	Yellowish brown silty slightly clayey fine SAND with occasional brownish yellow, orange, and bluish grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 6.14	198.4	103.9	3488	25.2	2.07	1.65

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	119	14.5	0.9	\	326	163		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

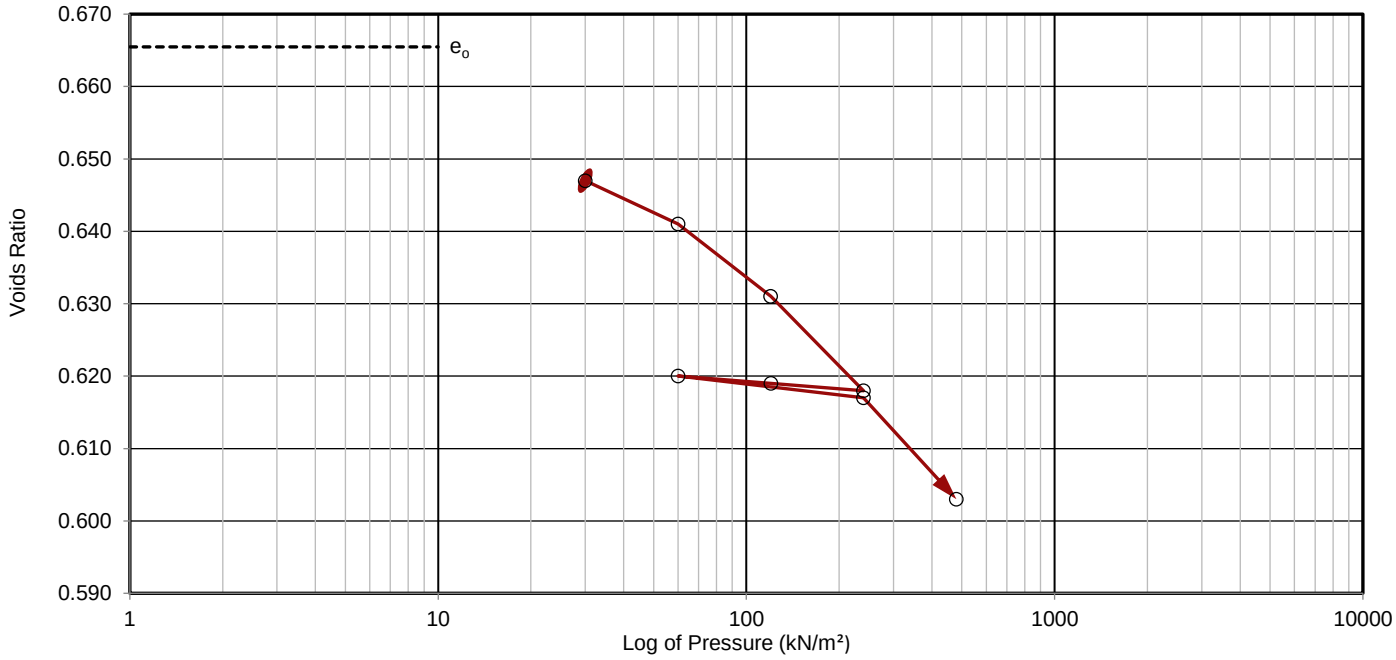
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF THE ONE-DIMESIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC04	6	UT	1	6.10 Horizontal	24.5	Yellowish brown silty slightly clayey fine SAND with occasional brownish yellow, orange, and bluish grey mottling.	

Initial Conditions			
Height	mm	18.77	
Diameter	mm	75.02	
Wet Weight	g	169.23	
Water Content	%	24.5	
Bulk Density	Mg/m³	2.04	
Particle Density		Assumed	2.73
Voids Ratio		0.665	
Degree of Saturation	%	100	
Swelling Pressure	kN/m²	<30	
Dry Density	Mg/m³	1.64	

Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
1	30	0.207	0.647	3.93	0.37	21	3.80
2	60	0.276	0.641	2.27	0.12	21	2.20
3	120	0.388	0.631	1.45	0.10	21	1.40
4	240	0.535	0.618	5.79	0.07	21	5.60
5	120	0.524	0.619		0.01	21	
6	60	0.512	0.620		0.01	21	
7	240	0.543	0.617	64.10	0.01	21	62.00
8	480	0.707	0.603	55.83	0.04	21	54.00



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

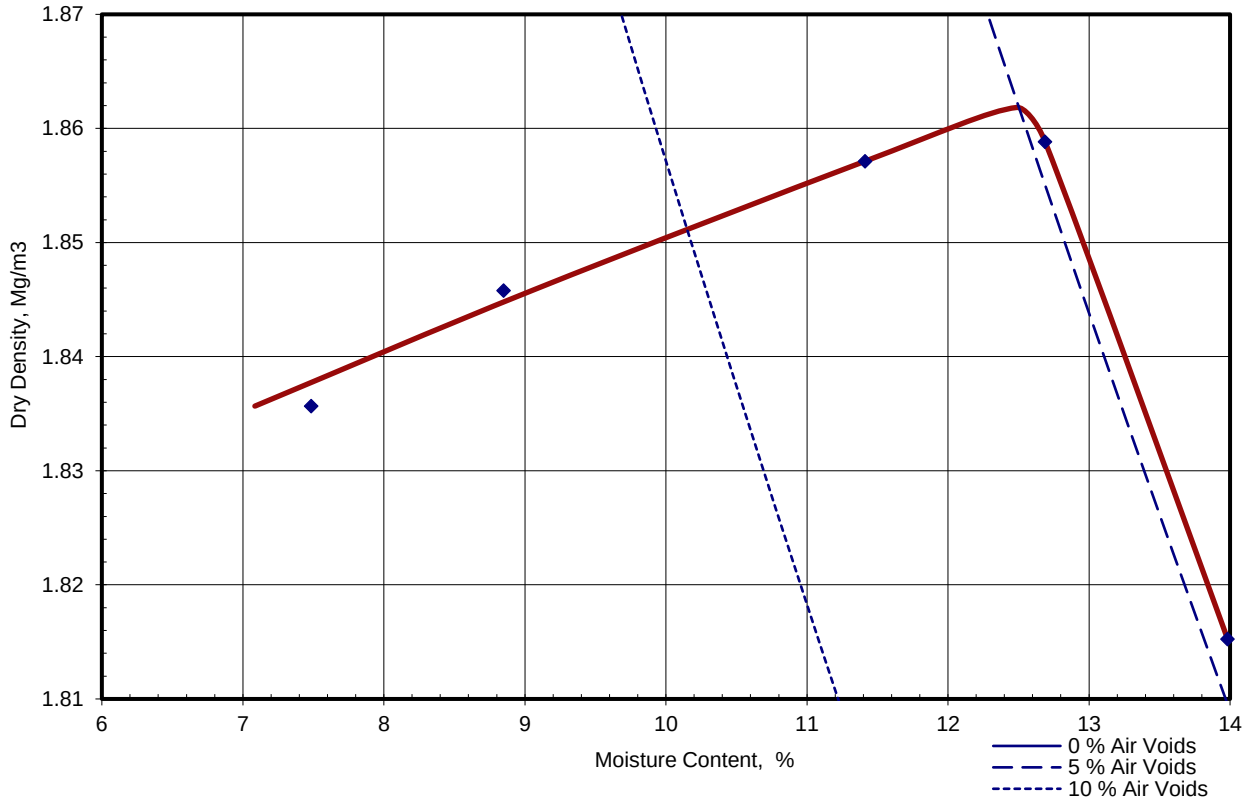
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
TPC07	1	B	1	11.4	Yellowish brown gravelly slightly silty SAND with rare dark greyish brown slightly clayey pockets. Gravel is black, brown and white angular to rounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	1.2 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density (Assumed)	2.60
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.86 Mg/m³**	**Optimum Water Content**	**12 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

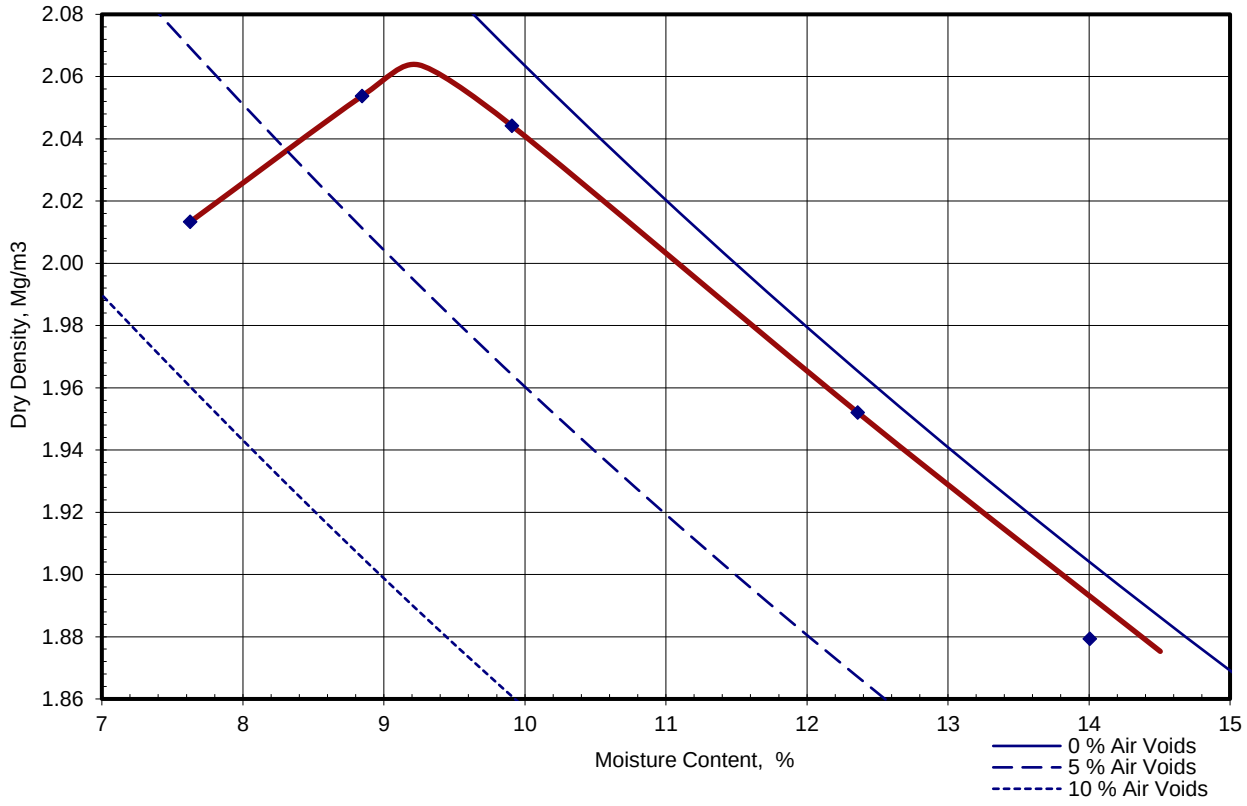
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
TPC08	1	B	1	12.4	Dark brown very gravelly silty SAND with occasional yellowish brown pockets, firm clayey lumps, and concrete fragments. Gravel is brown, black and white angular to rounded flint, and occasional brown and white subrounded quartzite.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	1.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	4.6 %	Single or Separate Samples	Single
Grading Zone	4	Particle Density	2.60
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**2.06 Mg/m³**	**Optimum Water Content**	**9.2 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

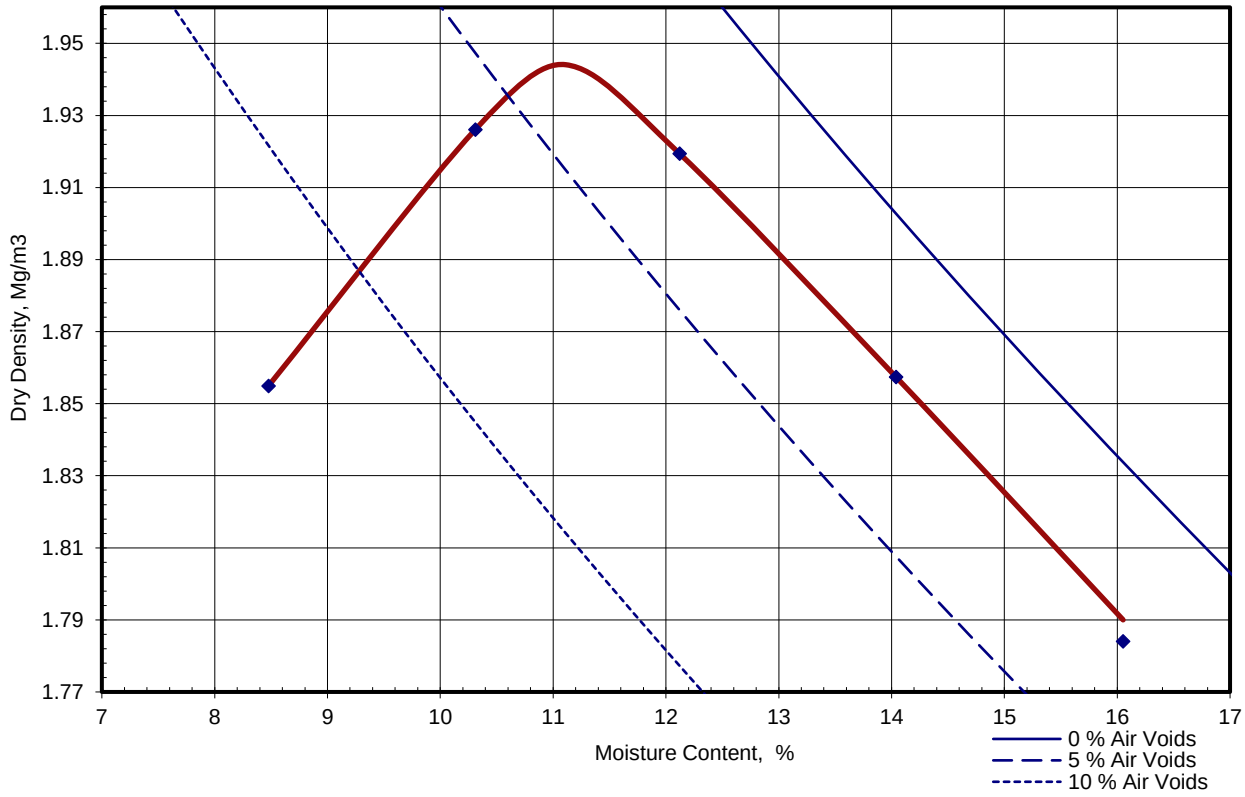
0998

Contract	Lake Lothing, Lowestoft
Serial No.	S31644-4

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
TPC10	0.5	B	1	8.5	Black gravelly silty clayey SAND with occasional concrete, and rare brick, ceramic and glass fragments. Gravel is brown, black and white angular to rounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	2.9 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density (Assumed)	2.60
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.94 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

UKAS TESTING 0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC07	1	B	1	Yellowish brown gravelly slightly silty SAND with rare dark greyish brown slightly clayey pockets. Gravel is black, brown and white angular to rounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of maximum dry density

Material Retained on 20mm Sieve Removed		1.2	%
Intitial Specimen Details:	Bulk Density	1.88	Mg/m³
	Dry Density	1.67	Mg/m³

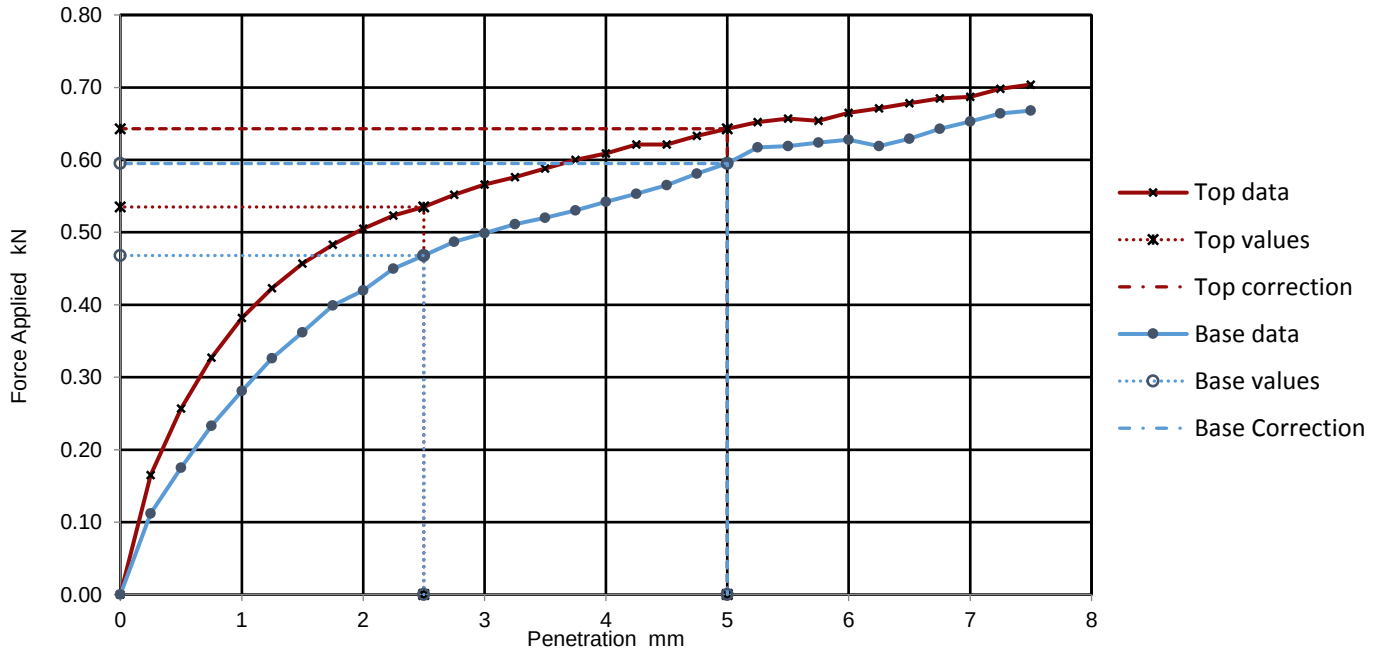
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	17	mins
Amount of Swell Recorded	0.02	mm
Initial Water Content	12.5	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Average*	Water Content (%)
TOP	No	4.1	3.2	4.1	3.8	14.2
BASE	No	3.5	3.0	3.5		14.4

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

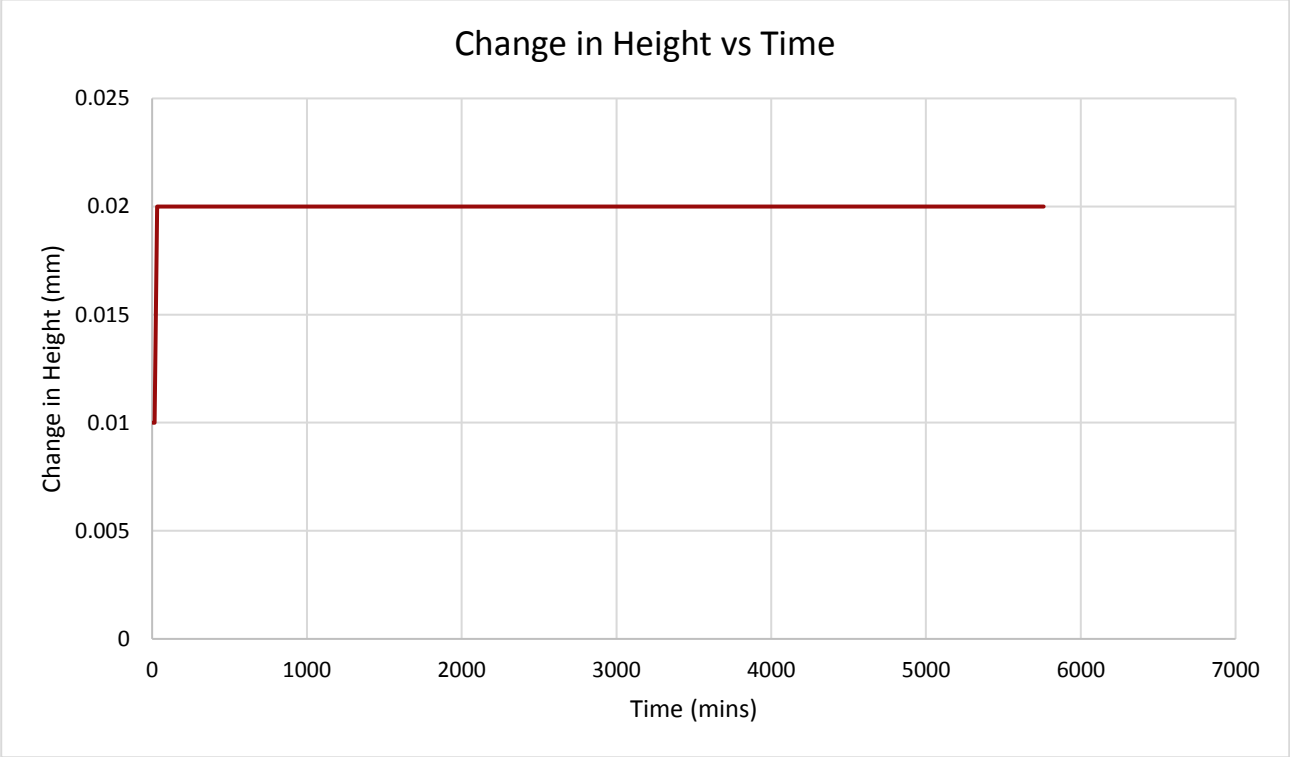
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
TPC07	1	B	1	Yellowish brown gravelly slightly silty SAND with rare dark greyish brown slightly clayey pockets. Gravel is black, brown and white angular to rounded flint.	

After Soaking

Water Contents	Top (%)	14.2	Bulk Density	1.93	Dry Density	1.67
	Bottom (%)	14.4				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**0.020**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC08	1	B	1	Dark brown very gravelly silty SAND with occasional yellowish brown pockets, firm clayey lumps, and concrete fragments. Gravel is brown, black and white angular to rounded flint, and occasional brown and white subrounded quartzite.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of maximum dry density

Material Retained on 20mm Sieve Removed		3.6	%
Intitial Specimen Details:	Bulk Density	2.03	Mg/m³
	Dry Density	1.86	Mg/m³

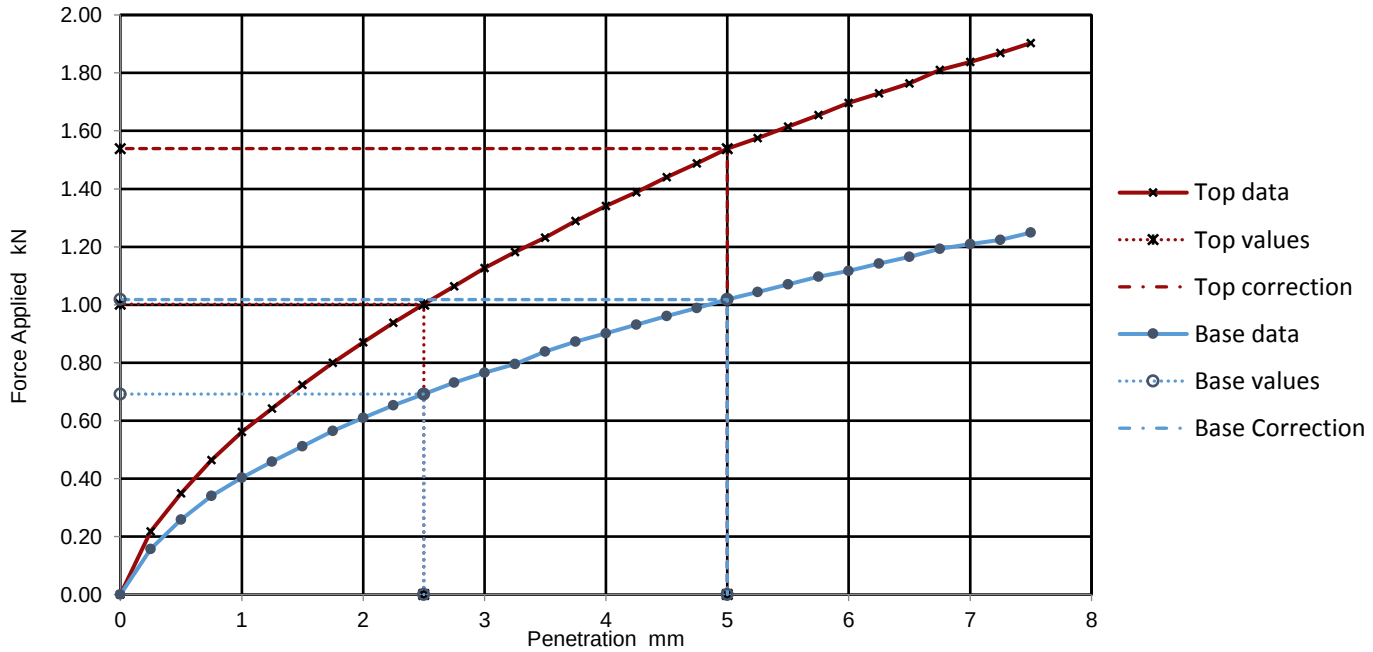
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	10	mins
Amount of Swell Recorded	-0.09	mm
Initial Water Content	9.1	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Average*	Water Content (%)
TOP	No	7.6	7.7	7.7		13.2
BASE	No	5.2	5.1	5.2		12.6

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

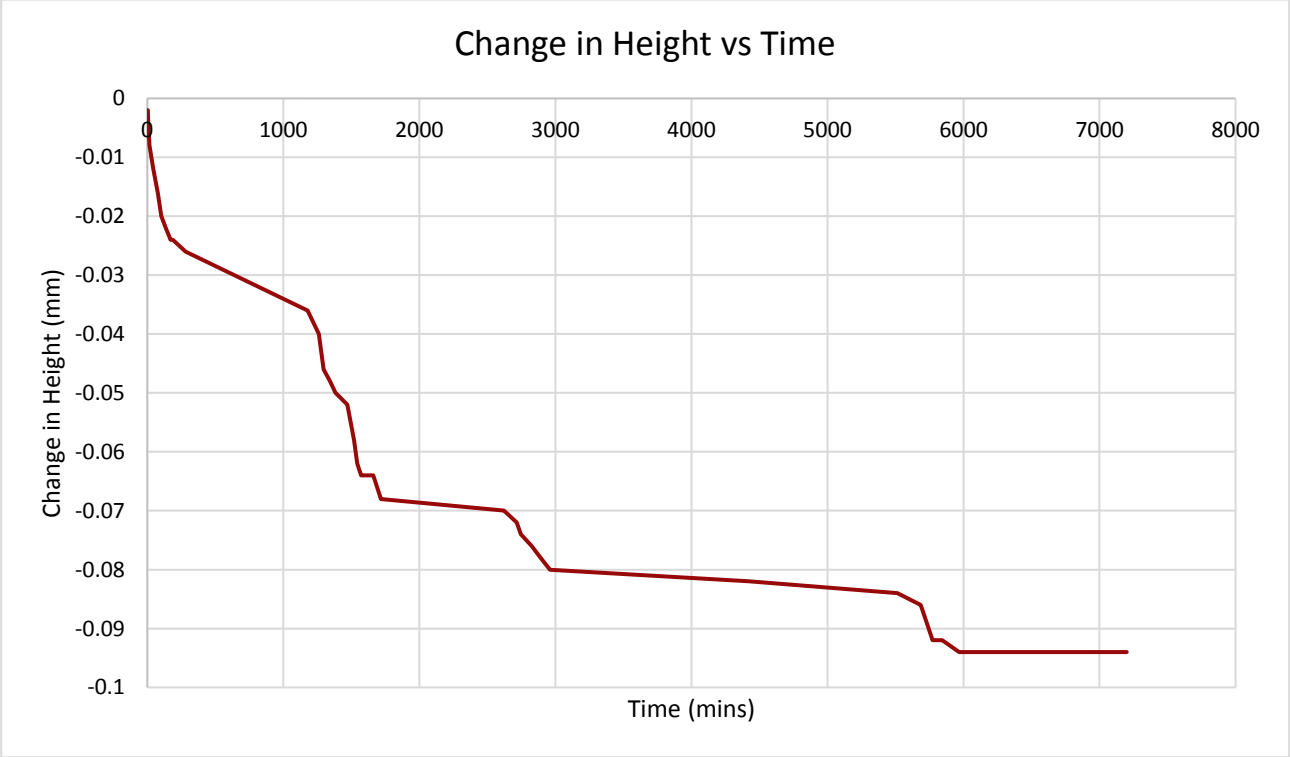
Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
TPC08	1	B	1	Dark brown very gravelly silty SAND with occasional yellowish brown pockets, firm clayey lumps, and concrete fragments. Gravel is brown, black and white angular to rounded flint, and occasional brown and white subrounded quartzite.	

After Soaking

Water Contents	Top	(%)	13.2	Bulk Density	1.93	Dry Density	1.86
	Bottom	(%)	12.6				

Surcharge Weights	(kg)	18

Total Change in Height	**(mm)**	**-0.094**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TPC10	0.5	B	1	Black gravelly silty clayey SAND with occasional concrete, and rare brick, ceramic and glass fragments. Gravel is brown, black and white angular to rounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of maximum dry density

Material Retained on 20mm Sieve Removed		2.9	%
Intitial Specimen Details:	Bulk Density	1.94	Mg/m³
	Dry Density	1.75	Mg/m³

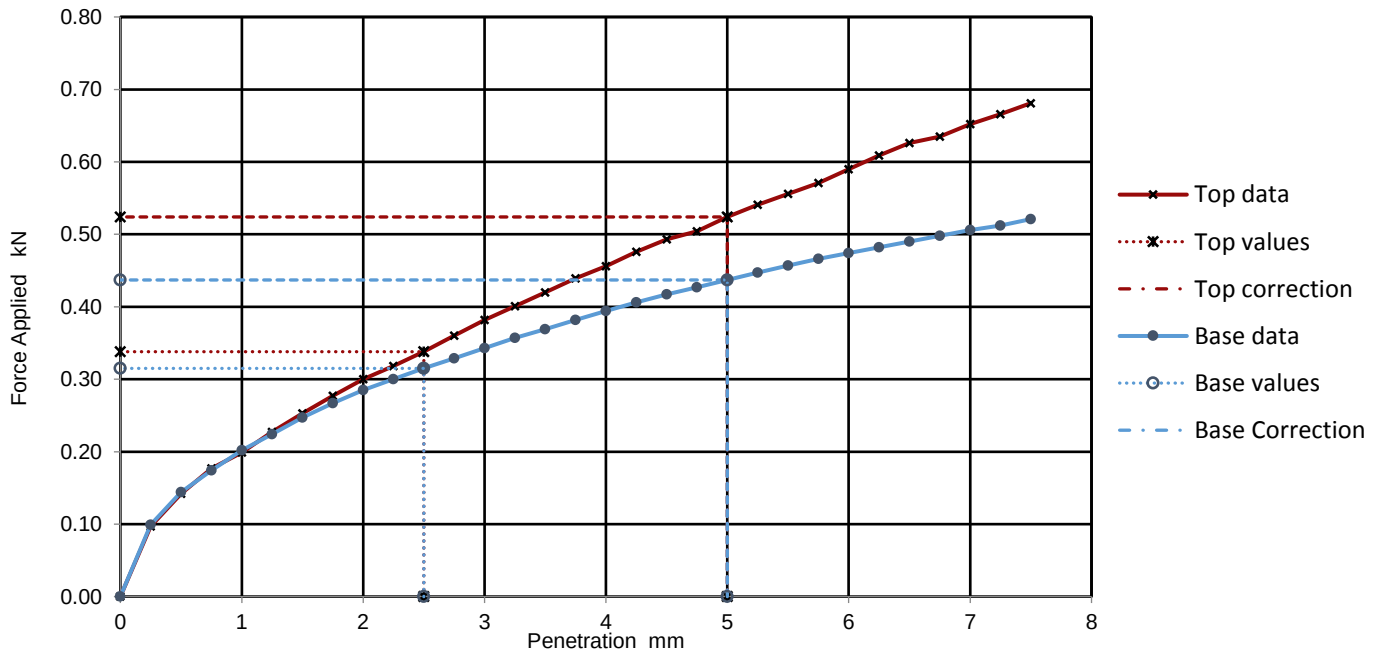
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	134	mins
Amount of Swell Recorded	0.01	mm
Initial Water Content	11.1	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Average*	Water Content (%)
TOP	No	2.6	2.6	2.6	2.5	16.0
BASE	No	2.4	2.2	2.4		15.2

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 01/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-4**

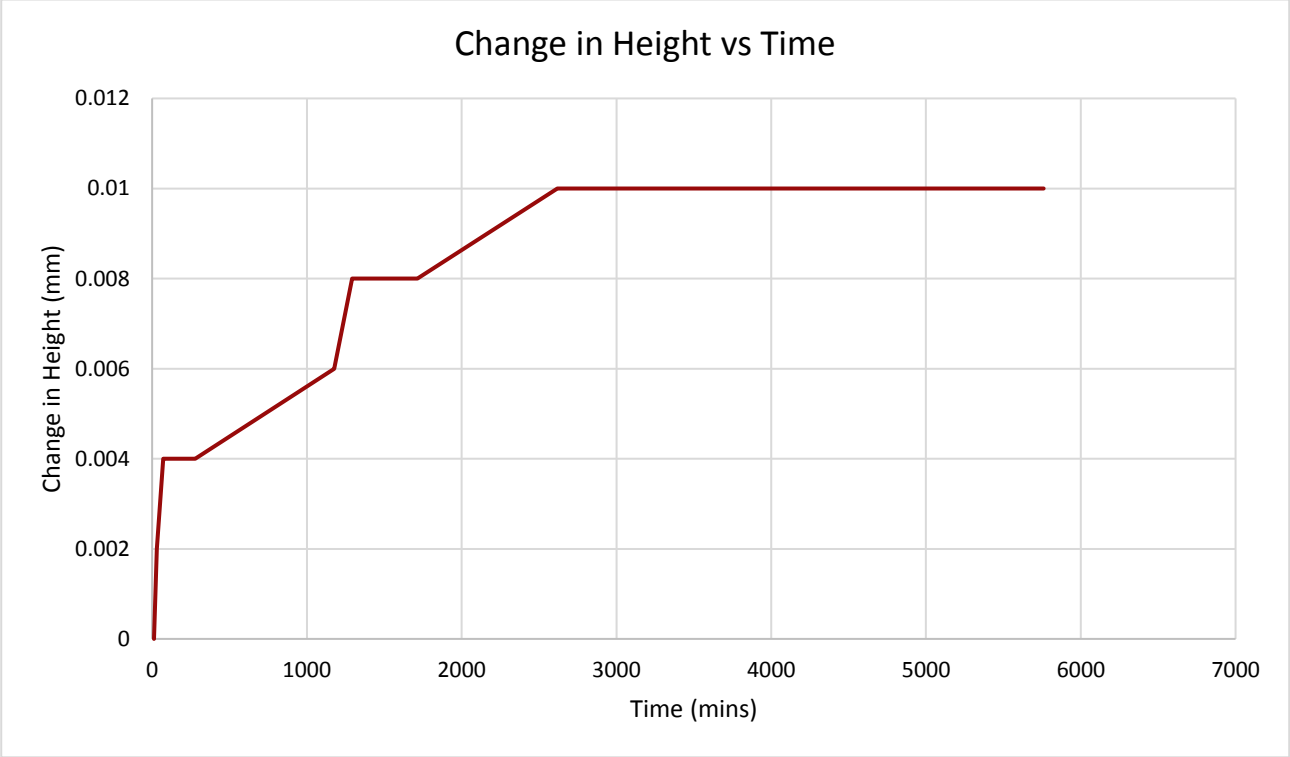
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
TPC10	0.5	B	1	Black gravelly silty clayey SAND with occasional concrete, and rare brick, ceramic and glass fragments. Gravel is brown, black and white angular to rounded flint.	

After Soaking

Water Contents	Top (%)	16.0	Bulk Density	1.93	Dry Density	1.75
	Bottom (%)	15.2				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**0.010**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-04350-1
Initial Date of Issue:	19-Feb-2018
Client	Soil Property Testing
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG
Contact(s):	Jon Garner
Project	S36144-4 Lake Lothing

Quotation No.:	Q17-10468	**Date Received:**	14-Feb-2018
Order No.:	S36144-4	**Date Instructed:**	14-Feb-2018
No. of Samples:	7		
Turnaround (Wkdays):	5	**Results Due:**	20-Feb-2018
Date Approved:	19-Feb-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S36144-4 Lake Lothing

Client: Soil Property Testing				**Chemtest Job No.:**	18-04350	18-04350	18-04350	18-04350	18-04350	18-04350	18-04350
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	579038	579039	579040	579041	579042	579043	579044
Order No.: S36144-4				Client Sample Ref.:	TPC07	TPC07	TPC08	TPC08	TPC10	BHC04	BHC04
				Client Sample ID.:	B1	D1	B1	B2	B1	B2	B11
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.00	1.50	1.00	2.00	0.50	0.60	9.00
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020	0.097	15	0.067	9.4	0.18	8.0	16
pH (2.5:1)	N	2010		N/A	[A] 7.9	[A] 8.3	[A] 8.5		[A] 8.7	[A] 8.0	[A] 7.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.073	0.060	0.043		0.076	0.61	0.040
Total Sulphur	U	2175	%	0.010	[A] 0.024	[A] 0.033	[A] 0.014		[A] 0.033	[A] 0.26	
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.025	[A] 0.032	[A] 0.013		[A] 0.060	[A] 0.28	
Organic Matter BS1377	N	2930	%	0.10				[A] 0.80		[A] 5.6	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
579038	TPC07	B1		A	Plastic Bag
579039	TPC07	D1		A	Plastic Tub 500g
579040	TPC08	B1		A	Plastic Bag
579041	TPC08	B2		A	Plastic Bag
579042	TPC10	B1		A	Plastic Bag
579043	BHC04	B2		A	Plastic Bag
579044	BHC04	B11		A	Plastic Bag

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2620	LOI 440	LOI 440	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

[redacted]

Date Received: 19/02/2018

Samples Tested Between: 19/02/2018 **and** 02/03/2018

Remarks:

For the attention of Mr S Gilchrist
Your Reference No: 2543,GI

Chemical testing subcontracted to Chmetest - results included as Appendix A to this Test Report

Notes:

1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2 (a) UKAS - United Kingdom Accreditation Service
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-5**	**Target Date**	19/02/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD: BS1377	PSD by Wet Sieve+Hydrometer	Hydrometer + Pre-sieve	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage	Loss On Ignition	Consolidation	Consol Extra 24hr Increment	Brownfield Site-Pyrite prese								Sample Remarks
BHC101	B	1	2.50	1		1																
BHC101	B	4	5.00		1																	
BHC101	D	7	8.00	1																		
BHC101	B	8	8.00		1																	
BHC101	B	13	11.00		1																	
BHC101	B	15	12.20	1				1	1													
BHC101	B	22	15.00		1																	
BHC101	D	27	18.00	1																		
BHC101	B	28	18.00				1						1									
BHC101	D	33	21.00	1																		
BHC101	B	34	21.00		1																	
BHC101	UT	36	22.00					1		2												
BHC101	B	38	22.60				1															
BHC101	D	39	23.00	1				1					1									
BHC101	B	40	23.00				1															
BHC101	UT	41	24.00					1		2												
BHC101	D	50	28.00	1																		
BHC101	B	51	28.00				1						1									
BHC101	D	58	32.00	1																		
BHC101	B	59	32.00				1															
BHC101	B	66	37.10		1																	
BHC102	B	1	1.80	1	1																	
BHC102	B	4	3.00		1						1											
BHC102	B	10	6.00		1																	
BHC102	D	14	8.00	1																		
BHC102	B	18	9.00		1																	
BHC102	B	23	12.20	1				1	1				1									
BHC102	B	27	15.00		1																	
BHC102	D	32	18.00	1			1															
BHC102	UT	40	21.80					1		1		1	3									
BHC102	B	42	22.00				1															
BHC102	D	44	23.00	1				1														
BHC102	B	48	24.00				1						1									
BHC102	B	56	28.00				1															
BHC102	UT	57	29.00					1		2												

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-5**	**Target Date**	19/02/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD: BS1377	PSD by Wet Sieve+Hydrometer	Hydrometer + Pre-sieve	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage	Loss On Ignition	Consolidation	Consol Extra 24hr Increment	Brownfield Site-Pyrite preser								Sample Remarks
BHC102	B	59	29.00				1															
BHC102	B	66	32.00		1																	
BHC102	B	72	35.00		1																	
Totals				**13**	**13**	**1**	**10**	**8**	**2**	**7**	**1**	**1**	**3**	**5**								**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC101	2.50 - 3.00	B	1	**23.7**									Black, white and brown angular to rounded flint and brown and white subrounded quartzite GRAVEL in a black sandy organic clay matrix locally oxidised to brown with rare brick and concrete fragments.	
BHC101	8.00 - 8.45	D	7	**22.6**									Light grey and pale brown gravelly fine to coarse SAND. Gravel is brown, black, white and grey fine to coarse angular to rounded flint and quartz.	
BHC101	12.20 - 12.40	B	15	**22.6**	31	13	18	0.53	Wet Sieved	9 (M)	24.8*	24	Very soft brownish grey slightly gravelly sandy silty CLAY with occasional orange staining. Gravel is brown, black and white fine to medium angular to subrounded flint.	CL
BHC101	18.00 - 18.45	D	27	**18.2**									Pale olive and dark bluish grey slightly clayey slightly silty slightly organic fine to medium SAND.	
BHC101	21.00 - 21.45	D	33	**29.7**									Dark bluish grey and brownish yellow silty slightly organic fine to medium SAND.	
BHC101	22.00 - 22.45	UT	36	**29.1**									Firm (Medium strength) mottled grey and dark grey very sandy silty CLAY changing to slightly sandy silty laminated CLAY with rare olive grey mottling. Sand is fine.	CH
BHC101	22.00 - 22.45	UT	36	**26.5**	63	24	39	0.06	From Natural	0 (A)		24	Stiff (High strength) laminated mottled grey and dark grey slightly sandy silty CLAY with occasional dark olive mottling and sandy pockets. Sand is fine to medium.	
BHC101	23.00 - 23.45	D	39	**36.7**	57	24	33	0.38	From Natural	0 (A)		24	Soft dark grey slightly sandy CLAY. Sand is fine.	CH

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC101	24.00 - 24.45	UT	41	**28.3**	42	17	25	0.45	From Natural	0 (A)		24	Stiff (High strength) thickly laminated mottled very dark grey and dark grey slightly sandy silty CLAY with occasional fine sand/silt pockets. Sand is fine.	CI
BHC101	24.00 - 24.45	UT	41	**17.9**									Dark grey very sandy silty CLAY changing to SAND. Sand is fine to medium.	
BHC101	28.00 - 28.45	D	50	**23.1**									Dark bluish grey and pale olive silty slightly clayey slightly organic fine to medium SAND.	
BHC101	32.00 - 32.45	D	58	**22.5**									Dark bluish grey and pale olive silty slightly organic fine to medium SAND.	
BHC102	1.80 - 2.00	B	1	**7.7**									Black, white and brown sandy slightly silty subangular to subrounded flint GRAVEL with rare concrete and brick fragments. Sand is pale brown.	
BHC102	8.00 - 8.45	D	14	**18.0**									Yellow fine to coarse SAND.	
BHC102	12.20 - 12.60	B	23	**16.9**	27	13	14	0.28	Wet Sieved	38 (M)	27.2*	24	Very soft pale brown slightly gravelly sandy silty CLAY with occasional yellowish brown mottling and frequent loose fine to coarse sand. Gravel is brown, black and white fine to coarse angular to rounded flint and quartz.	CL
BHC102	18.00 - 18.45	D	32	**27.2**									Dark olive grey silty clayey organic SAND.	

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC102	21.80 - 22.25	UT	40	**29.8**	51	22	29	0.27	From Natural	0 (A)		24	Stiff (High strength) slightly fissured dark grey CLAY with occasional silt and fine sand pockets.	CH
BHC102	23.00 - 23.45	D	44	**33.0**	65	27	38	0.16	From Natural	0 (A)		24	Firm dark grey slightly sandy CLAY. Sand is fine.	CH
BHC102	29.00 - 29.45	UT	57	**30.7**	50	17	33	0.42	From Natural	0 (A)		24	Grey SAND changing to stiff laminated mottled grey and dark grey sandy silty CLAY with rare shell fragments.	CI/CH
BHC102	29.00 - 29.45	UT	57	**21.5**									Grey silty clayey SAND with occasional olive grey mottling and shell fragments and areas of laminated sandy silty clay. Sand is fine to medium.	

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS1377:Part 2:1990:3.2, 4.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

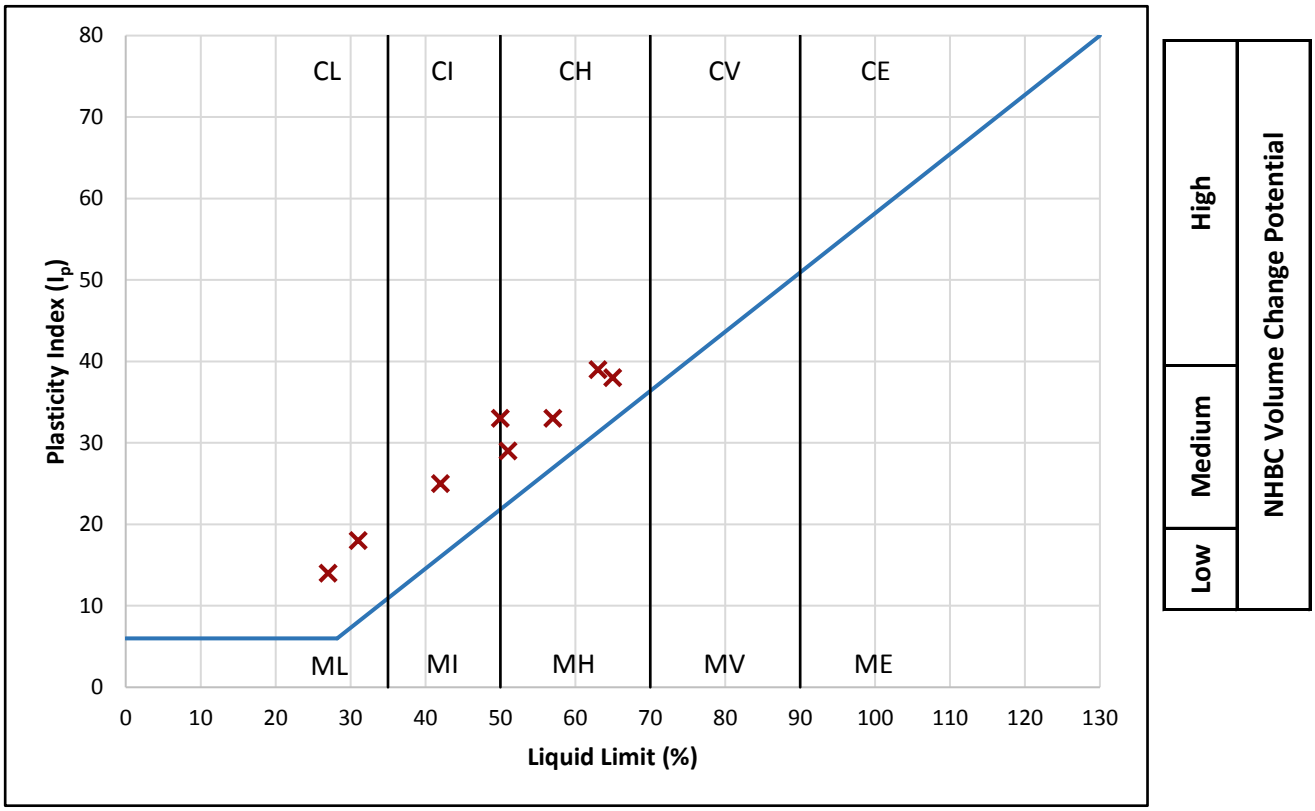
DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

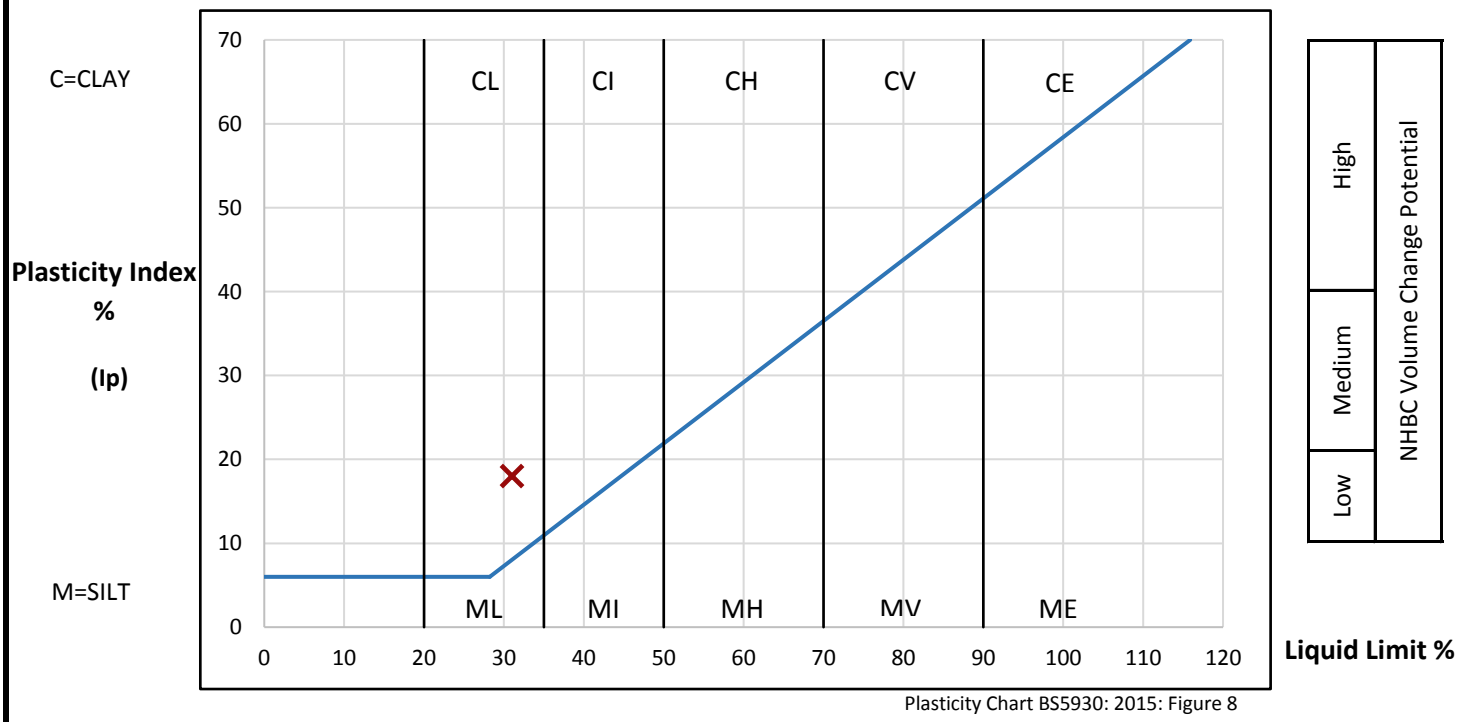
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC101	12.20 - 12.40	B	15	22.6	Very soft brownish grey slightly gravelly sandy silty CLAY with occasional orange staining. Gravel is brown, black and white fine to medium angular to subrounded flint.	

PREPARATION				Liquid Limit	31 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	13 %
Sample retained 0.425mm sieve	(Measured)	9 %		Plasticity Index	18 %
Corrected water content for material passing 0.425mm		24.8 %		Liquidity Index	0.53
Sample retained 2mm sieve	(Measured)	7 %		NHBC Modified (I'p)	16 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

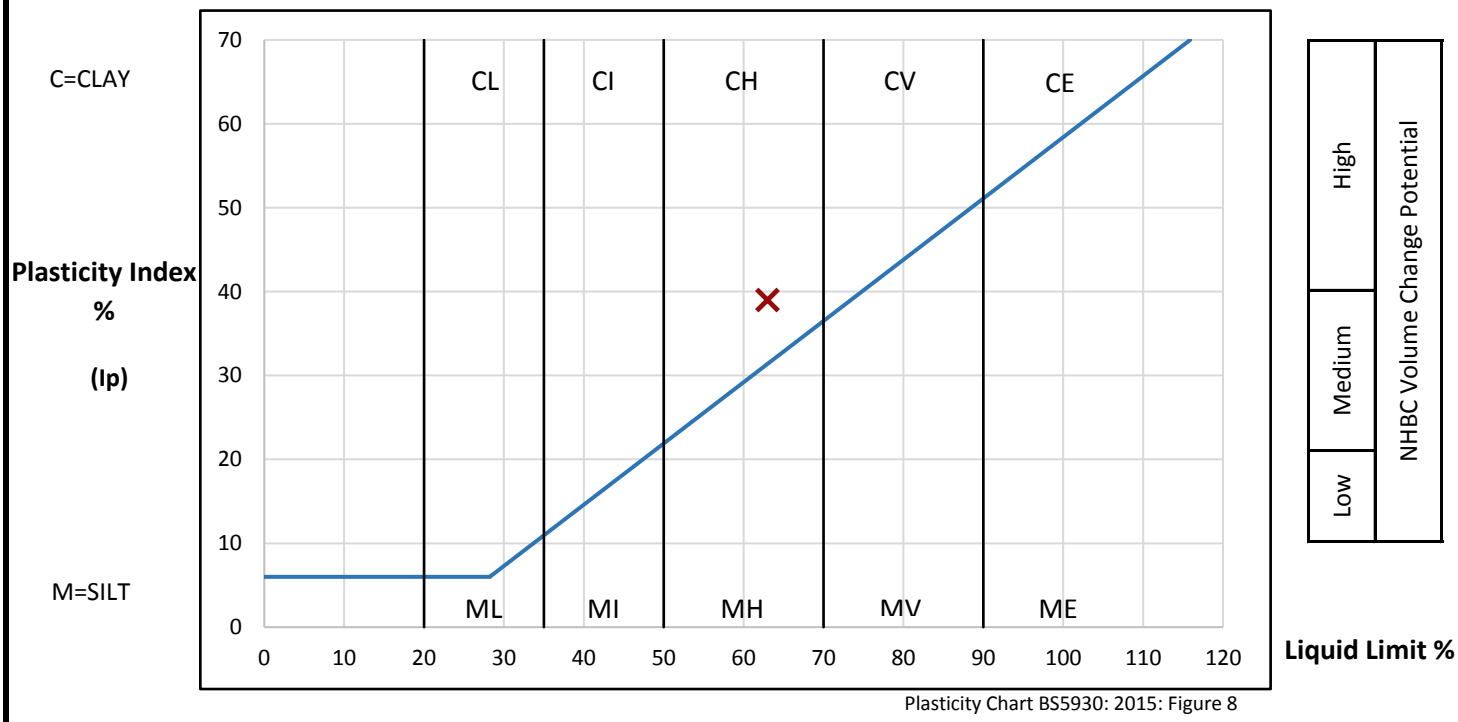
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC101	22.00 - 22.45	UT	36	26.5	Stiff (High strength) laminated mottled grey and dark grey slightly sandy silty CLAY with occasional dark olive mottling and sandy pockets. Sand is fine to medium.	Specimen taken from 22.25m depth.

PREPARATION				Liquid Limit	63 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	39 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.06
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

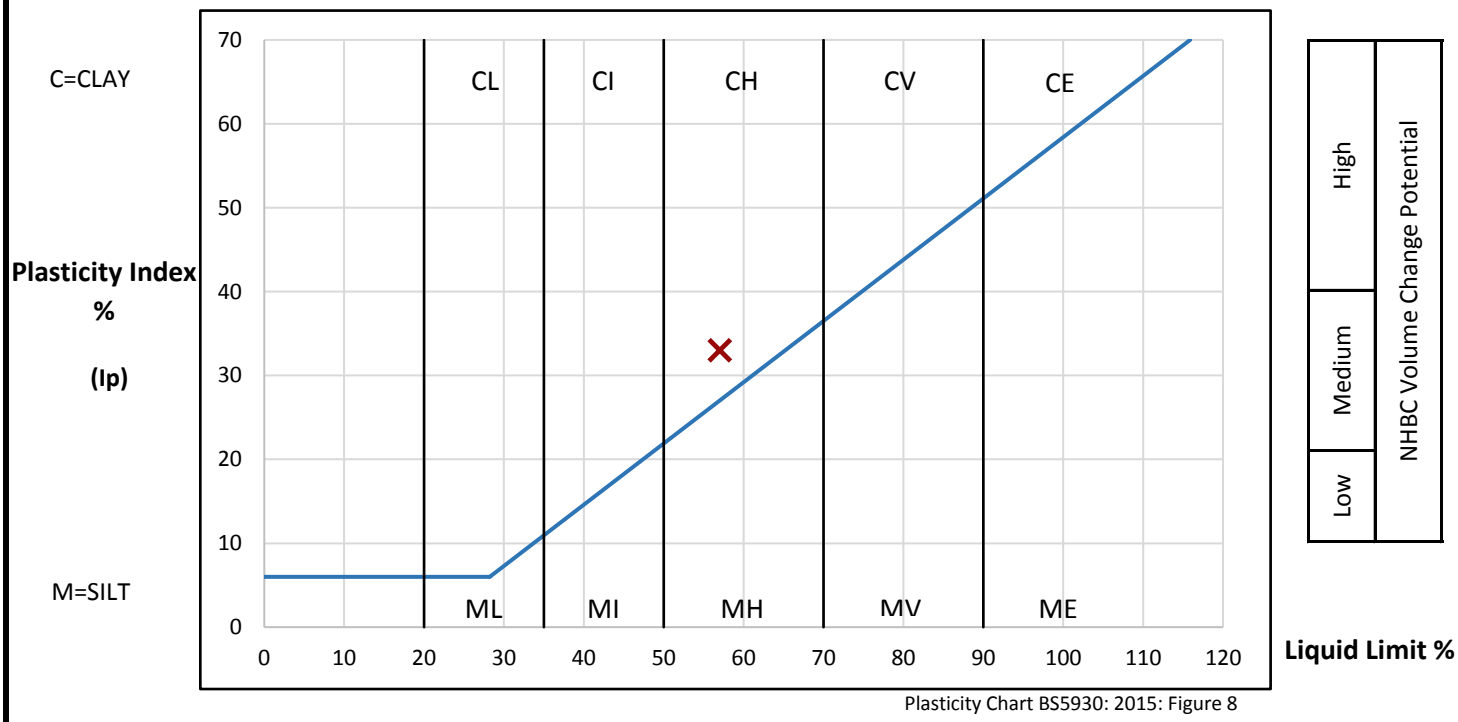
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC101	23.00 - 23.45	D	39	36.7	Soft dark grey slightly sandy CLAY. Sand is fine.	

PREPARATION				Liquid Limit	57 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	33 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.38
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

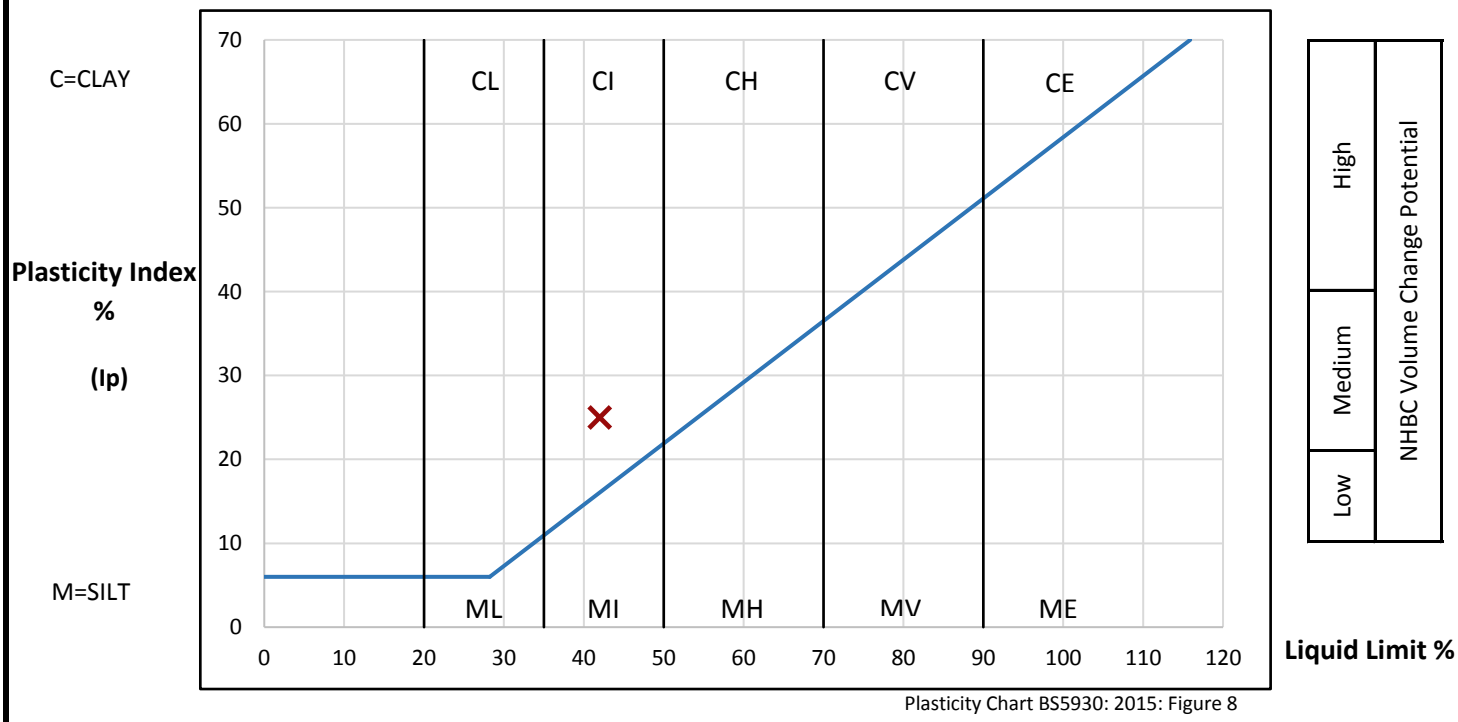
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC101	24.00 - 24.45	UT	41	28.3	Stiff (High strength) laminated mottled grey and dark grey slightly sandy silty CLAY with occasional dark olive mottling and sandy pockets. Sand is fine to medium.	Specimen taken from 24.14m depth.

PREPARATION				Liquid Limit	42 %
Method of preparation		From natural		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	25 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.45
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

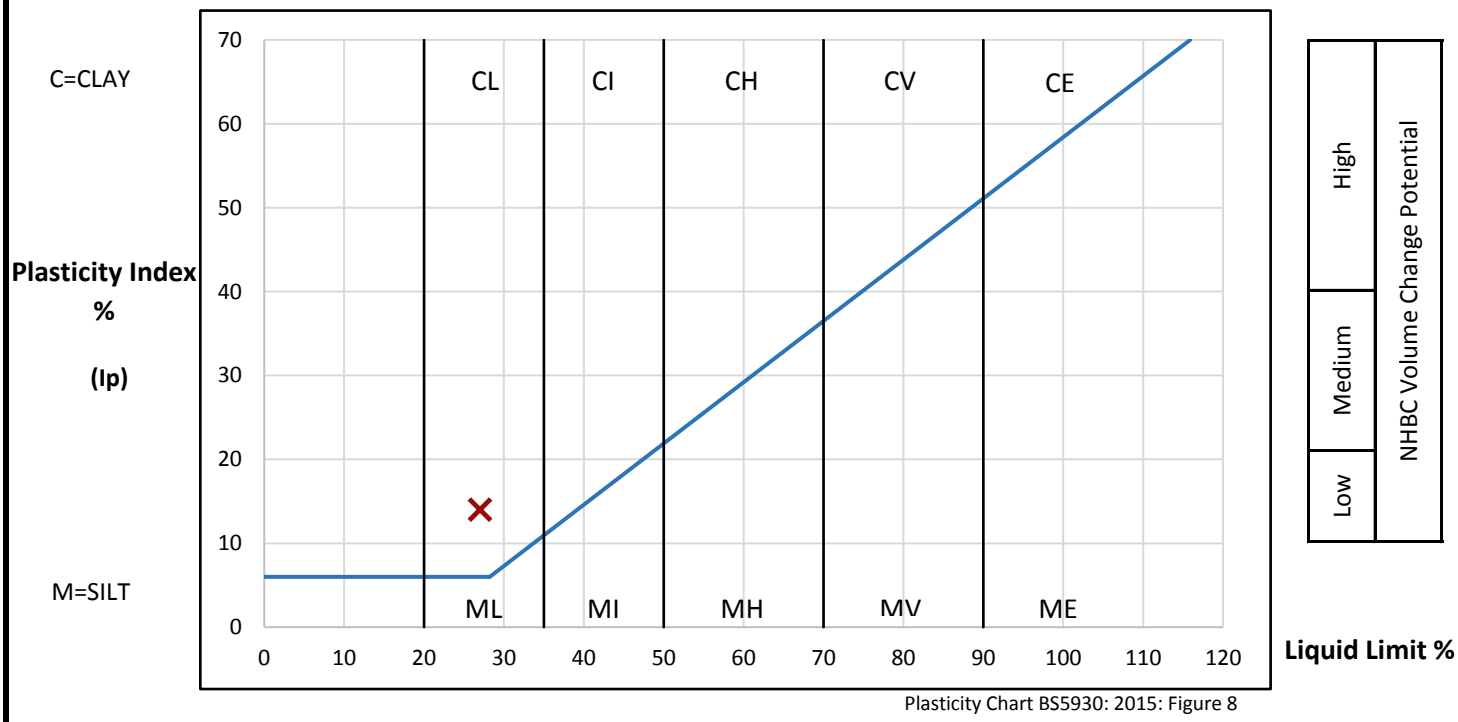
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC102	12.20 - 12.60	B	23	16.9	Very soft pale brown slightly gravelly sandy silty CLAY with occasional yellowish brown mottling and frequent loose fine to coarse sand. Gravel is brown, black and white fine to coarse angular to rounded flint and quartz.	

PREPARATION		Liquid Limit	27 %
Method of preparation	Wet sieved over 0.425mm sieve	Plastic Limit	13 %
Sample retained 0.425mm sieve (Measured)	38 %	Plasticity Index	14 %
Corrected water content for material passing 0.425mm	27.2 %	Liquidity Index	0.28
Sample retained 2mm sieve (Measured)	23 %	NHBC Modified (I'p)	9 %
Curing time 24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

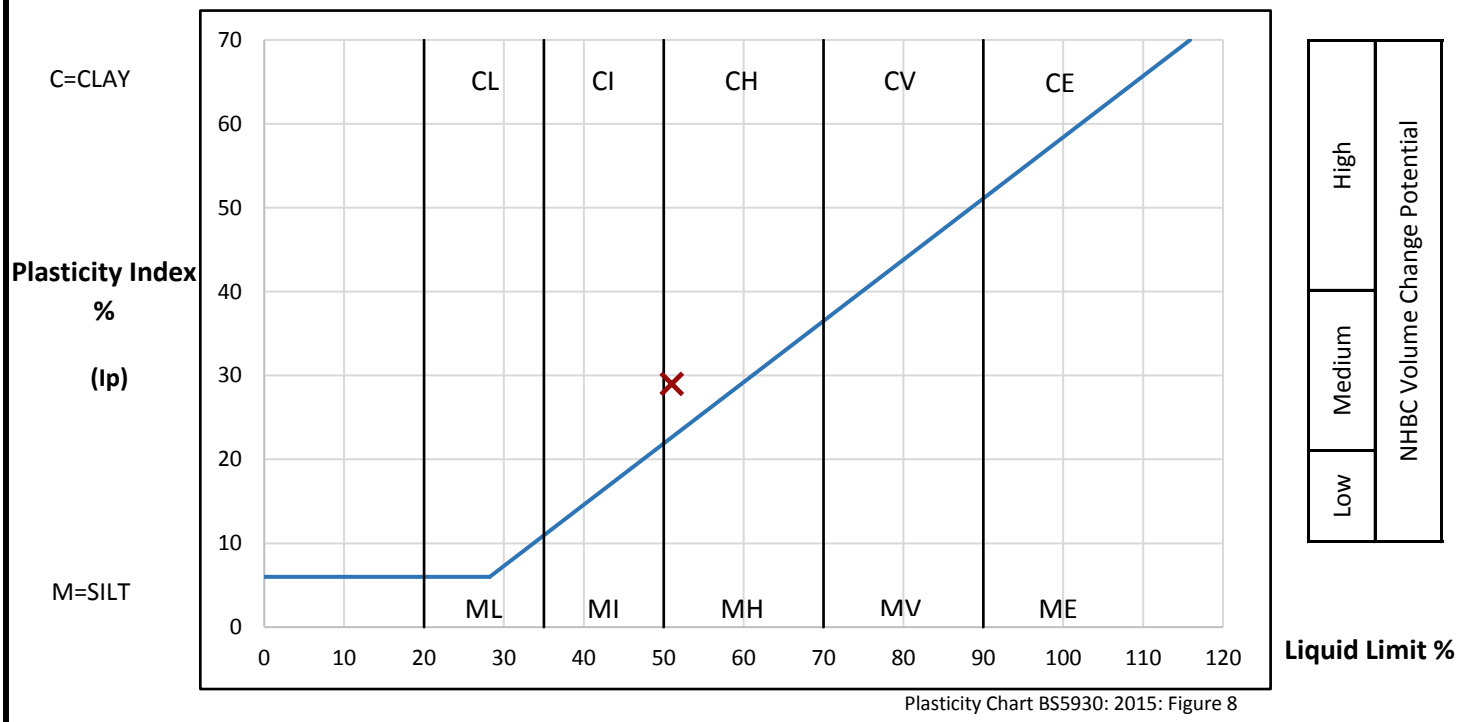
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC102	21.80 - 22.25	UT	40	29.8	Stiff (High strength) slightly fissured dark grey CLAY with occasional silt and fine sand pockets.	

PREPARATION				Liquid Limit	51 %
Method of preparation		From natural		Plastic Limit	22 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	29 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.27
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

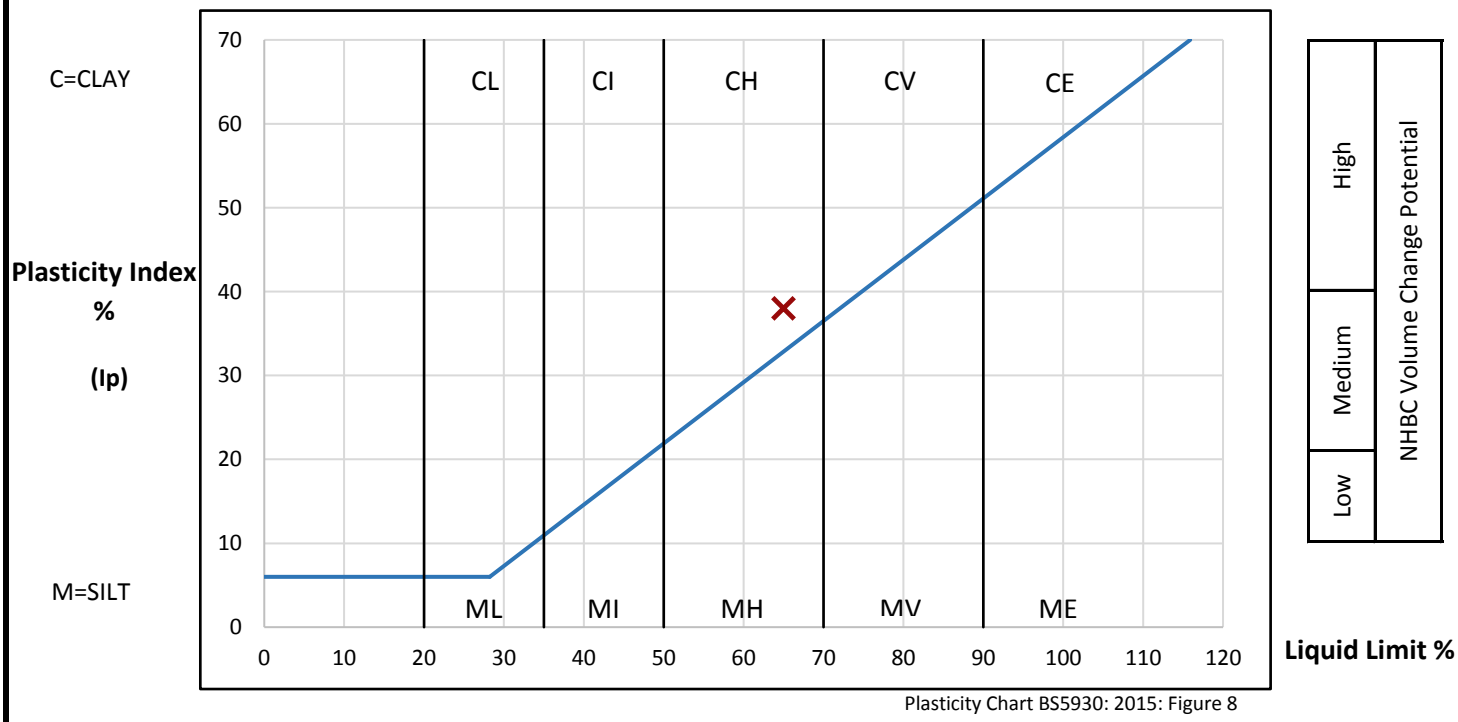
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC102	23.00 - 23.45	D	44	33.0	Firm dark grey slightly sandy CLAY. Sand is fine.	

PREPARATION				Liquid Limit	65 %
Method of preparation		From natural		Plastic Limit	27 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	38 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.16
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

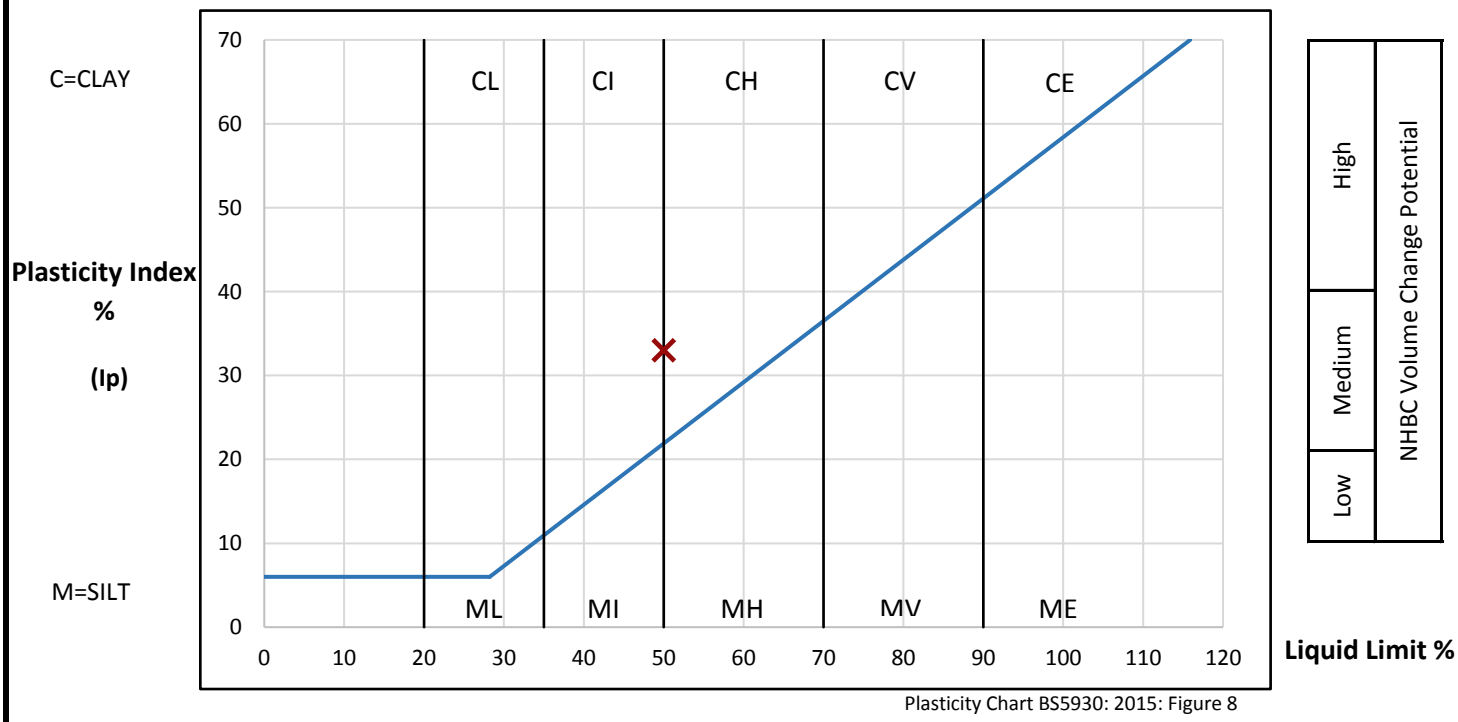
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC102	29.00 - 29.45	UT	57	30.7	Grey SAND changing to stiff laminated mottled grey and dark grey sandy silty CLAY with rare shell fragments.	Specimen taken from clay at portion at 29.20m.

PREPARATION				Liquid Limit	50 %
Method of preparation		From natural		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	33 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.42
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1337: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

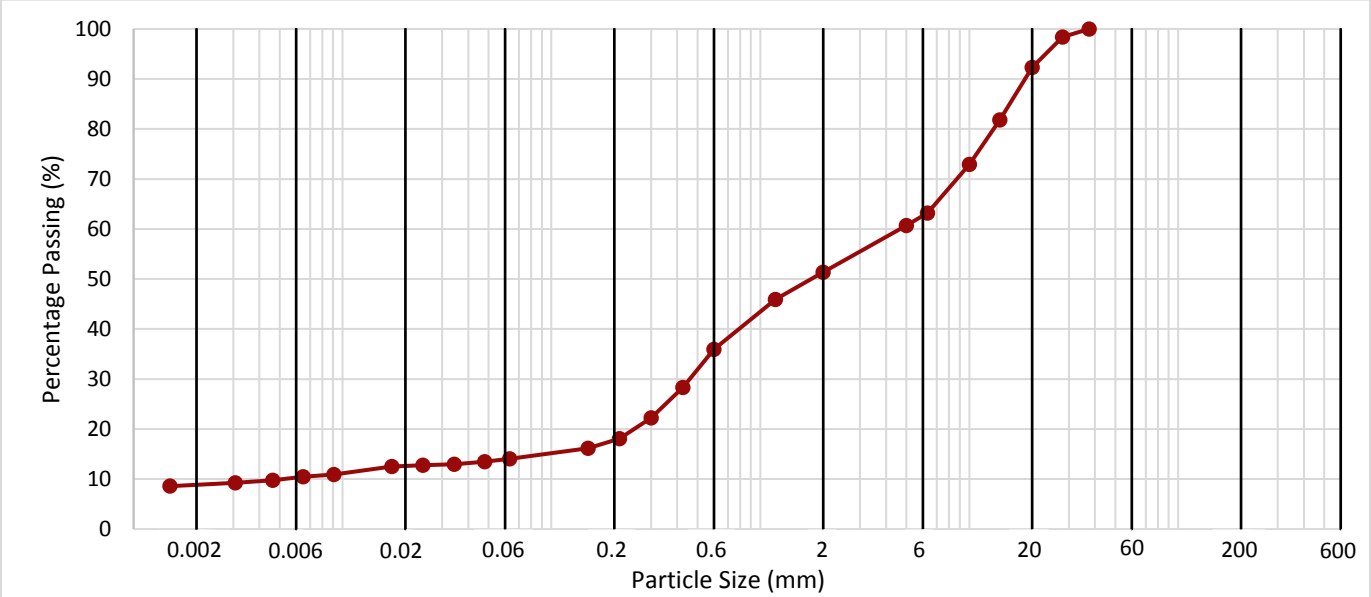
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	2.50 - 3.00	B	1	Black, white and brown angular to rounded flint and brown and white subrounded quartzite GRAVEL in a black sandy organic clay matrix locally oxidised to brown with rare brick and concrete fragments.	Hydrocarbon odour.

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0480	13	5	
	0.0342	13		
	0.0243	13		
	0.0172	13		9
	0.0091	11		
	0.0065	10		
	0.0046	10		
	0.0031	9		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	51	37
1.18	46	
0.600	36	
0.425	28	
0.300	22	
0.212	18	
0.150	16	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		49
125		
90		
63		
50		
37.5	100	
28	98	
20	92	
14	82	
10	73	
6.3	63	
5	61	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

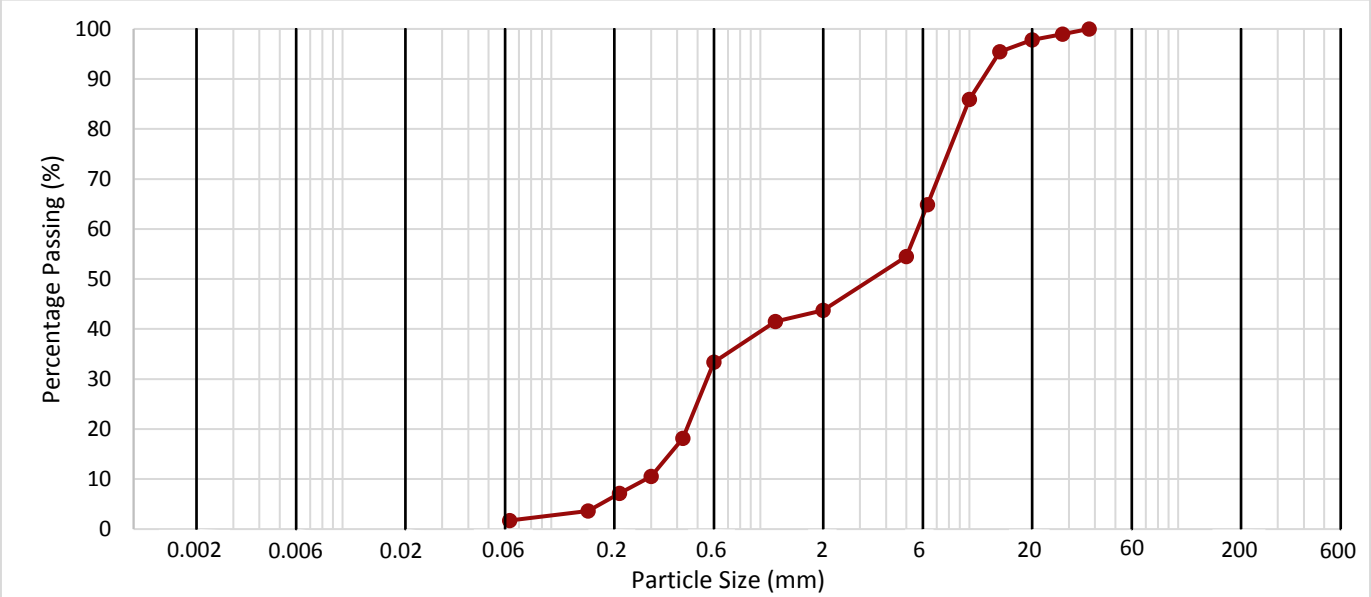
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	5.00 - 5.50	B	4	Dark yellowish brown SAND and black, white and brown subangular to subrounded flint GRAVEL with occasional white and yellowish brown subrounded to rounded quartzite.	Slight hydrocarbon odour.

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	44	42
1.18	41	
0.600	33	
0.425	18	
0.300	11	
0.212	7	
0.150	4	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		56
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	95	
10	86	
6.3	65	
5	54	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

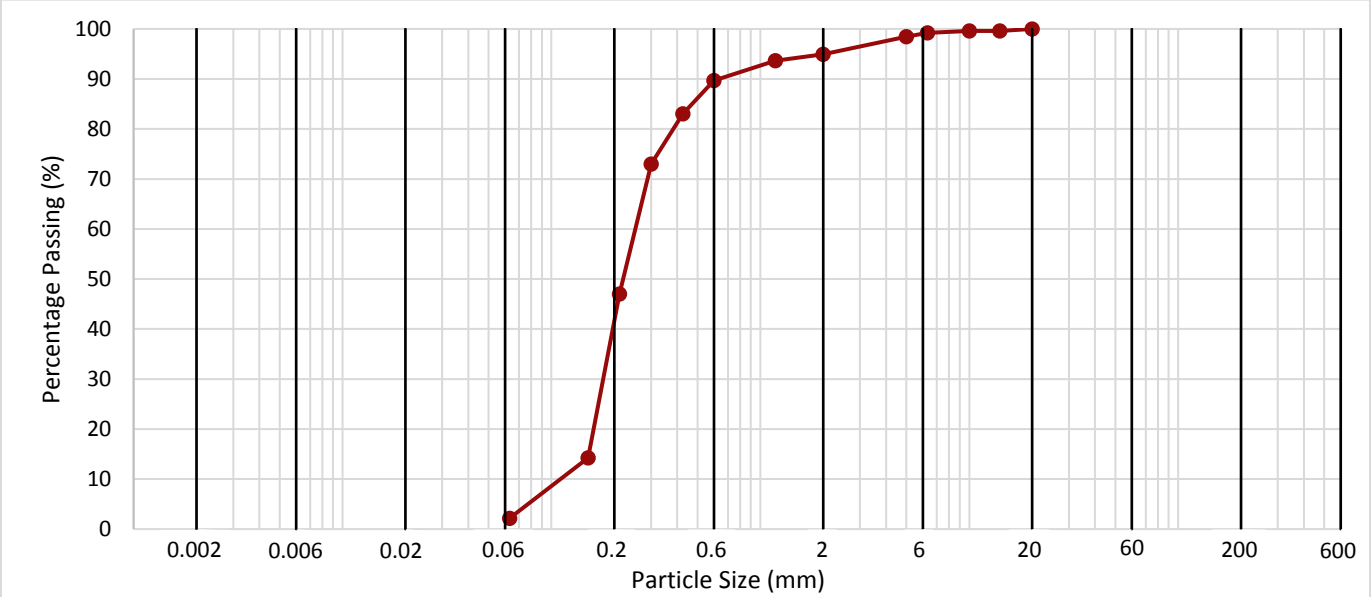
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	8.00 - 8.50	B	8	Pale olive brown gravelly slightly silty SAND. Gravel is black, white and brown flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	95	93
1.18	94	
0.600	90	
0.425	83	
0.300	73	
0.212	47	
0.150	14	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		5
125		
90		
63		
50		
37.5		
28		
20	100	
14	100	
10	100	
6.3	99	
5	98	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

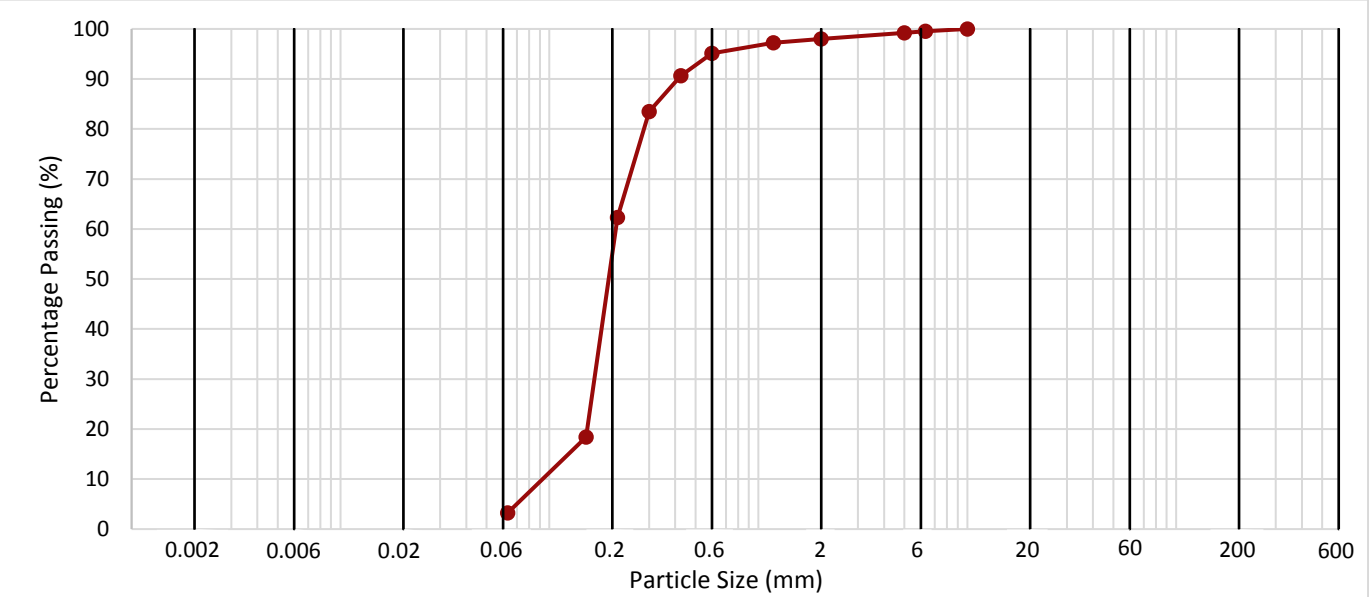
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	11.00 - 11.50	B	13	Olive brown slightly gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	95
1.18	97	
0.600	95	
0.425	91	
0.300	83	
0.212	62	
0.150	18	
0.063	3	

Fines By Dry Mass (%)	
<0.063mm	3

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

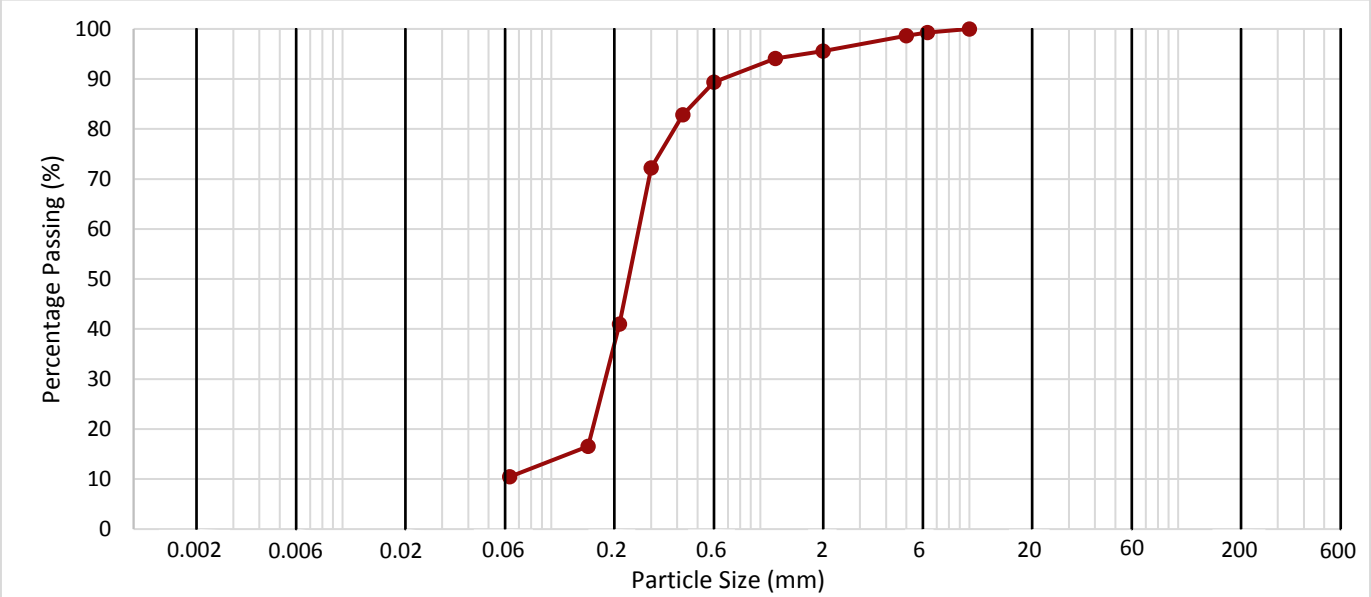
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	15.00 - 15.50	B	22	Yellowish brown slightly gravelly slightly silty clayey SAND. Gravel is dark grey, brown and grey subangular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	86
1.18	94	
0.600	89	
0.425	83	
0.300	72	
0.212	41	
0.150	17	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

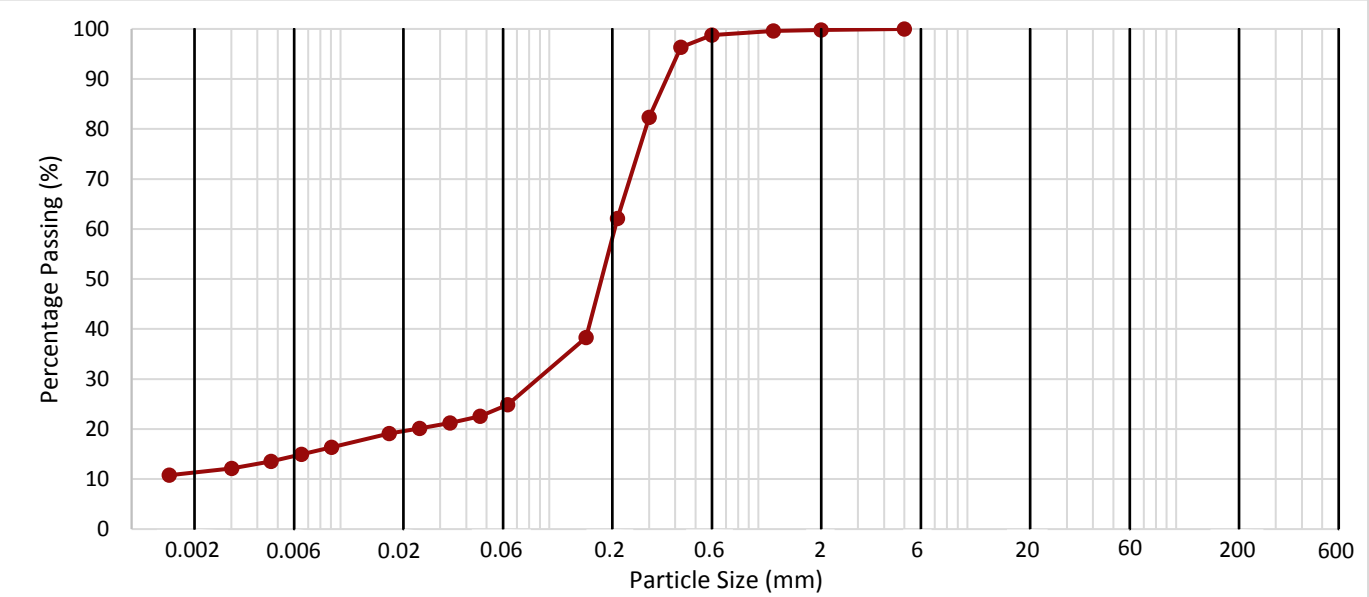
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	18.00 - 18.50	B	28	Dark grey silty clayey organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0466	23	**14**
	0.0334	21	
	0.0239	20	
	0.0171	19	**Clay by Dry Mass (%)**
	0.0091	16	
	0.0065	15	
	0.0046	14	**11**
	0.0030	12	
	0.0015	11	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	**75**
1.18	100	
0.600	99	
0.425	96	
0.300	82	
0.212	62	
0.150	38	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	**25**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

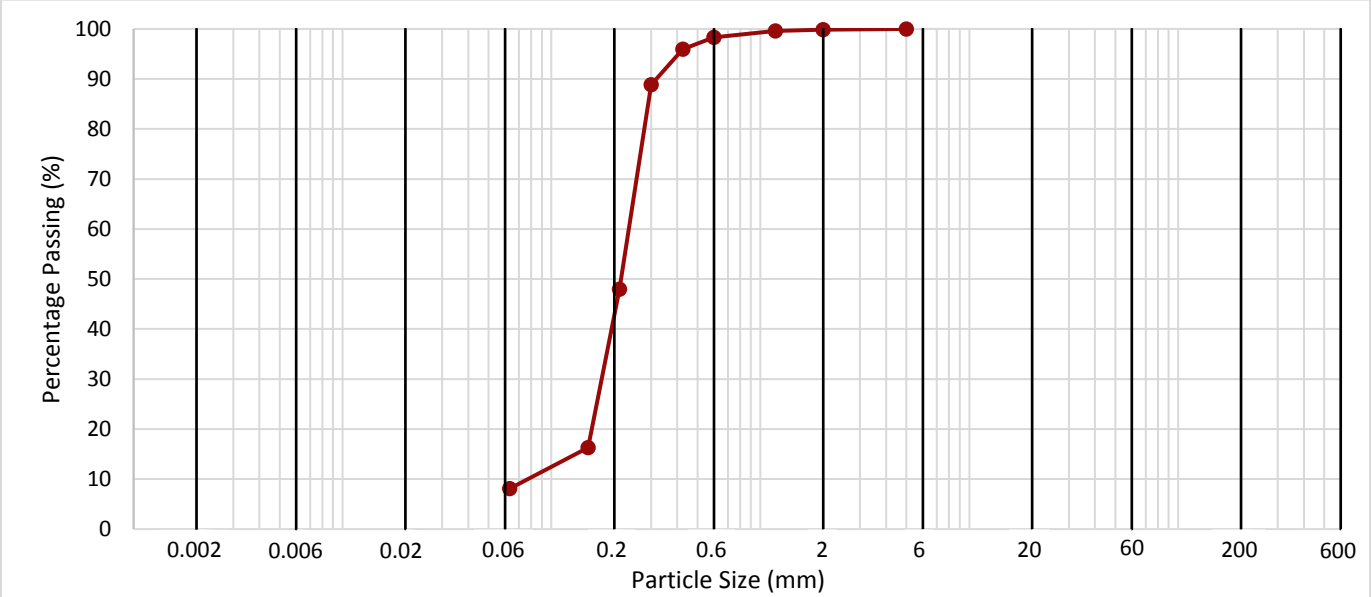
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	21.00 - 21.50	B	34	Dark bluish grey and olive grey slightly silty slightly clayey slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	92
1.18	100	
0.600	98	
0.425	96	
0.300	89	
0.212	48	
0.150	16	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	8

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

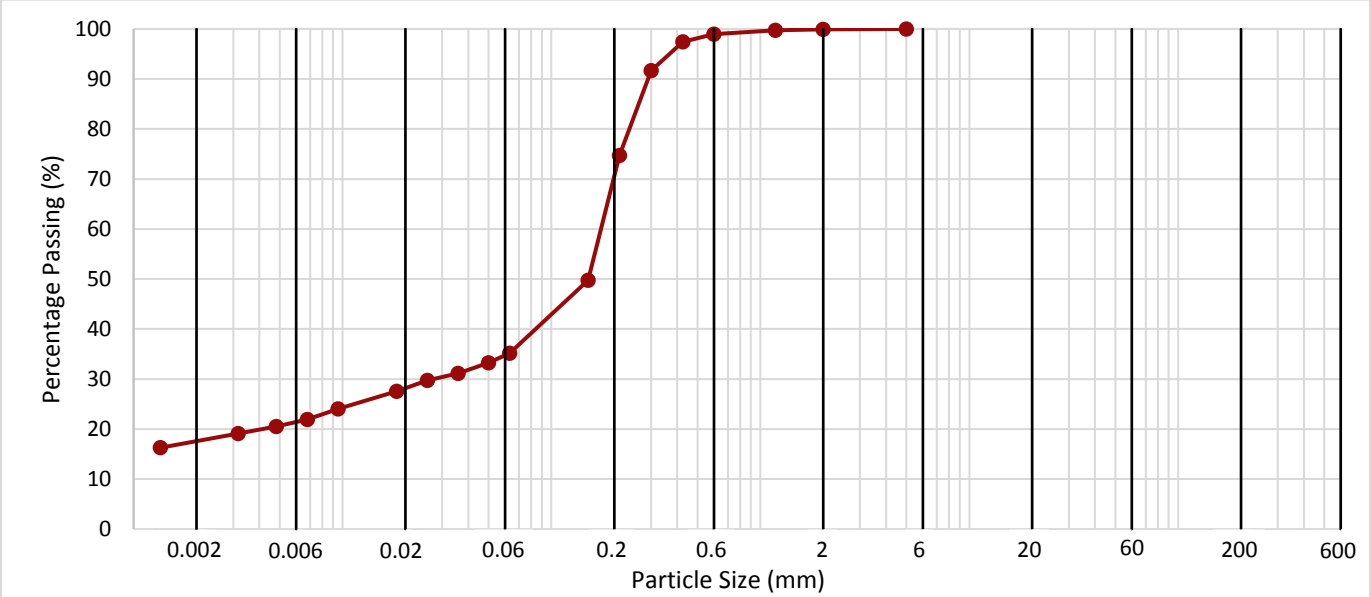
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	22.60 - 23.00	B	38	Dark bluish grey and dark olive grey sandy slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0500	33	18
	0.0357	31	
	0.0254	30	
	0.0182	28	Clay by Dry Mass (%)
	0.0095	24	
	0.0068	22	
	0.0048	21	17
	0.0032	19	
	0.0013	16	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	65
1.18	100	
0.600	99	
0.425	97	
0.300	92	
0.212	75	
0.150	50	
0.063	35	

Fines By Dry Mass (%)	
<0.063mm	35

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

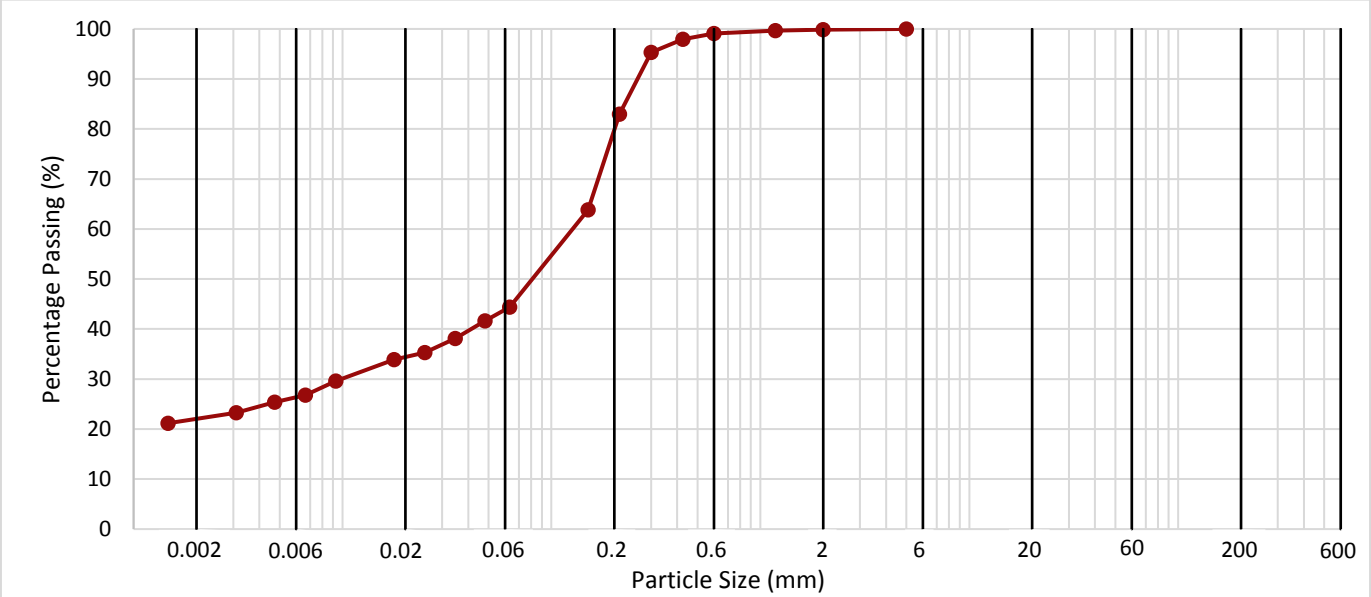
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	23.00 - 23.50	B	40	Very soft dark grey sandy silty organic CLAY. Sand is fine.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0480	42	22	
0.0346	38		
0.0248	35		
0.0177	34		22
0.0093	30		
0.0067	27		
0.0047	25		
0.0031	23		
0.0015	21		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	56
1.18	100	
0.600	99	
0.425	98	
0.300	95	
0.212	83	
0.150	64	
0.063	44	

Fines By Dry Mass (%)	
<0.063mm	44

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

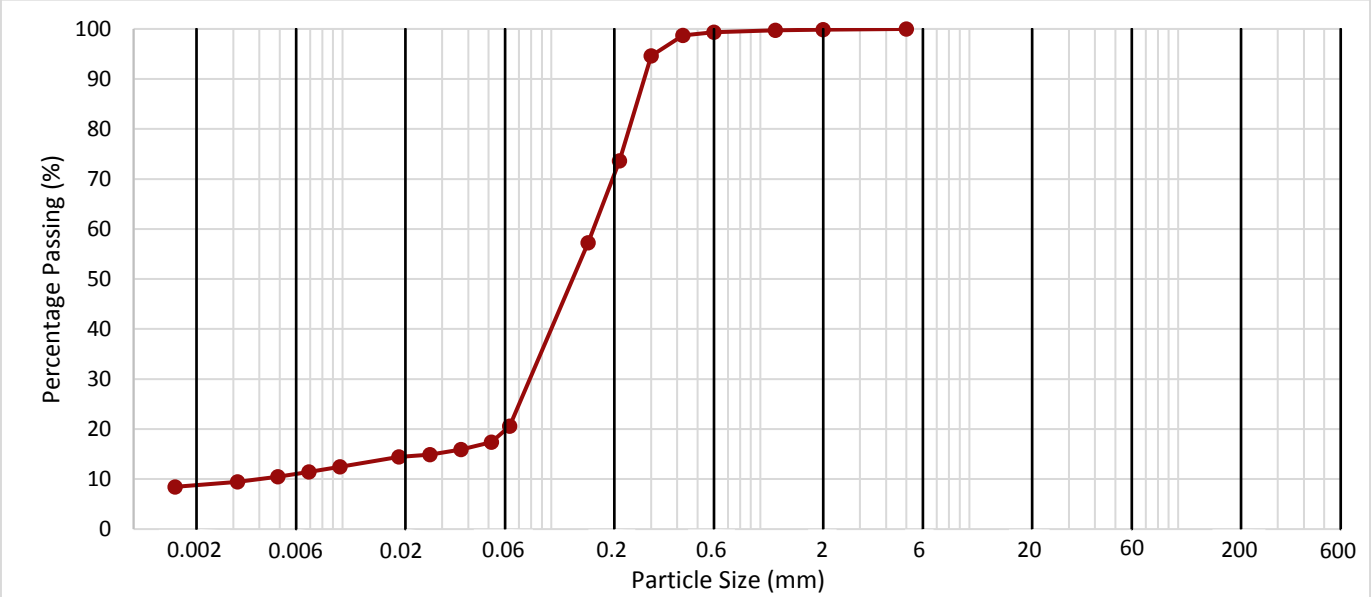
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	28.00 - 28.50	B	51	Dark grey silty clayey organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0517	17	12	
	0.0369	16		
	0.0262	15		
	0.0186	14		9
	0.0097	12		
	0.0069	11		
	0.0049	10		
	0.0031	9		
	0.0016	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	79
1.18	100	
0.600	99	
0.425	99	
0.300	95	
0.212	74	
0.150	57	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

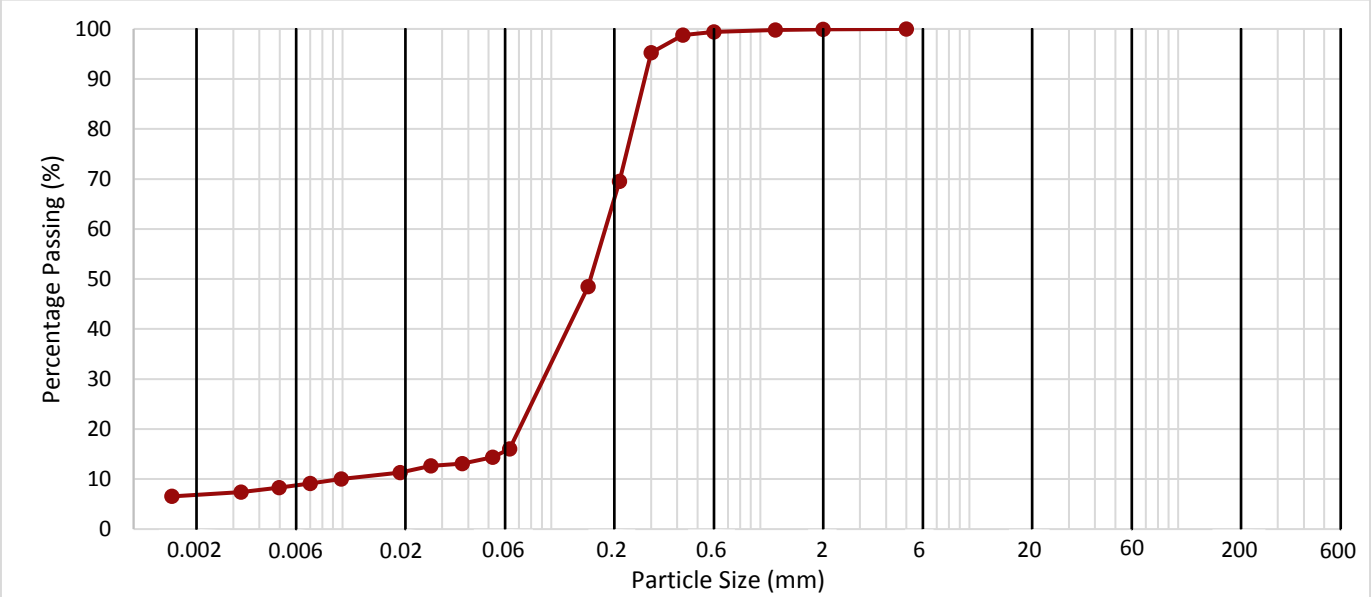
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	32.00 - 32.50	B	59	Dark grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0524	14	9	
	0.0374	13		
	0.0265	13		
	0.0189	11		
	0.0098	10		
	0.0070	9		
	0.0050	8		7
	0.0033	7		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	84
1.18	100	
0.600	99	
0.425	99	
0.300	95	
0.212	70	
0.150	48	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

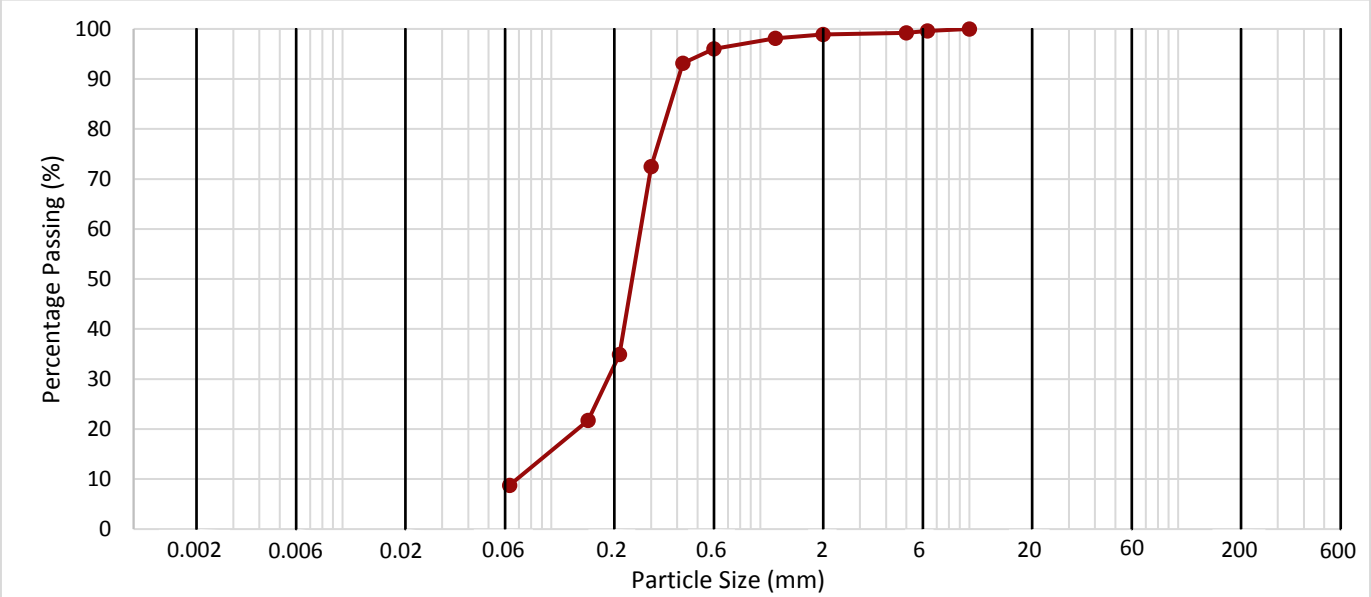
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC101	37.10 - 37.60	B	66	Grey silty slightly clayey SAND with occasional olive pockets, and shell fragments.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	90
1.18	98	
0.600	96	
0.425	93	
0.300	72	
0.212	35	
0.150	22	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	9

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

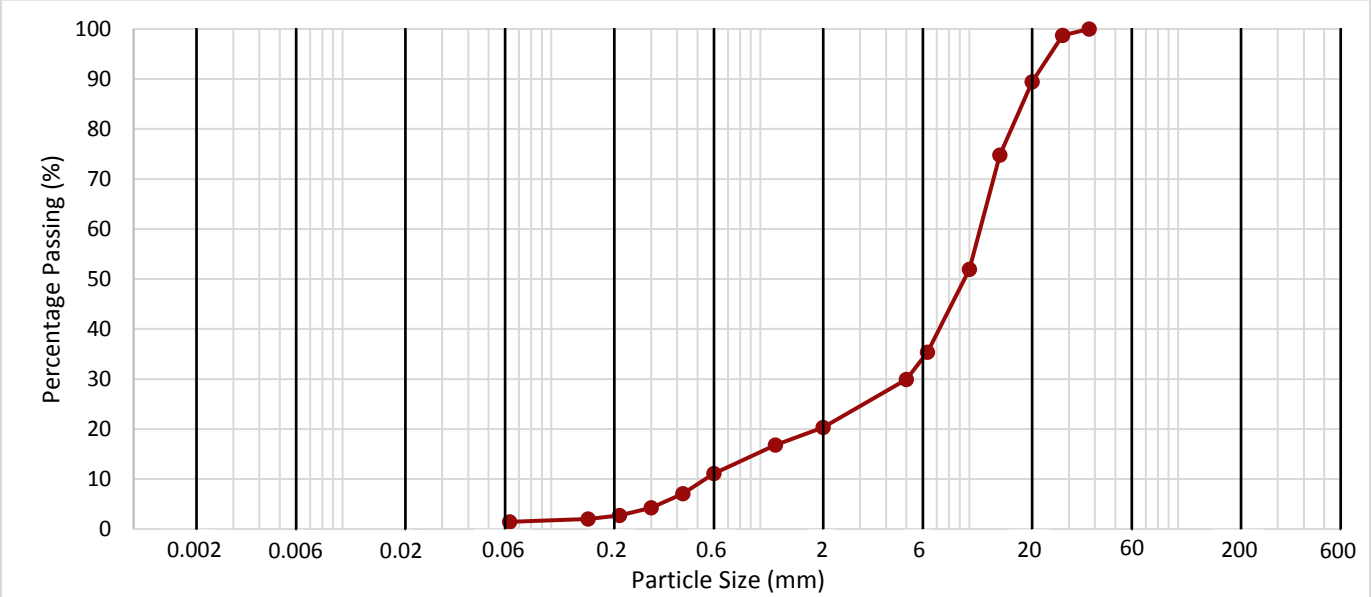
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	1.80 - 2.00	B	1	Black, white and brown sandy slightly silty subangular to subrounded flint GRAVEL with rare concrete and brick fragments. Sand is pale brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	20	19
1.18	17	
0.600	11	
0.425	7	
0.300	4	
0.212	3	
0.150	2	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		80
125		
90		
63		
50		
37.5	100	
28	99	
20	89	
14	75	
10	52	
6.3	35	
5	30	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

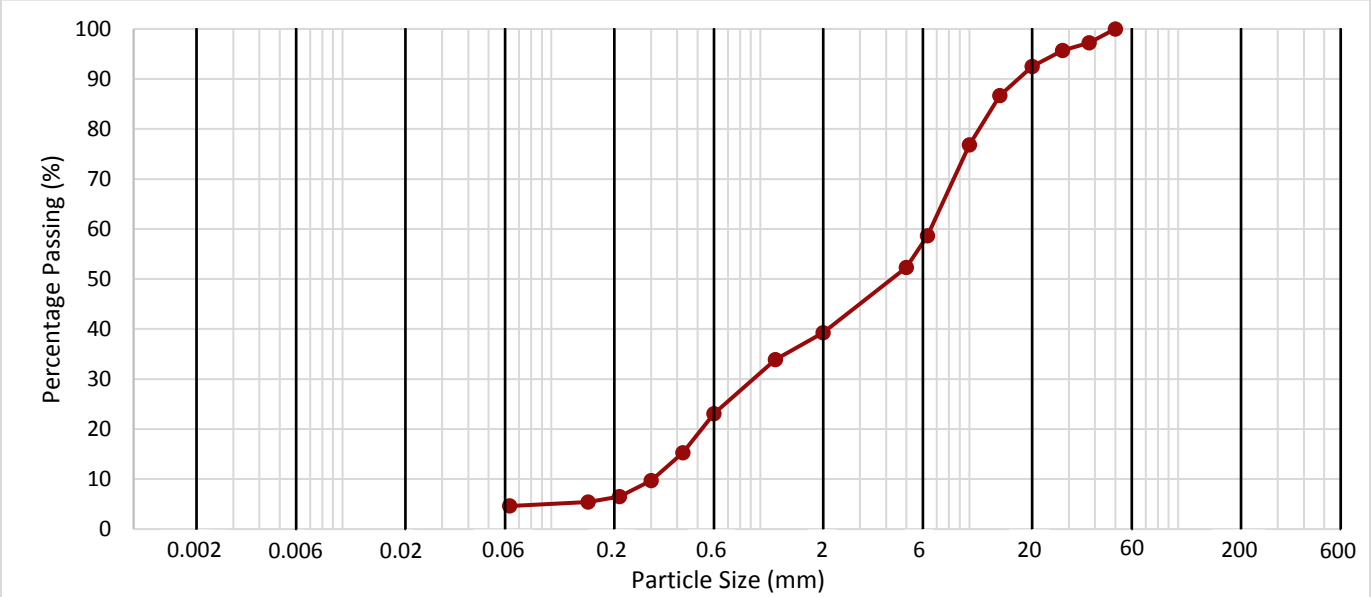
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	3.00 - 3.50	B	4	Black, brown and white very sandy slightly silty slightly clayey angular to rounded flint GRAVEL. Sand is dark grey and brown.	Hydrocarbon odour.

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	39	34
1.18	34	
0.600	23	
0.425	15	
0.300	10	
0.212	7	
0.150	5	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		61
125		
90		
63		
50	100	
37.5	97	
28	96	
20	93	
14	87	
10	77	
6.3	59	
5	52	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

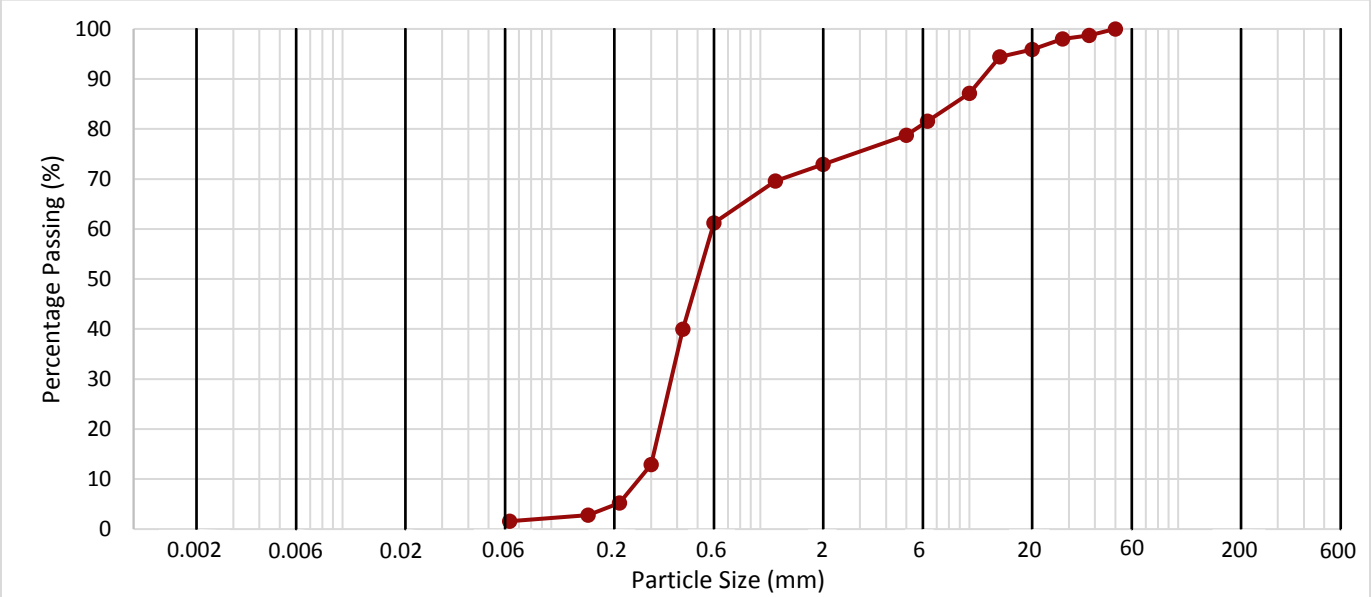
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	6.00 - 6.50	B	10	Dark olive brown very gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint and rare white subrounded to rounded quartzite.	Hydrocarbon odour.

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	73	71
1.18	70	
0.600	61	
0.425	40	
0.300	13	
0.212	5	
0.150	3	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		27
125		
90		
63		
50	100	
37.5	99	
28	98	
20	96	
14	94	
10	87	
6.3	82	
5	79	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

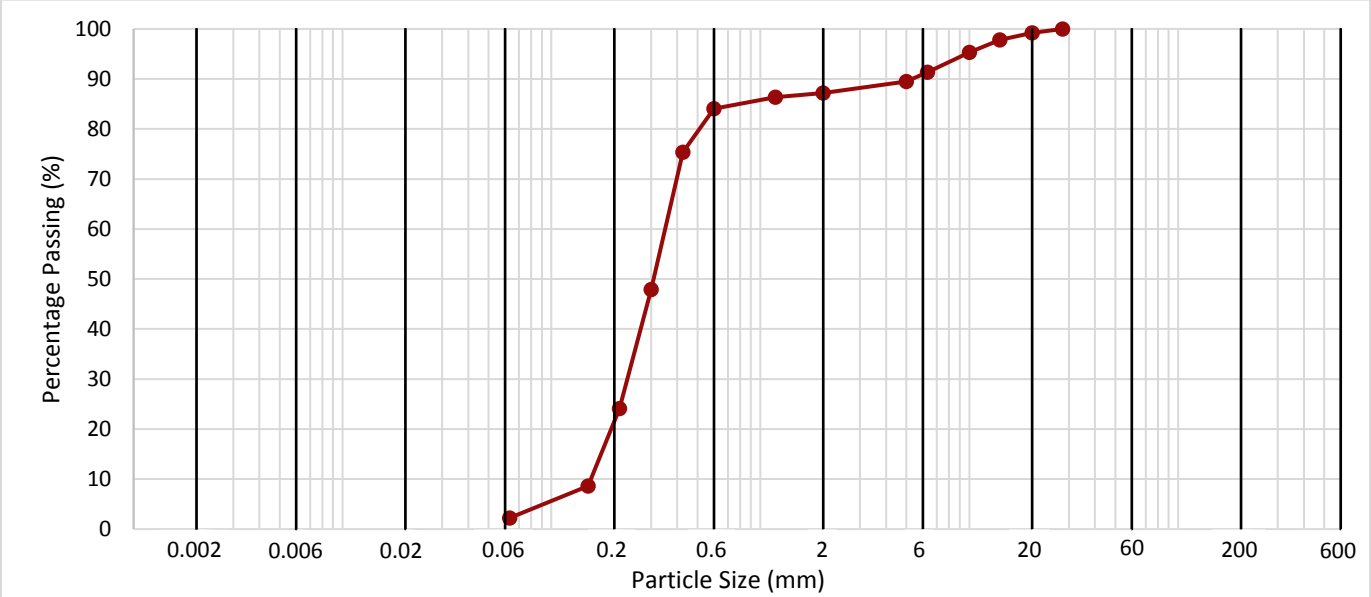
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	9.00 - 9.50	B	18	Yellowish brown gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint and occasional yellowish white quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	87	**85**
1.18	86	
0.600	84	
0.425	75	
0.300	48	
0.212	24	
0.150	9	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	**2**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**13**
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	98	
10	95	
6.3	91	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

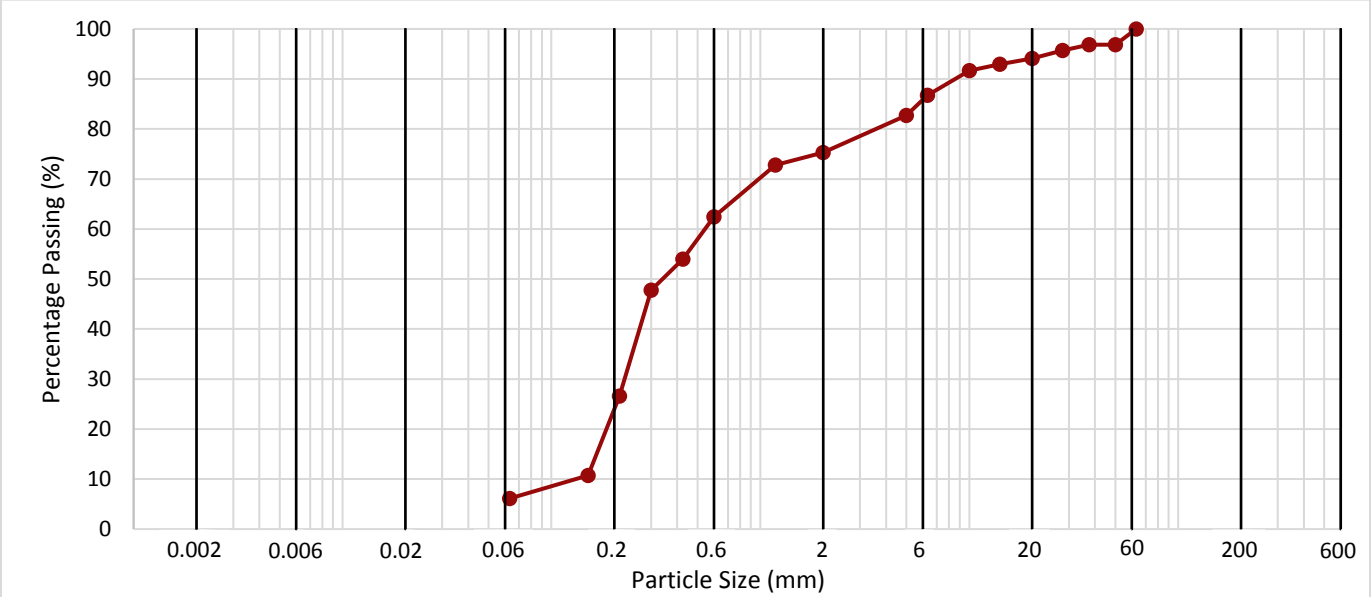
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	15.00 - 15.50	B	27	Brown very gravelly slightly silty slightly clayey SAND. Gravel is black, brown and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	75	69
1.18	73	
0.600	62	
0.425	54	
0.300	48	
0.212	27	
0.150	11	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		25
125		
90		
63	100	
50	97	
37.5	97	
28	96	
20	94	
14	93	
10	92	
6.3	87	
5	83	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

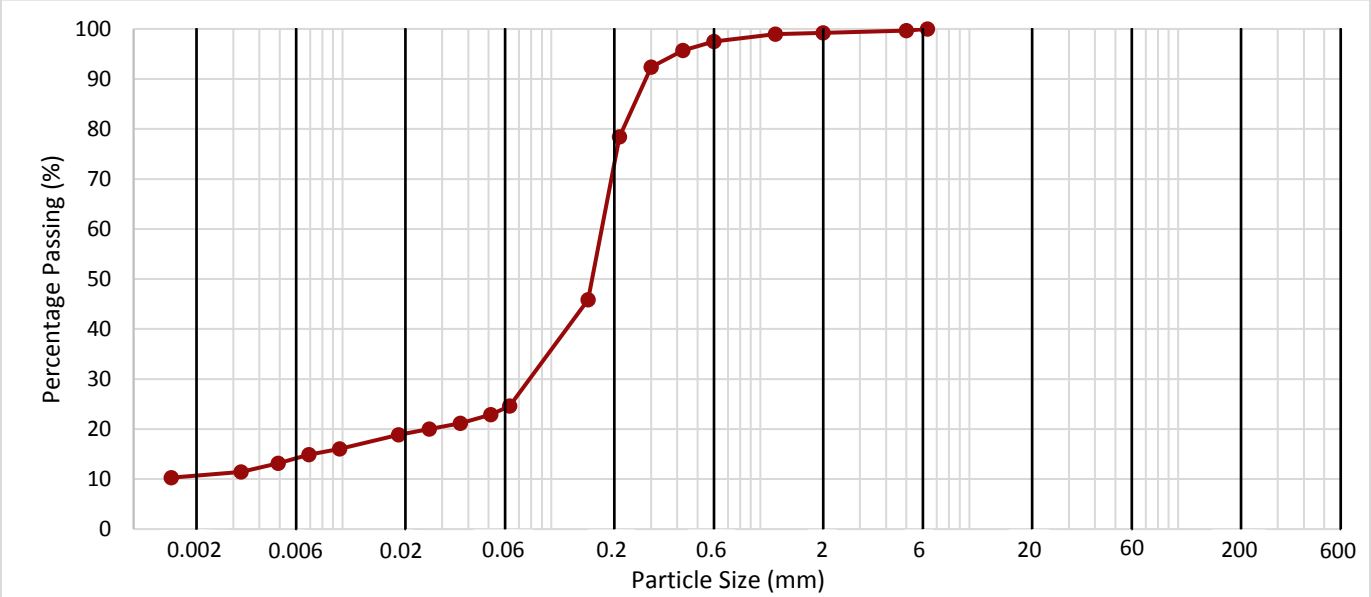
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	18.00 - 18.45	D	32	Dark olive grey silty clayey organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0513	23	14
	0.0366	21	
	0.0260	20	
	0.0185	19	Clay by Dry Mass (%)
	0.0097	16	
	0.0069	15	
	0.0049	13	11
	0.0033	11	
	0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	74
1.18	99	
0.600	97	
0.425	96	
0.300	92	
0.212	78	
0.150	46	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	25

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

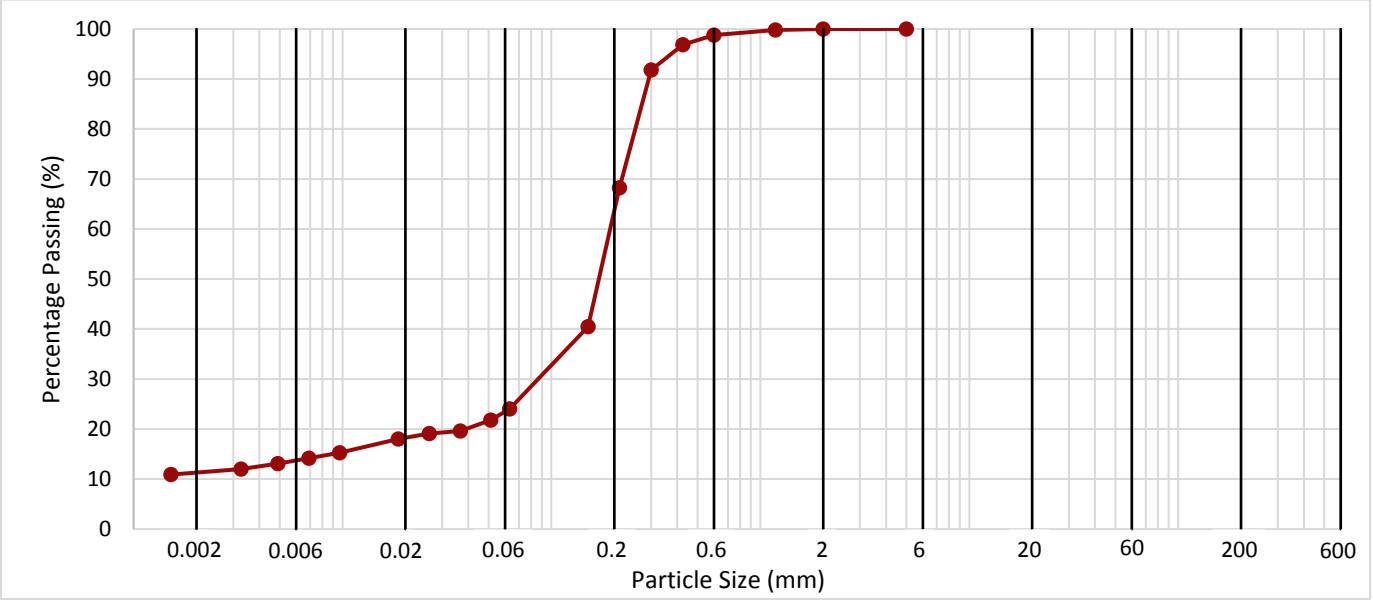
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	22.00 - 22.50	B	42	Dark grey silty clayey organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0512	22	13	
	0.0367	20		
	0.0260	19		
	0.0185	18		11
	0.0097	15		
	0.0069	14		
	0.0049	13		
	0.0033	12		
	0.0015	11		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	76
1.18	100	
0.600	99	
0.425	97	
0.300	92	
0.212	68	
0.150	40	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

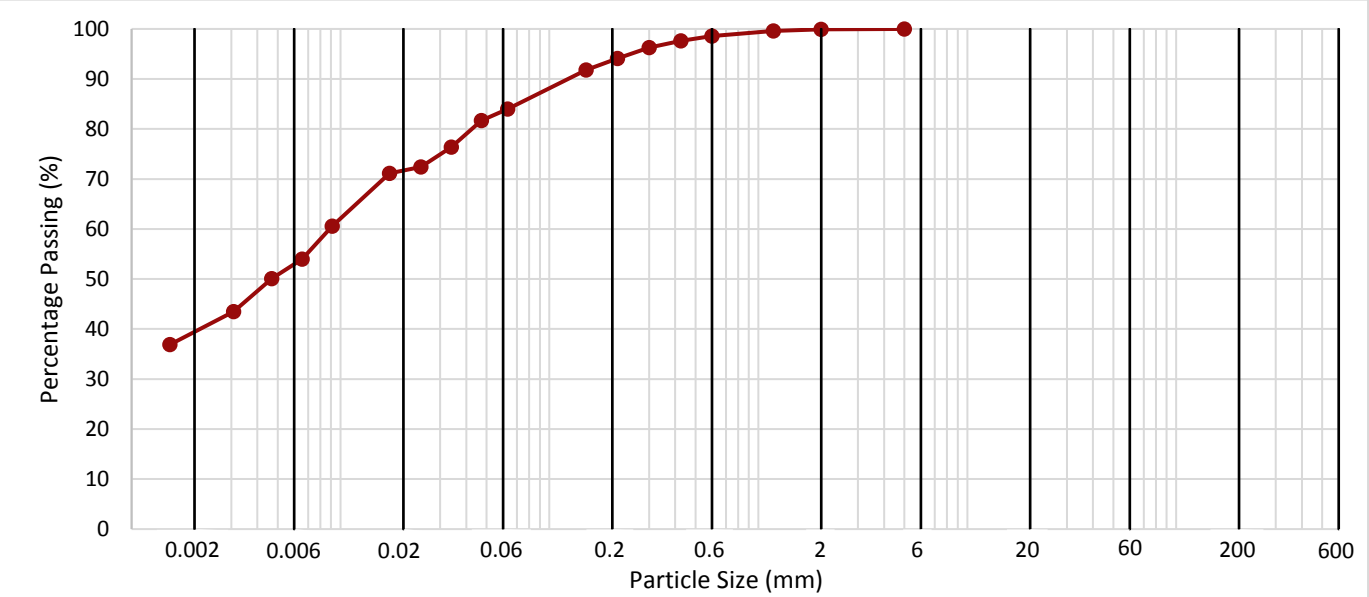
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	24.00 - 24.50	B	48	Very soft dark grey slightly sandy silty CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0472	82	45	
0.0339	76		
0.0242	72		
0.0172	71		39
0.0091	61		
0.0066	54		
0.0047	50		
0.0031	43		
0.0015	37		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	16
1.18	100	
0.600	99	
0.425	98	
0.300	96	
0.212	94	
0.150	92	
0.063	84	

Fines By Dry Mass (%)	
<0.063mm	84

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

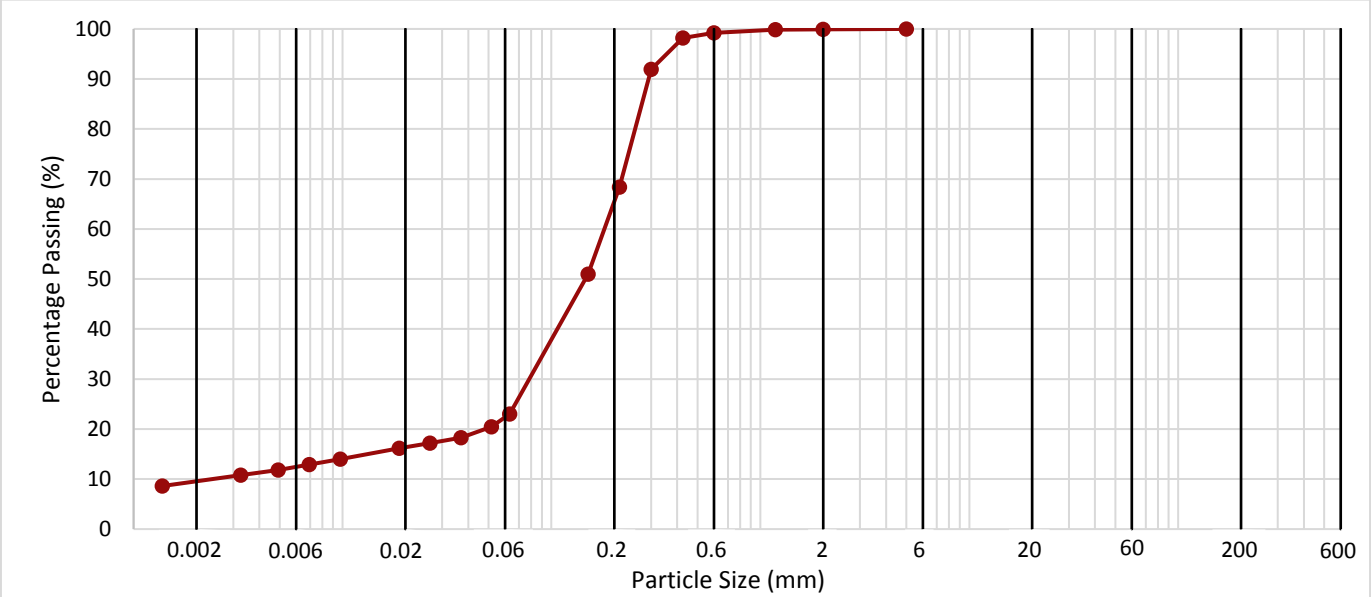
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	28.00 - 28.50	B	56	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0515	20	14	
0.0369	18		
0.0263	17		
0.0187	16		
0.0098	14		
0.0069	13		9
0.0049	12		
0.0033	11		
0.0014	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	77
1.18	100	
0.600	99	
0.425	98	
0.300	92	
0.212	68	
0.150	51	
0.063	23	

Fines By Dry Mass (%)	
<0.063mm	23

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

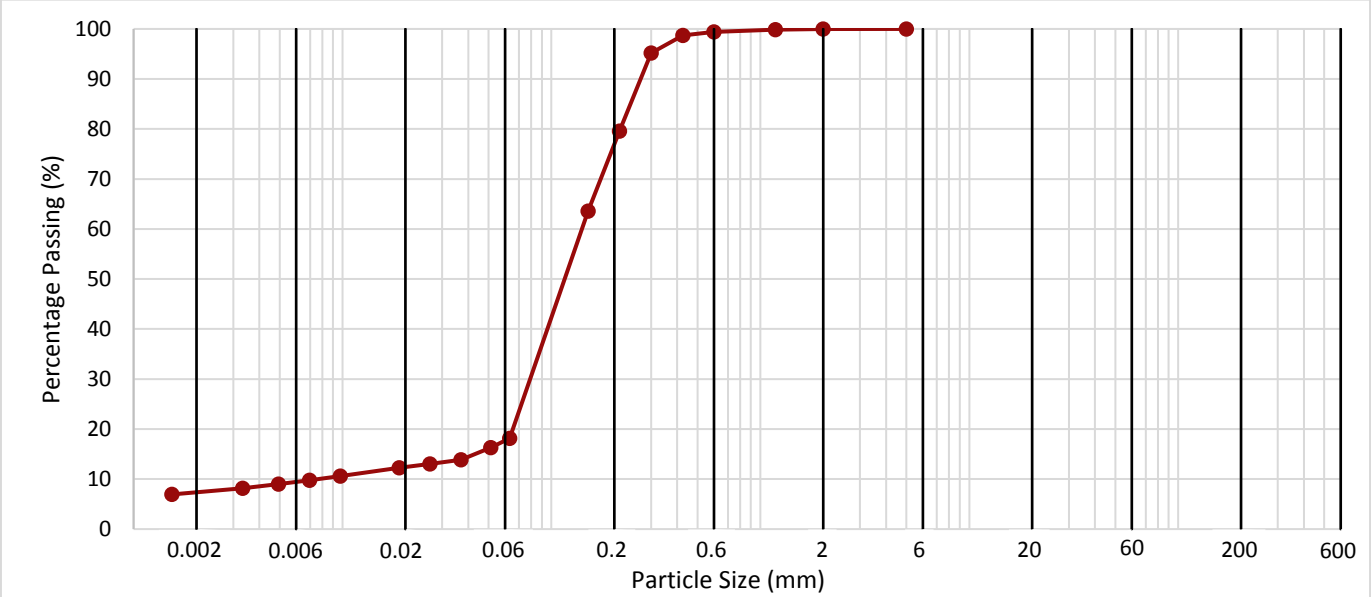
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	29.00 - 29.50	B	59	Dark olive grey silty clayey organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0512	16	11	
	0.0369	14		
	0.0263	13		
	0.0187	12		7
	0.0098	11		
	0.0069	10		
	0.0049	9		
	0.0033	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	82
1.18	100	
0.600	99	
0.425	99	
0.300	95	
0.212	80	
0.150	64	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

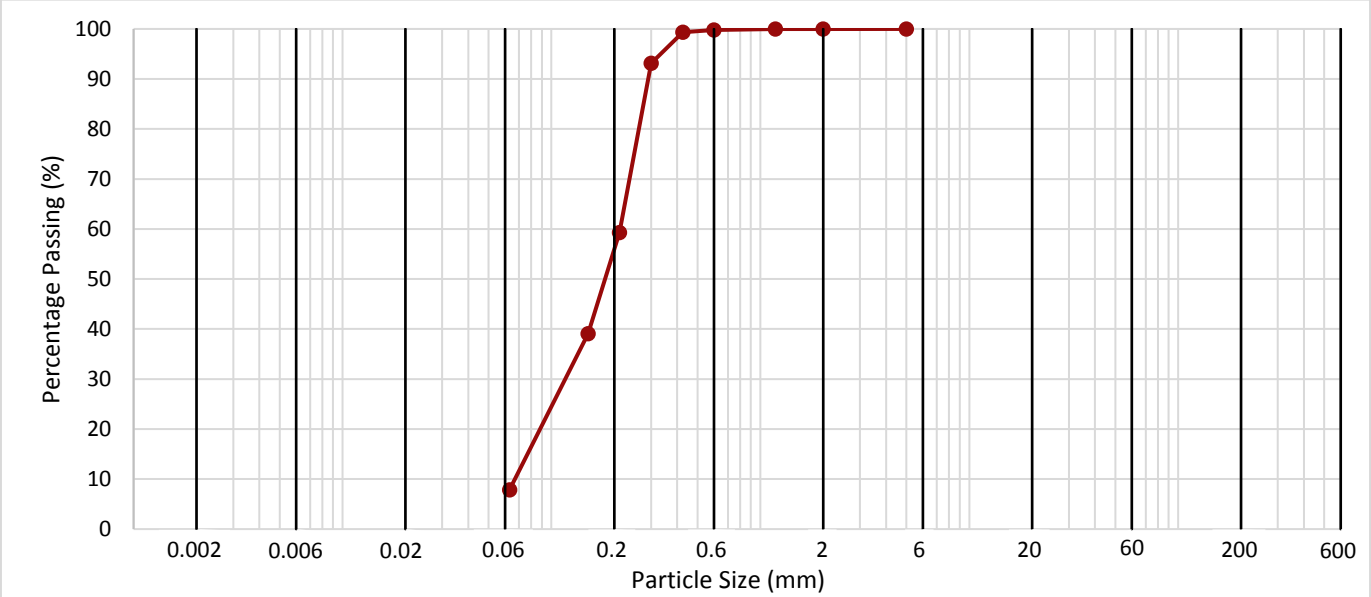
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	32.00 - 32.50	B	66	Dark olive grey silty slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	92
1.18	100	
0.600	100	
0.425	99	
0.300	93	
0.212	59	
0.150	39	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	8

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

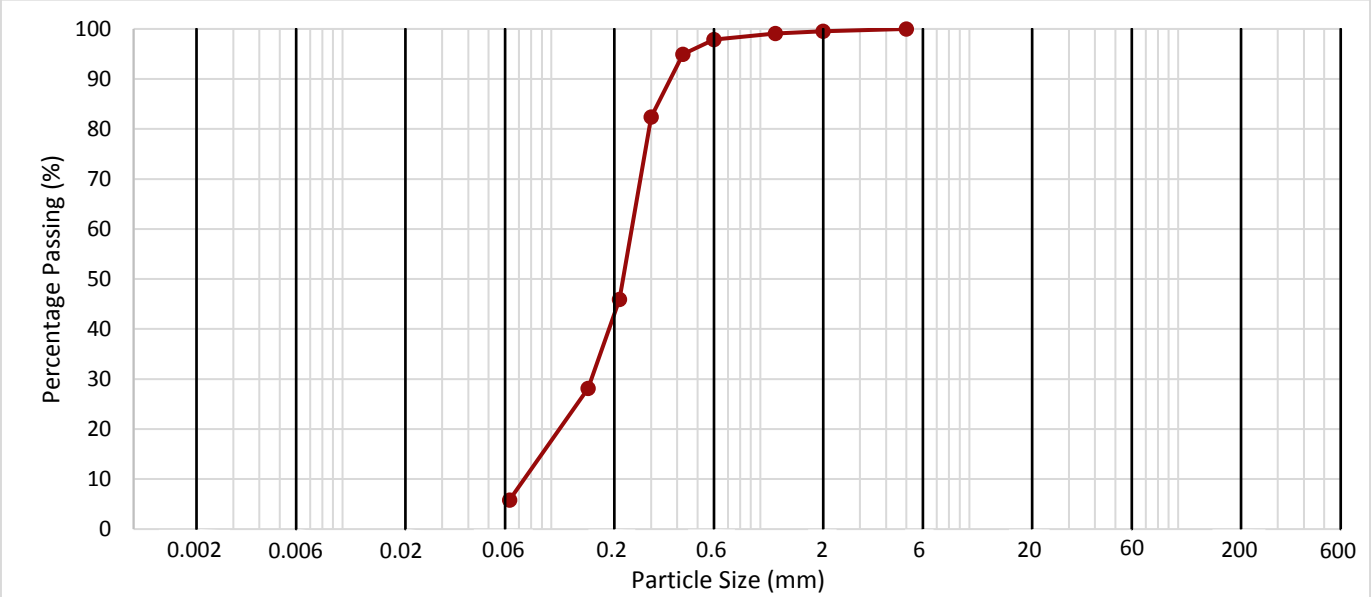
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC102	35.00 - 35.50	B	72	Grey silty slightly organic SAND locally oxidised to brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**94**
1.18	99	
0.600	98	
0.425	95	
0.300	82	
0.212	46	
0.150	28	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	**6**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC101	22.00 - 22.45	UT	36	29.1	1.98	1.53	401	128	64			Firm (Medium strength) mottled grey and dark grey very sandy silty CLAY changing to slightly sandy silty laminated CLAY with rare olive grey mottling. Sand is fine.
BHC101	22.00 - 22.45	UT	36	26.5	1.91	1.51	797	229	115			Stiff (High strength) laminated mottled grey and dark grey slightly sandy silty CLAY with occasional dark olive mottling and sandy pockets. Sand is fine to medium.
BHC101	24.00 - 24.45	UT	41	28.3	2.02	1.57	502	149	75			Stiff (High strength) thickly laminated mottled very dark grey and dark grey slightly sandy silty CLAY with occasional fine sand/silt pockets. Sand is fine.
BHC101	24.00 - 24.45	UT	41	17.9	2.18	1.85	748	859	430			Dark grey very sandy silty CLAY changing to SAND. Sand is fine to medium.
BHC102	21.80 - 22.25	UT	40	29.8	1.96	1.51	400	241	121			Stiff (High strength) slightly fissured dark grey CLAY with occasional silt and fine sand pockets.
BHC102	29.00 - 29.45	UT	57	30.7	2.04	1.56	600	301	151			Grey SAND changing to stiff laminated mottled grey and dark grey sandy silty CLAY with rare shell fragments.
BHC102	29.00 - 29.45	UT	57	21.5	2.05	1.69	802	210	105			Grey silty clayey SAND with occasional olive grey mottling and shell fragments and areas of laminated sandy silty clay. Sand is fine to medium.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

UKAS TESTING

0998

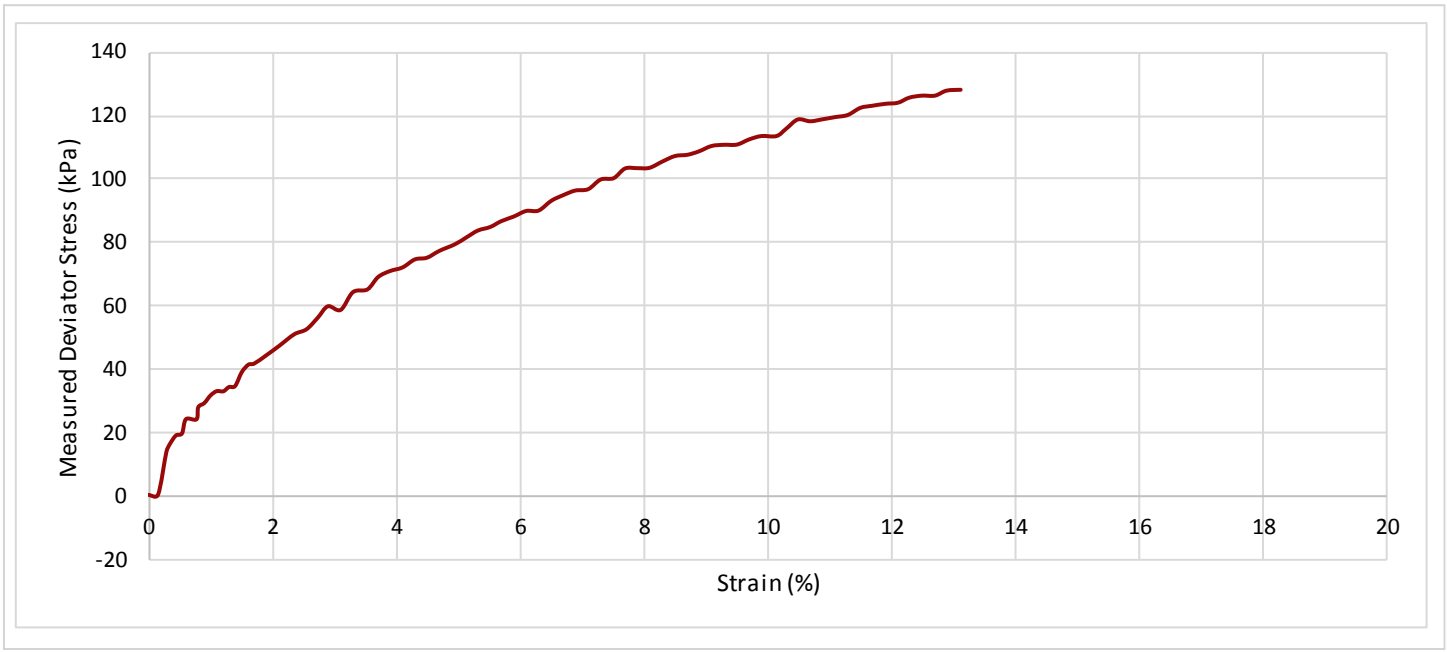
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC101	22.00 - 22.45	UT	36	Firm (Medium strength) mottled grey and dark grey very sandy silty CLAY changing to slightly sandy silty laminated CLAY with rare olive grey mottling. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.10	150.5	102.8	2477	29.1	1.98	1.53

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	401	13.1	0.8	\	128	64		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

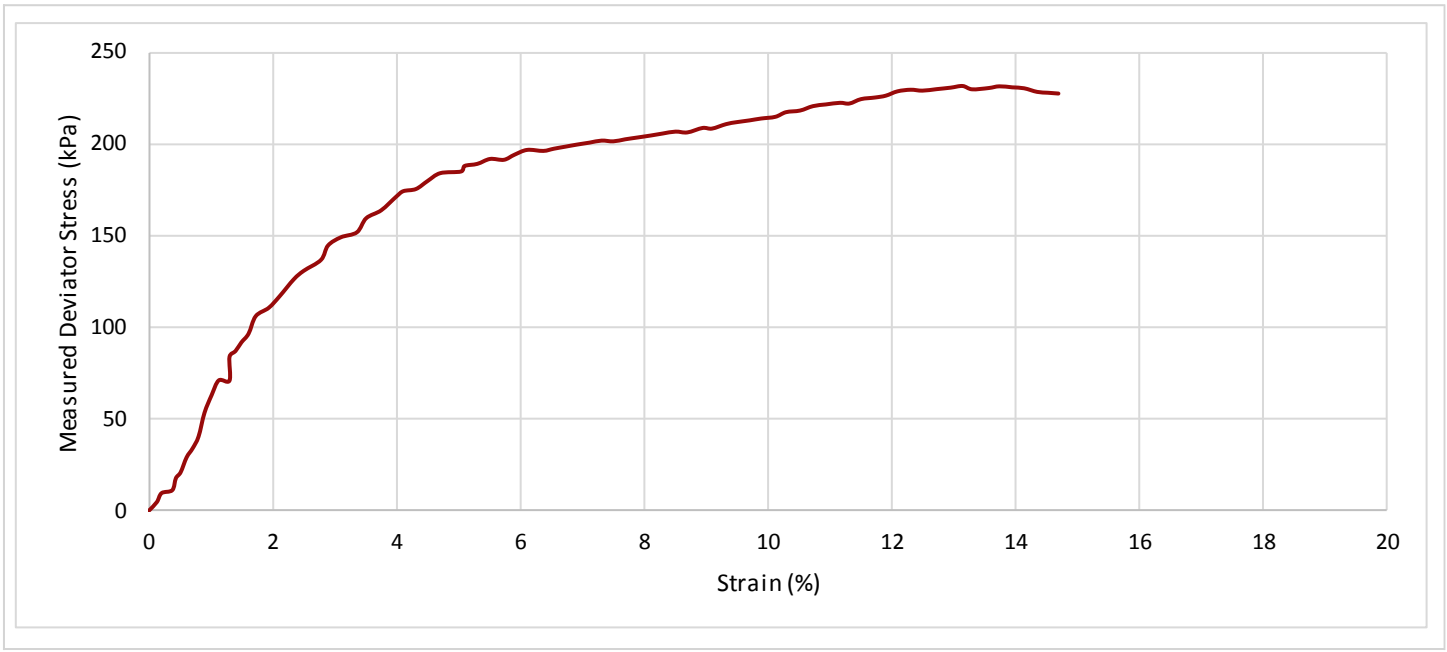
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC101	22.00 - 22.45	UT	36	Stiff (High strength) laminated mottled grey and dark grey slightly sandy silty CLAY with occasional dark olive mottling and sandy pockets. Sand is fine to medium	Not enough for second U100 - U38 taken.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.25	72.7	36.8	148	26.5	1.91	1.51

TEST INFORMATION	Rate of Strain	1.4	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	797	13.2	2.2	\	229	115		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

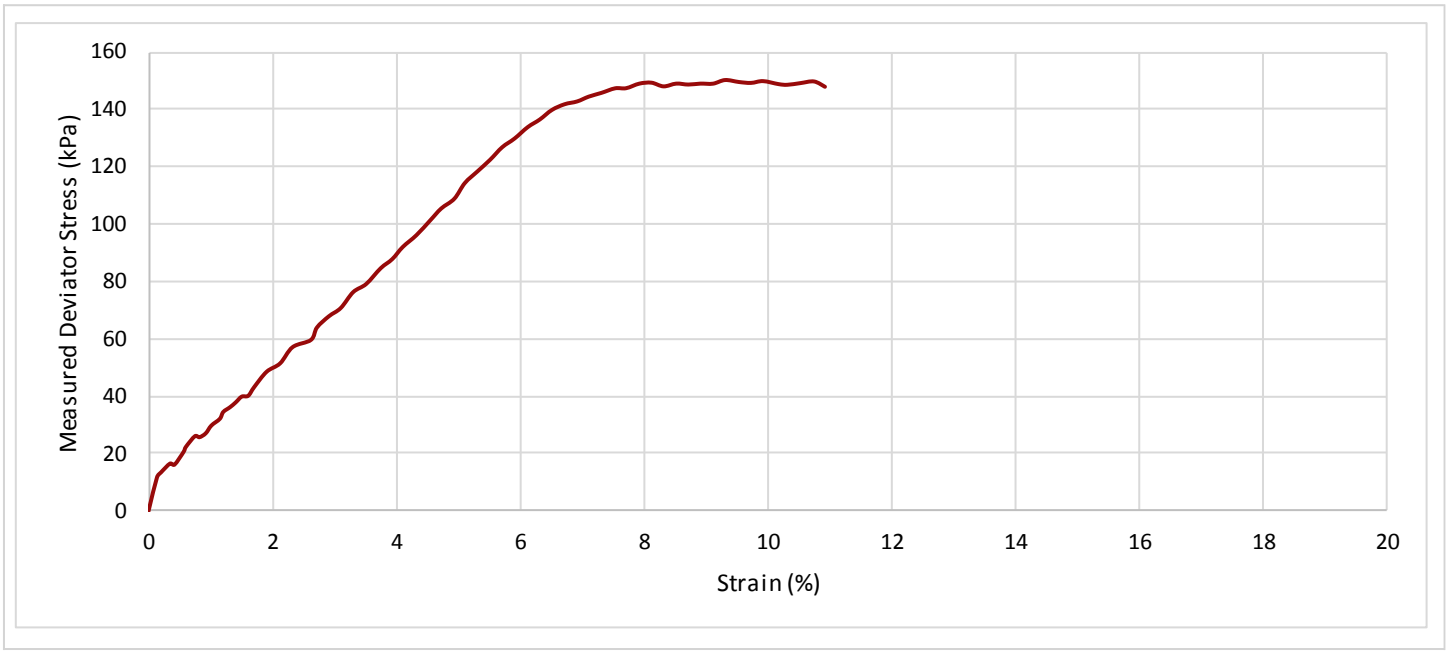
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC101	24.00 - 24.45	UT	41	Stiff (High strength) thickly laminated mottled very dark grey and dark grey slightly sandy silty CLAY with occasional fine sand/silt pockets. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.14	148.9	103.4	2524	28.3	2.02	1.57

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	502	9.3	0.6	\	149	75		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

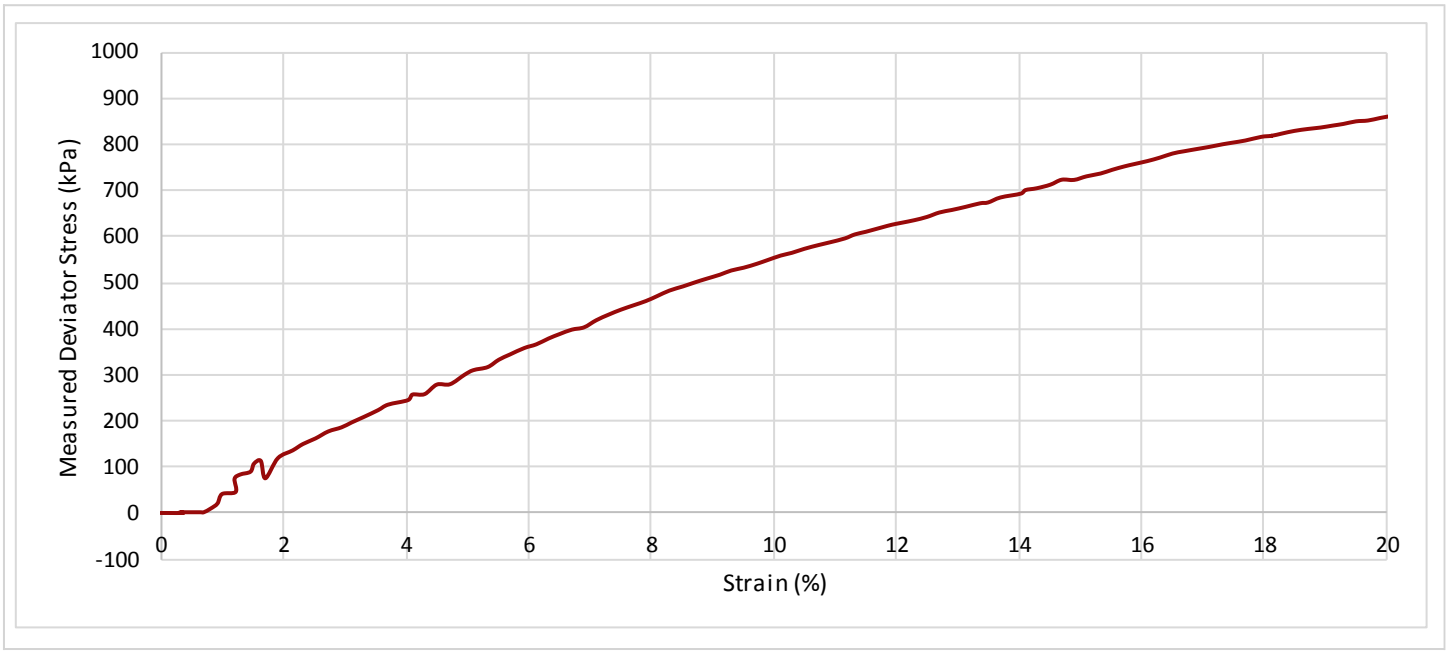
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC101	24.00 - 24.45	UT	41	Dark grey very sandy silty CLAY changing to SAND. Sand is fine to medium.	Not enough sample for second U100 - U38 taken.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.29	75.3	37.3	179	17.9	2.18	1.85

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	748	20.1	3.1	\	859	430		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

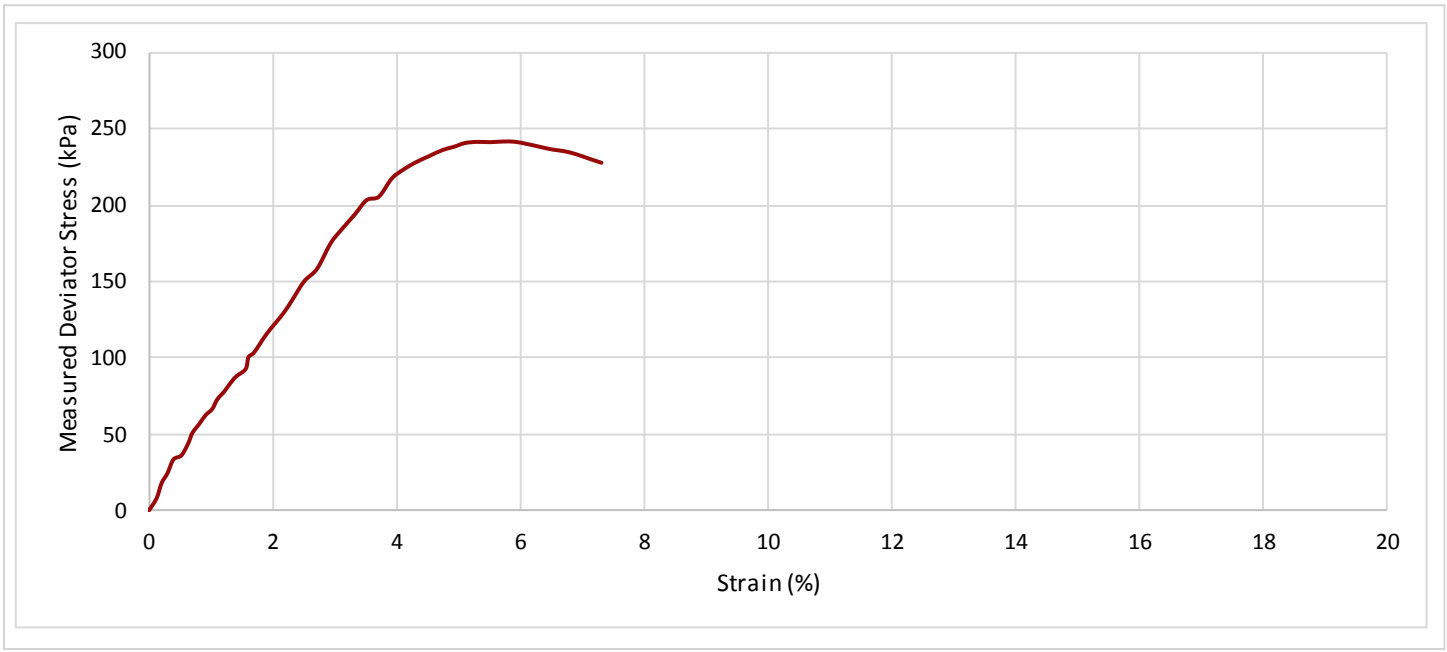
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC102	21.80 - 22.25	UT	40	Stiff (High strength) slightly fissured dark grey CLAY with occasional silt and fine sand pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 21.94	199.6	103.6	3290	29.8	1.96	1.51

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	400	5.7	0.4	\	241	121		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

UKAS TESTING
0998

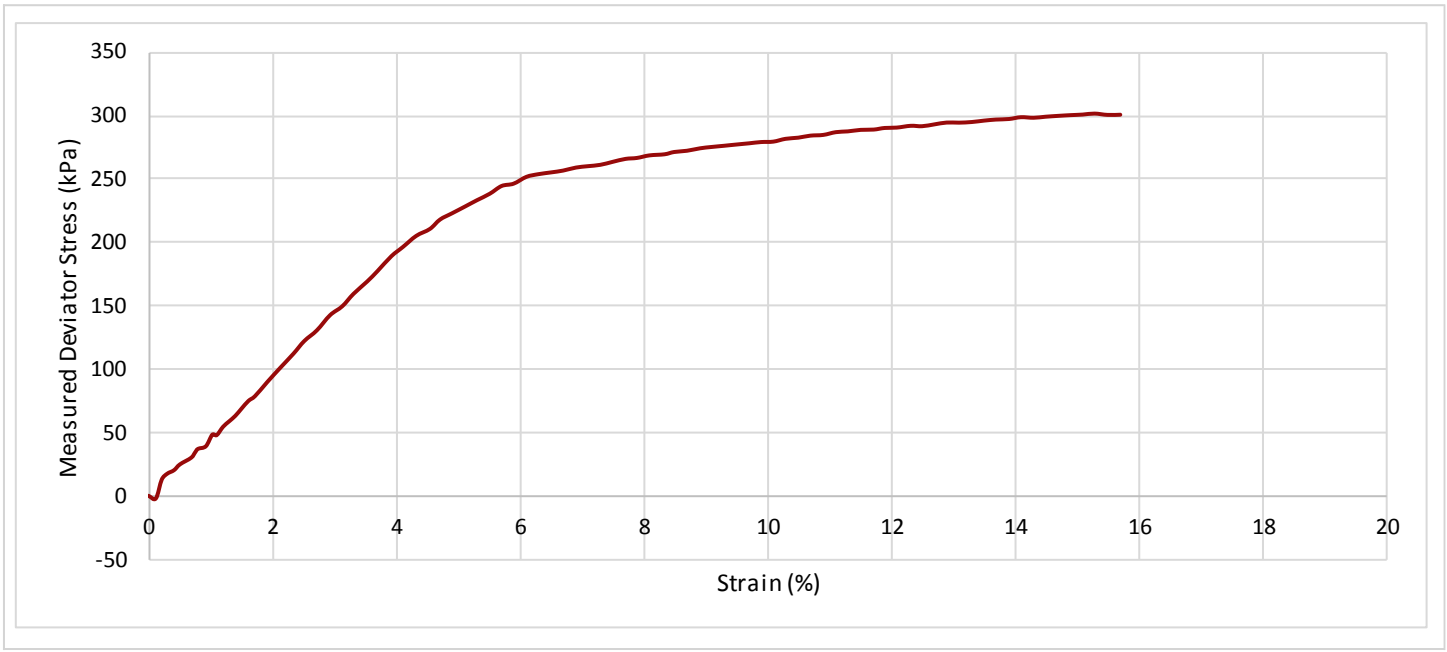
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

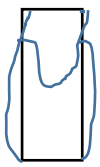
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC102	29.00 - 29.45	UT	57	Grey SAND changing to stiff laminated mottled grey and dark grey sandy silty CLAY with rare shell fragments.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 29.06	171.4	101.9	2856	30.7	2.04	1.56

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	600	15.3	0.9	\	301	151		

Method of Preparation: BS 1377: Part 1: 1990
Method of Test: BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: Tested in Vertical Condition
UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

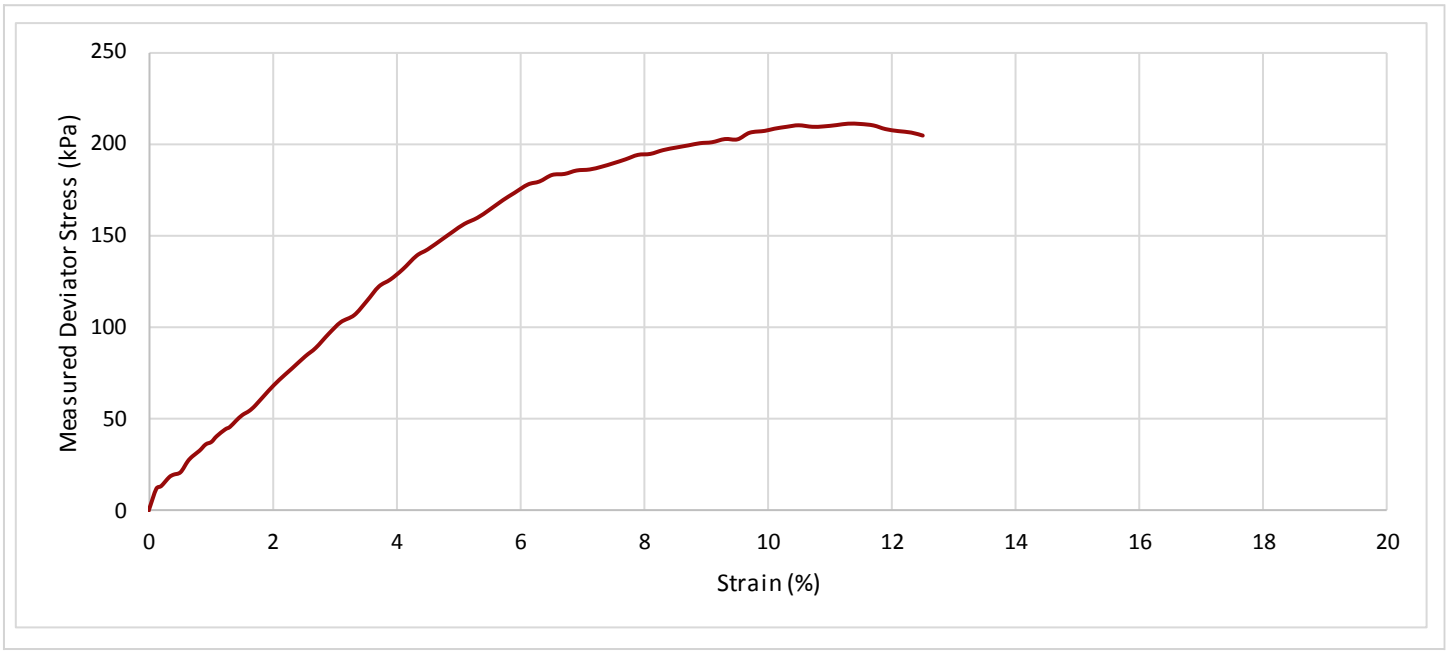
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC102	29.00 - 29.45	UT	57	Grey silty clayey SAND with occasional olive grey mottling and shell fragments and areas of laminated sandy silty clay. Sand is fine to medium.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 29.22	169.6	102.9	2889	21.5	2.05	1.69

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	802	11.3	0.7	\	210	105		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/03/2018

0998

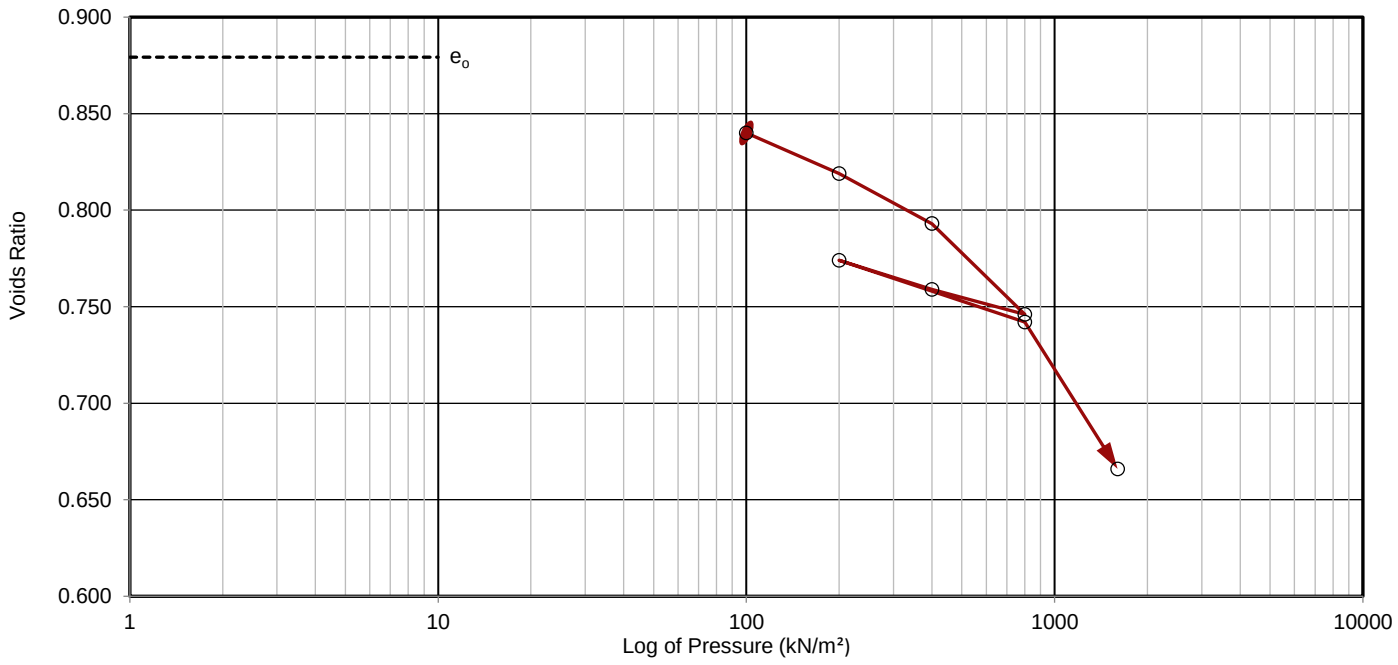
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-5**

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC102	21.80 - 22.25	UT	40	21.90 Horizontal	32.3	Stiff (High strength) slightly fissured dark grey CLAY with occasional silt and fine sand pockets.	

Initial Conditions			
Height	mm	18.76	
Diameter	mm	75.00	
Wet Weight	g	159.17	
Water Content	%	32.3	
Bulk Density	Mg/m³	1.92	
Particle Density		Assumed	2.73
Voids Ratio		0.879	
Degree of Saturation	%	100	
Swelling Pressure	kN/m²	<100	
Dry Density	Mg/m³	1.45	

Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
1	100	0.392	0.840	3.00	0.21	21	2.90
2	200	0.597	0.819	2.30	0.11	20	2.30
3	400	0.860	0.793	2.58	0.07	21	2.50
4	800	1.333	0.746	5.69	0.07	21	5.50
5	400	1.204	0.759		0.02	21	
6	200	1.054	0.774		0.04	21	
7	800	1.370	0.742	2.17	0.03	21	2.10
8	1600	2.130	0.666	1.55	0.06	21	1.50



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Amended Report

Report No.:	18-05055-4		
Initial Date of Issue:	26-Feb-2018	**Date of Re-Issue:**	05-Mar-2018
Client	Soil Property Testing		
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG		
Contact(s):	Jon Garner		
Project	S31644-5 Lake Lothing, Lowestoft		
Quotation No.:	Q17-10468	**Date Received:**	21-Feb-2018
Order No.:	S31644-5	**Date Instructed:**	21-Feb-2018
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	27-Feb-2018
Date Approved:	26-Feb-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-5 Lake Lothing, Lowestoft

Client: Soil Property Testing			**Chemtest Job No.:**		18-05055	18-05055	18-05055	18-05055	18-05055	18-05055
Quotation No.: Q17-10468			**Chemtest Sample ID.:**		582182	582183	582184	582185	582186	582187
Order No.: S31644-5			Client Sample Ref.:		BHC101	BCH101	BCH101	BCH102	BHC102	BHC102
			Client Sample ID.:		B28	D39	B51	B4	B23	B48
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		18.00	23.00	28.00	3.0	12.20	24.00
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Moisture	N	2030	%	0.020	24	21	20		13	24
pH (2.5:1)	N	2010		N/A	[A] 5.9	[A] 6.2	[A] 8.0		[A] 7.9	[A] 7.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.31	2.3	0.22		< 0.010	0.45
Total Sulphur	U	2175	%	0.010	[A] 0.28	[A] 2.5	[A] 0.41		[A] < 0.010	[A] 1.8
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.087	[A] 1.5	[A] 0.056		[A] < 0.010	[A] 0.23
LOI 440	N		%	0.1				0.55		

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
582182	BHC101	B28		A	Plastic Bag
582183	BCH101	D39		A	Plastic Tub 500g
582184	BCH101	B51		A	Plastic Bag
582186	BHC102	B23		A	Plastic Bag
582187	BHC102	B48		A	Plastic Bag

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2620	LOI 440	LOI 440	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** Technical Director
- ☐ **S.P. Townend FGS** Quality Manager
- ☐ **W. Johnstone** Materials Lab Manager
- ☐ **D. Sabnis** Operations Manager

[redacted]

Date Received: 06/03/2018

Samples Tested Between: 06/03/2018 **and** 18/04/2018

Remarks:

For the attention of Mr S Gilchrist
Your Reference No: 2543,GI

Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-6**	**Target Date**	30/03/2018
Scheduled By	Geosphere Environmental Ltd		

CHEDULE OF LABORATORY TEST

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	Hydrometer + Pre-sieve	Liquid/Plastic Limits	Wet Sieve Preparation	Brownfield Site-Pyrite prese	Organic Content (Dichromat	Triaxial Test	CBR inc. static compression	Soaked CBR Swelling Measu	Compaction 2.5kg					Sample Remarks
BHC14	B	1	1.00	1		1														
BHC14	B	2	1.80	1				1	1	1										
BHC14	D	3	2.00	1		1					1									
BHC14	B	8	4.90	1	1															
BHC14	D	13	7.00		1															
BHC14	B	18	9.40	1	1					1										
BHC14	B	23	11.70		1															
BHC14	B	27	13.70	1	1															
BHC14	B	33	16.70		1															
BHC14	D	39	19.00	1			1													
BHC14	B	44	21.60		1															
BHC14	D	45	22.00	1				1												
BHC14	B	46	22.60							1										
BHC14	UT	47	23.00	1				1				2								
BHC14	B	52	25.70	1			1													
BHC14	B	56	27.60				1													
BHC14	B	60	29.60	1			1													
BHC14	B	68	33.80	1			1	1												
BHC14	B	72	35.60				1			1										
BHC14	B	78	38.60				1													
BHC22	B	2	0.50		1															
BHC22	B	4	1.20			1						1	1	1						
BHC22	U	5	2.00	1			1				1									
BHC22	D	7	3.00	1				1												
BHC22	B	8	3.00				1			1										
BHC22	D	9	4.00	1																
BHC22	B	14	6.00				1													
BHC22	D	17	9.00	1	1															
BHC22	B	20	10.00		1															
BHC22	D	22	10.80	1				1	1											
BHC22	B	30	14.00		1															
BHC22	B	37	17.00	1			1													
BHC22	B	45	21.00		1															
BHC22	B	50	24.00	1	1															
BHC27	B	1	2.00		1															

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-6**	**Target Date**	30/03/2018
Scheduled By	Geosphere Environmental Ltd		

CHEDULE OF LABORATORY TEST

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	Hydrometer + Pre-sieve	Liquid/Plastic Limits	Wet Sieve Preparation	Brownfield Site-Pyrite prese	Organic Content (Dichromat	Triaxial Test	CBR inc. static compression	Soaked CBR Swelling Measu	Compaction 2.5kg					Sample Remarks
BHC27	D	2	3.00						1											
BHC27	B	4	4.00	1	1															
BHC27	B	11	9.00	1	1															
BHC27	B	17	13.00		1															
BHC27	D	18	13.70				1		1											
BHC27	B	26	17.00	1			1													
BHC27	B	34	21.00		1															
BHC27	D	35	21.80	1				1												
BHC27	UT	36	22.00	1				1			2									
BHC27	UT	39	23.00	1				1			2									
BHC27	B	40	23.00				1													
BHC27	B	48	27.00				1													
BHC27	B	52	29.00						1											
BHC27	B	58	32.50	1			1													
BHC27	B	66	36.50				1													
BHC27	D	71	39.50						1											
BHC27	B	74	40.50		1															
BHC27	B	81	44.20		1															
BHC27	B	89	47.50		1															
BHC27	D	93	50.00				1													
Totals				**26**	**21**	**3**	**18**	**9**	**2**	**9**	**2**	**6**	**1**	**1**	**1**						**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC14	1.00	B	1	**12.9**	Dark brown silty clayey SAND and brown, black and white angular to rounded flint GRAVEL with occasional concrete fragments.	
BHC14	1.80	B	2	**25.1**	Soft light olive brown slightly gravelly slightly sandy CLAY with rare recently active roots. Gravel is fine to coarse angular to subrounded chalk and rare flint.	
BHC14	2.00	D	3	**24.1**	Soft olive brown slightly gravelly slightly sandy CLAY. Gravel is brown, black and white angular flint.	
BHC14	4.90	B	8	**12.3**	Orange very gravelly slightly silty SAND. Gravel is black, brown and white angular to rounded flint.	
BHC14	9.40	B	18	**12.5**	Light brown very gravelly SAND. Gravel is black and white angular to rounded flint.	
BHC14	13.70	B	27	**15.2**	Light brown gravelly slightly silty SAND. Gravel is black and white angular to subangular flint.	
BHC14	19.00	D	39	**23.8**	Olive grey silty clayey slightly organic SAND.	
BHC14	22.00	D	45	**29.8**	Firm olive grey slightly sandy CLAY. Sand is fine.	
BHC14	23.00	UT	47	**35.6**	Firm (Medium strength) dark grey silty CLAY with occasional fine sand laminations.	
BHC14	23.00	UT	47	**31.3**	Soft (Low strength) dark grey silty CLAY with occasional fine sand laminations.	
BHC14	25.70	B	52	**23.1**	Dark grey silty clayey slightly organic SAND.	
BHC14	29.60	B	60	**25.8**	Dark grey silty clayey slightly organic SAND.	
BHC14	33.80	B	68	**36.2**	Soft olive grey slightly sandy silty slightly organic CLAY	
BHC22	2.00	U	5	**25.1**	Very soft brownish yellow slightly gravelly sandy silty CLAY with occasional light grey mottling.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC22	3.00	D	7	**24.3**	Very soft brownish yellow sandy silty CLAY with occasional bluish grey and orange mottling. Sand is fine.	
BHC22	4.00	D	9	**22.3**	Very soft orangish brown gravelly silty clayey fine to medium SAND. Gravel is fine to medium sandstone and flint.	
BHC22	9.00	D	17	**19.2**	Light olive brown slightly gravelly silty SAND. Gravel is black, brown and white angular flint.	
BHC22	10.80	D	22	**35.0**	Soft light olive brown slightly gravelly slightly sandy silty CLAY with occasional bluish grey and orange mottling. Sand is fine to medium. Gravel is fine to medium flint.	
BHC22	17.00	B	37	**40.9**	Olive grey silty clayey slightly organic SAND.	
BHC22	24.00	B	50	**21.0**	Dark grey silty SAND.	
BHC27	4.00	B	4	**9.2**	Black, white and brown very sandy silty angular to rounded GRAVEL. Sand is brown.	
BHC27	9.00	B	11	**19.7**	Light olive brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	
BHC27	17.00	B	26	**20.9**	Olive brown slightly gravelly silty clayey SAND. Gravel is angular flint.	
BHC27	21.80	D	35	**33.8**	Soft dark grey slightly sandy silty slightly organic CLAY with occasional olive mottling. Sand is fine.	
BHC27	22.00	UT	36	**33.0**	Stiff (High strength) dark grey silty CLAY with occasional grey fine sand laminations.	
BHC27	22.00	UT	36	**32.0**	Stiff (High strength) dark grey silty CLAY with occasional olive grey mottling, and grey fine sand laminations.	
BHC27	23.00	UT	39	**32.1**	Firm (Medium strength) dark grey CLAY with occasional light grey fine sand laminations.	
BHC27	23.00	UT	39	**32.0**	Stiff (High strength) dark grey CLAY with grey fine sand laminations.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC27	32.50	B	58	**22.4**	Olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

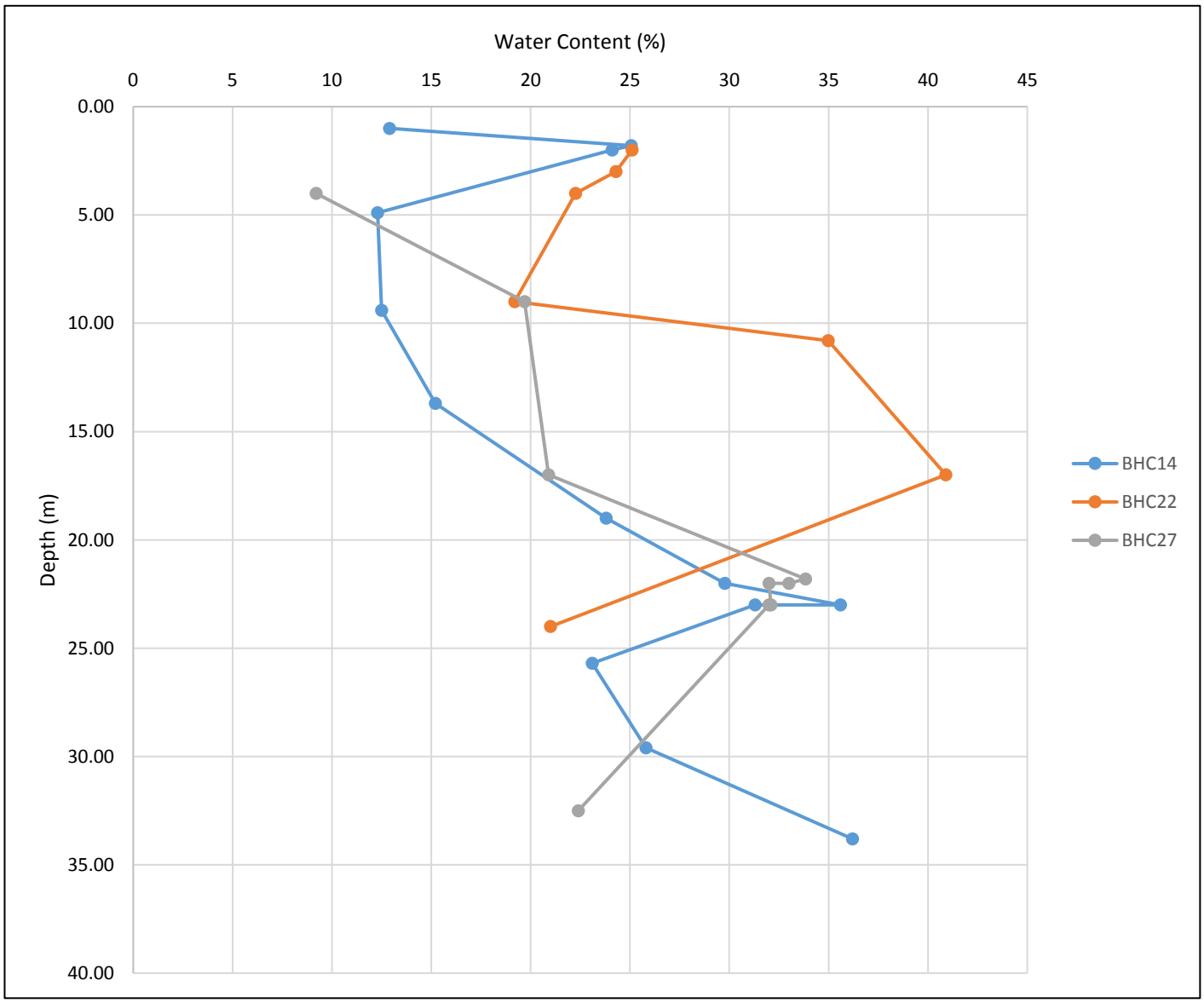
ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

WATER CONTENT VS DEPTH BELOW GROUND LEVEL



Method of Preparation:	BSEN ISO 17892-1: 2014
Method of Test:	BSEN ISO 17892-1: 2014
Type of Sample Key:	U - Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC14	1.80	B	2	**25.1**	54	19	35	0.17	Wet Sieved	11 (M)	N/R*	24	Soft light olive brown slightly gravelly slightly sandy CLAY with rare recently active roots. Gravel is fine to coarse angular to subrounded chalk and rare flint.	CH
BHC14	22.00	D	45	**29.8**	56	22	34	0.23	From Natural	0 (A)		25	Firm olive grey slightly sandy CLAY. Sand is fine.	CH
BHC14	23.00	UT	47	**35.6**	48	18	30	0.59	From Natural	0 (A)		24	Firm (Medium strength) dark grey silty CLAY with occasional fine sand laminations.	CI
BHC14	33.80	B	68	**36.2**	64	24	40	0.31	From Natural	0 (A)		71	Soft olive grey slightly sandy silty slightly organic CLAY	CH
BHC22	3.00	D	7	**24.3**	28	19	9	0.59	From Natural	0 (A)		24	Very soft brownish yellow sandy silty CLAY with occasional bluish grey and orange mottling. Sand is fine.	CL
BHC22	10.80	D	22	**35.0**	50	20	30	0.50	Wet Sieved	15 (M)	41.2*	73	Soft light olive brown slightly gravelly slightly sandy silty CLAY with occasional bluish grey and orange mottling. Sand is fine to medium. Gravel is fine to medium flint.	CI/CH
BHC27	21.80	D	35	**33.8**	48	20	28	0.49	From Natural	0 (A)		27	Soft dark grey slightly sandy silty slightly organic CLAY with occasional olive mottling. Sand is fine.	CIO
BHC27	22.00	UT	36	**33.0**	46	22	24	0.46	From Natural	0 (A)		24	Stiff (High strength) dark grey silty CLAY with occasional grey fine sand laminations.	CI

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC27	23.00	UT	39	**32.1**	54	20	34	0.36	From Natural	0 (A)		24	Firm (Medium strength) dark grey CLAY with occasional light grey fine sand laminations.	CH

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

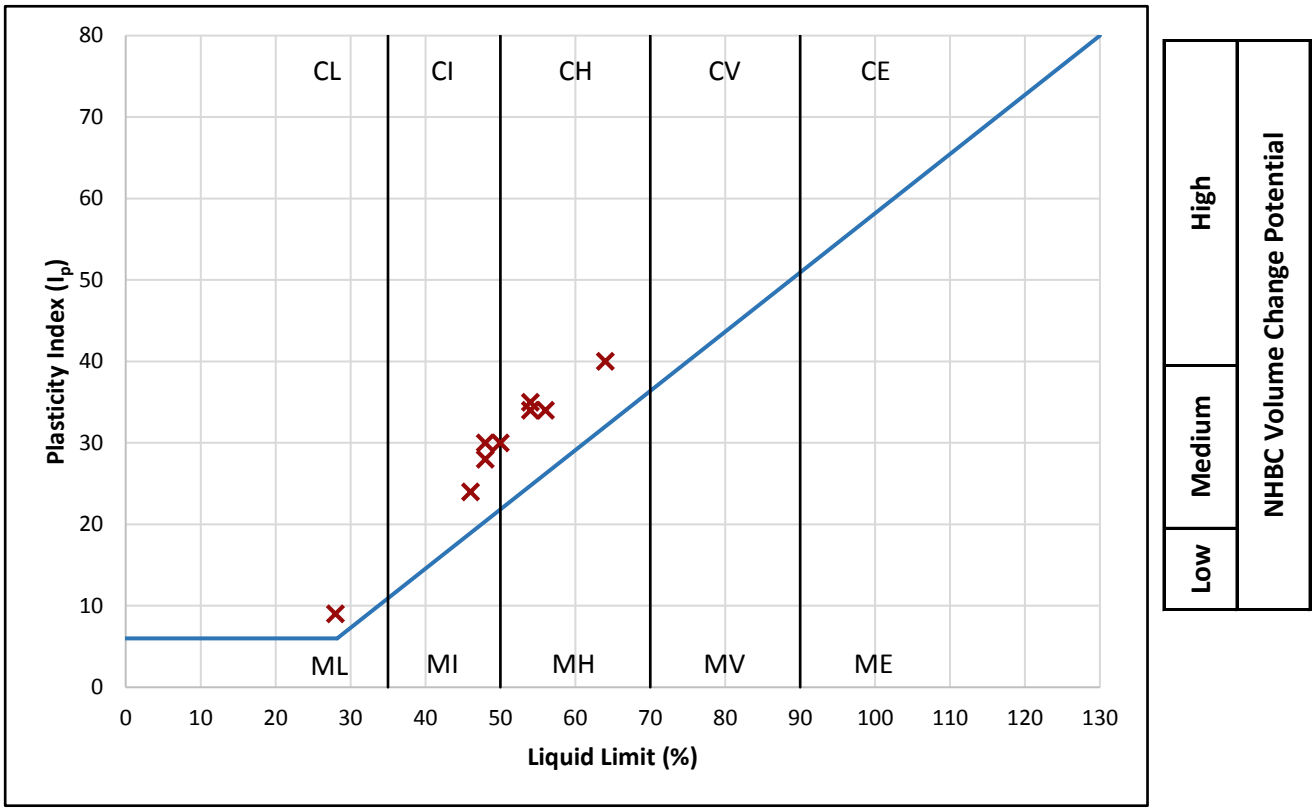
DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

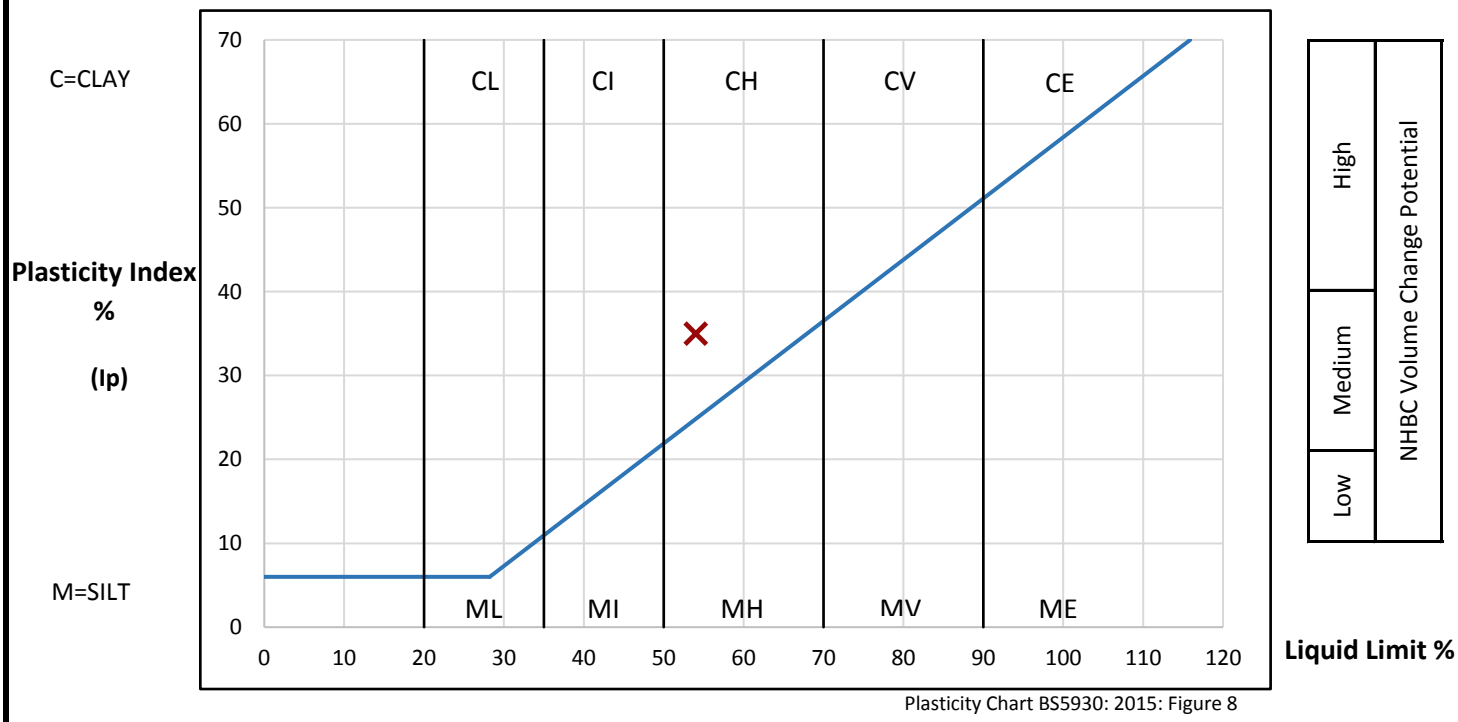
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC14	1.80	B	2	25.1	Soft light olive brown slightly gravelly slightly sandy CLAY with rare recently active roots. Gravel is fine to coarse angular to subrounded chalk and rare flint.	

PREPARATION				Liquid Limit	54 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	19 %
Sample retained 0.425mm sieve	(Measured)	11 %		Plasticity Index	35 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	0.17
Sample retained 2mm sieve	(Measured)	8 %		NHBC Modified (I'p)	31 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

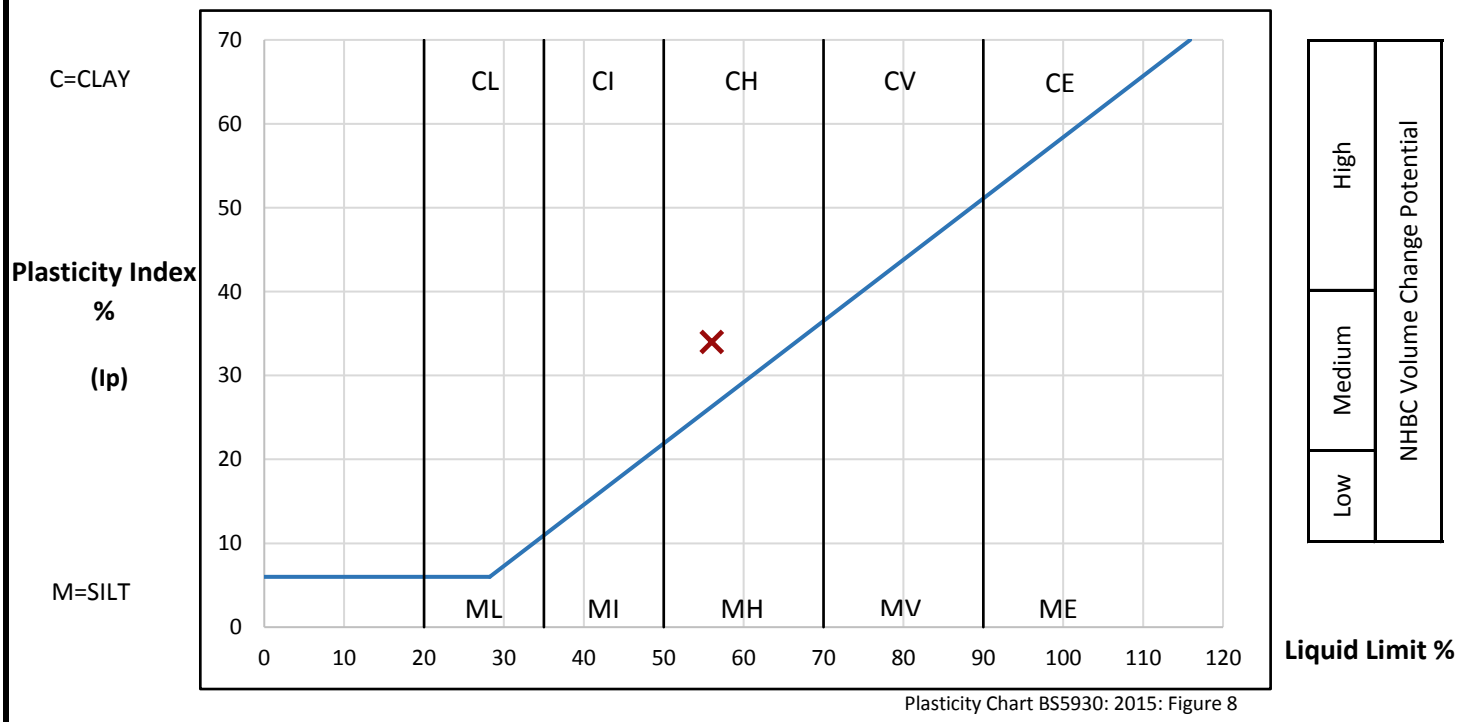
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC14	22.00	D	45	29.8	Firm olive grey slightly sandy CLAY. Sand is fine.	

PREPARATION			Liquid Limit	56 %
Method of preparation		From natural	Plastic Limit	22 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	34 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.23
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	25 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

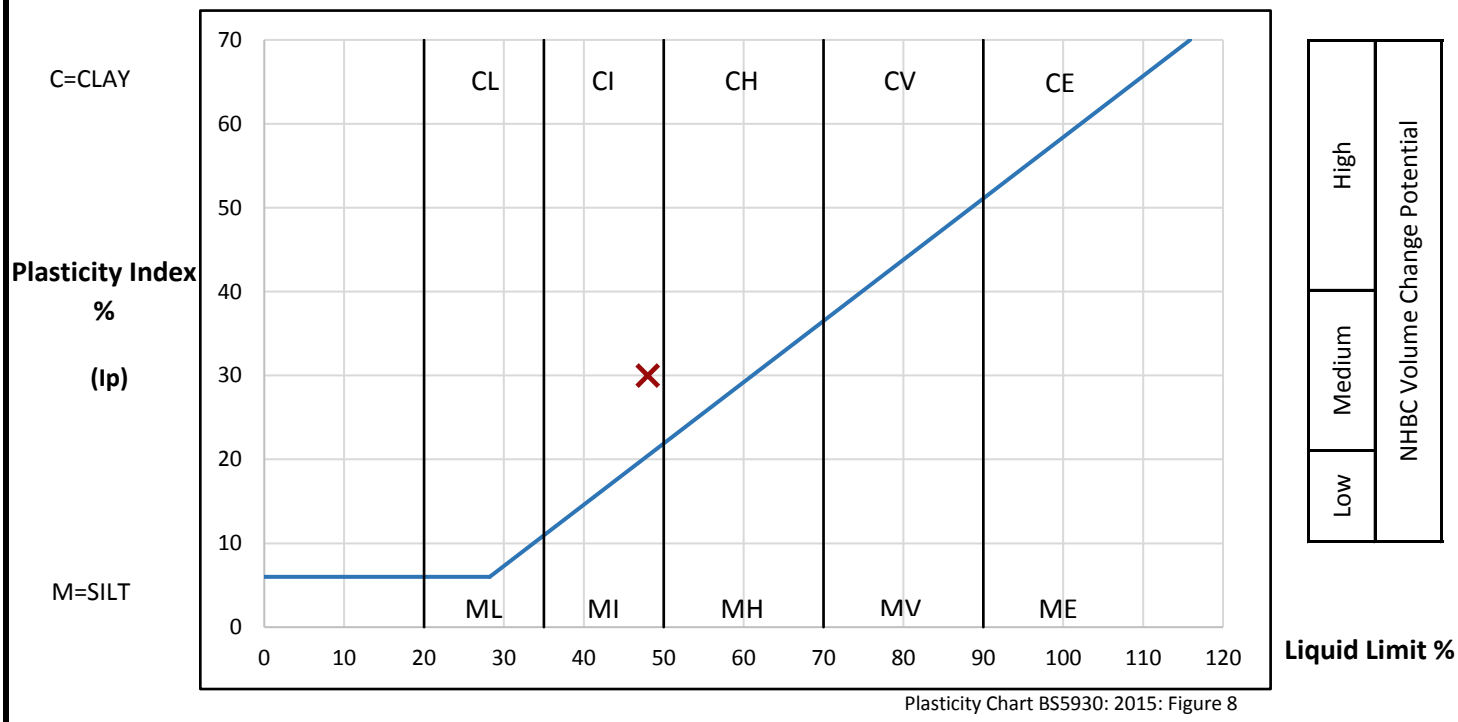
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC14	23.00	UT	47	35.6	Firm (Medium strength) dark grey silty CLAY with occasional fine sand laminations.	

PREPARATION				Liquid Limit	48 %
Method of preparation		From natural		Plastic Limit	18 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	30 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.59
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs		Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

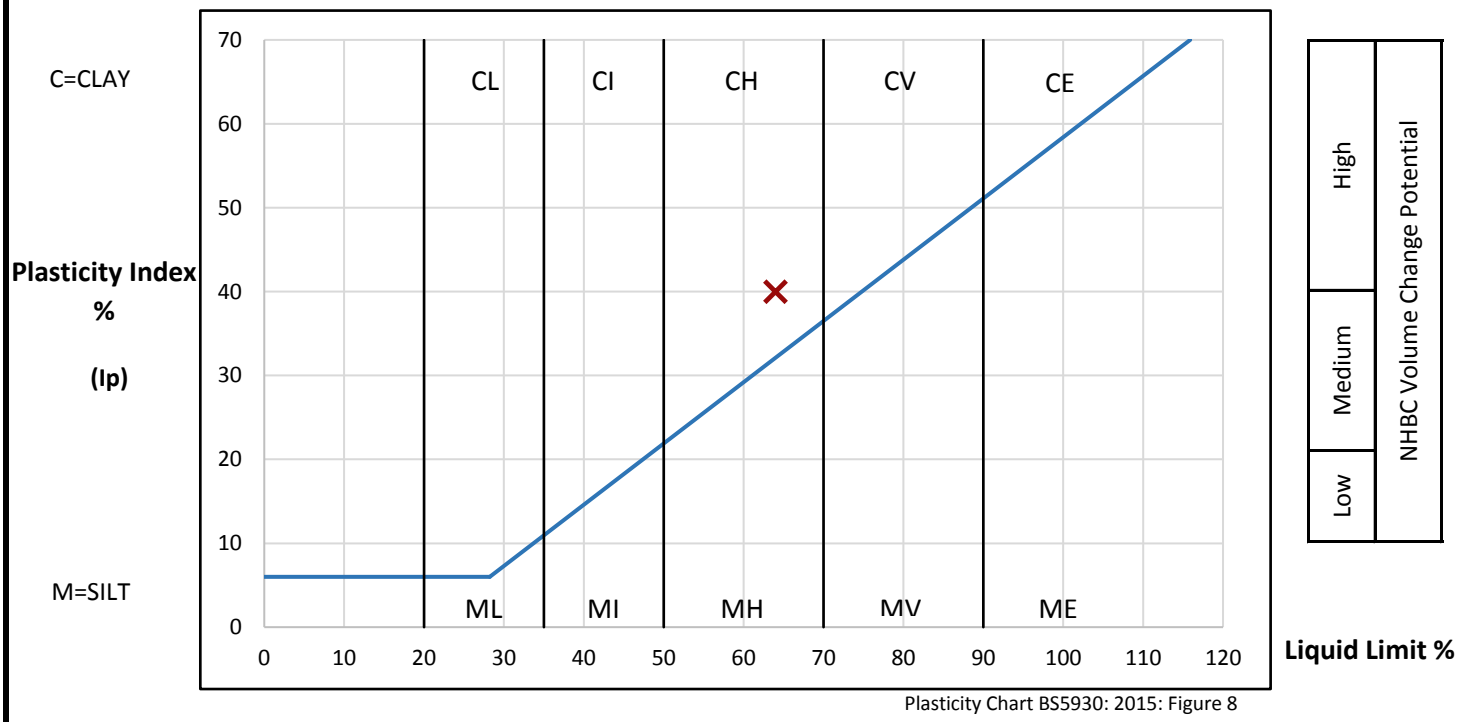
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC14	33.80	B	68	36.2	Soft olive grey slightly sandy silty slightly organic CLAY	

PREPARATION				Liquid Limit	64 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	40 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.31
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	71 hrs		Clay Content 37 %	Derived Activity	1.08



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

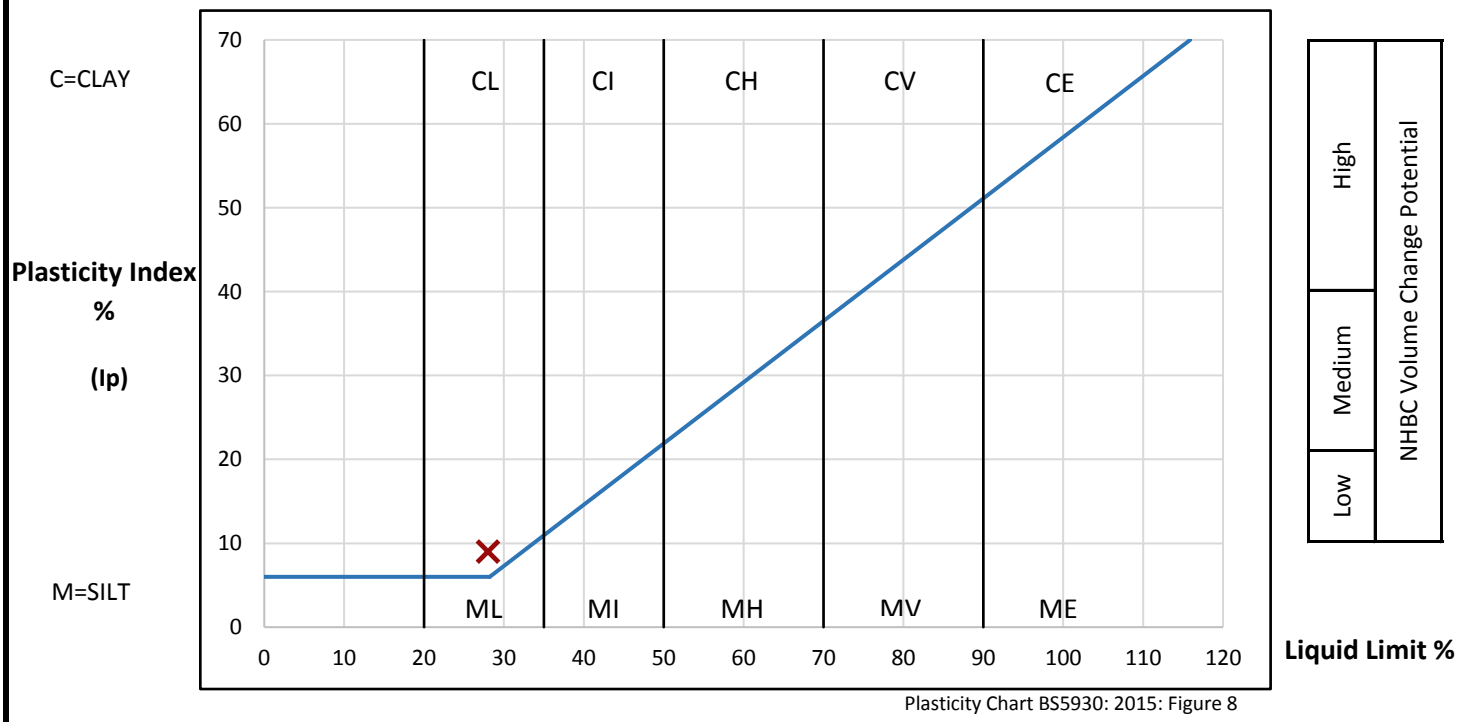
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC22	3.00	D	7	24.3	Very soft brownish yellow sandy silty CLAY with occasional bluish grey and orange mottling. Sand is fine.	

PREPARATION			Liquid Limit	28 %
Method of preparation		From natural	Plastic Limit	19 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	9 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.59
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

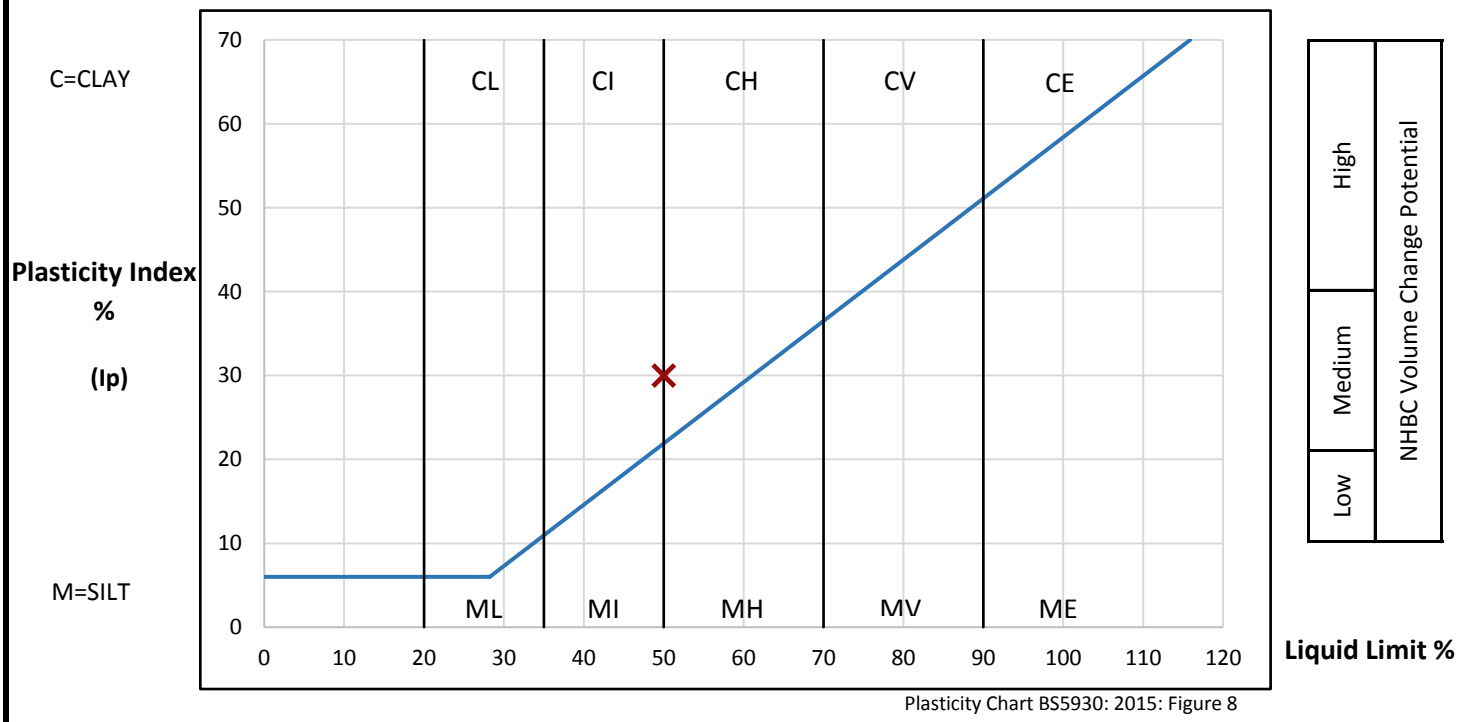
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC22	10.80	D	22	35.0	Soft light olive brown slightly gravelly slightly sandy silty CLAY with occasional bluish grey and orange mottling. Sand is fine to medium. Gravel is fine to medium flint.	

PREPARATION				Liquid Limit	50 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	20 %
Sample retained 0.425mm sieve	(Measured)	15 %		Plasticity Index	30 %
Corrected water content for material passing 0.425mm		41.2		Liquidity Index	0.50
Sample retained 2mm sieve	(Measured)	4 %		NHBC Modified (I'p)	26 %
Curing time	73 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

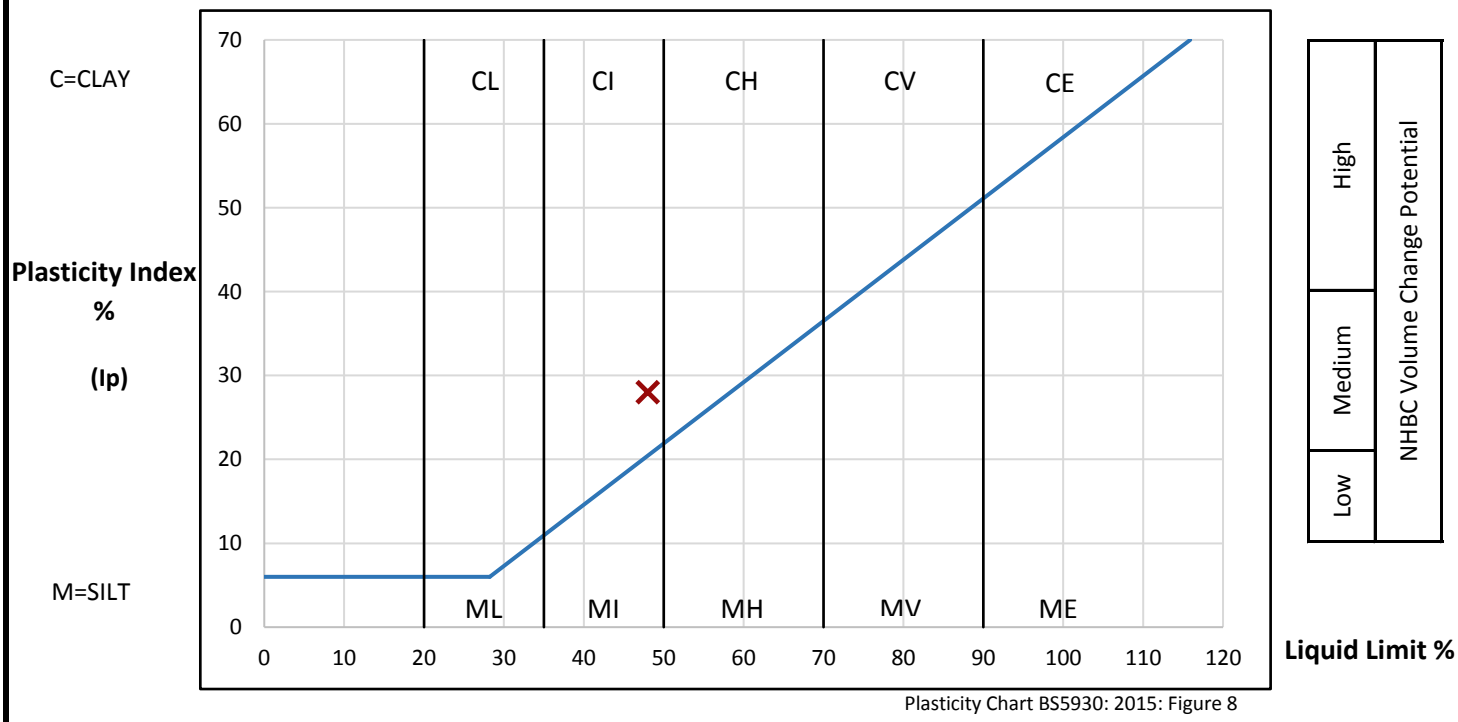
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC27	21.80	D	35	33.8	Soft dark grey slightly sandy silty slightly organic CLAY with occasional olive mottling. Sand is fine.	

PREPARATION			Liquid Limit	48 %
Method of preparation		From natural	Plastic Limit	20 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	28 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.49
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	27 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

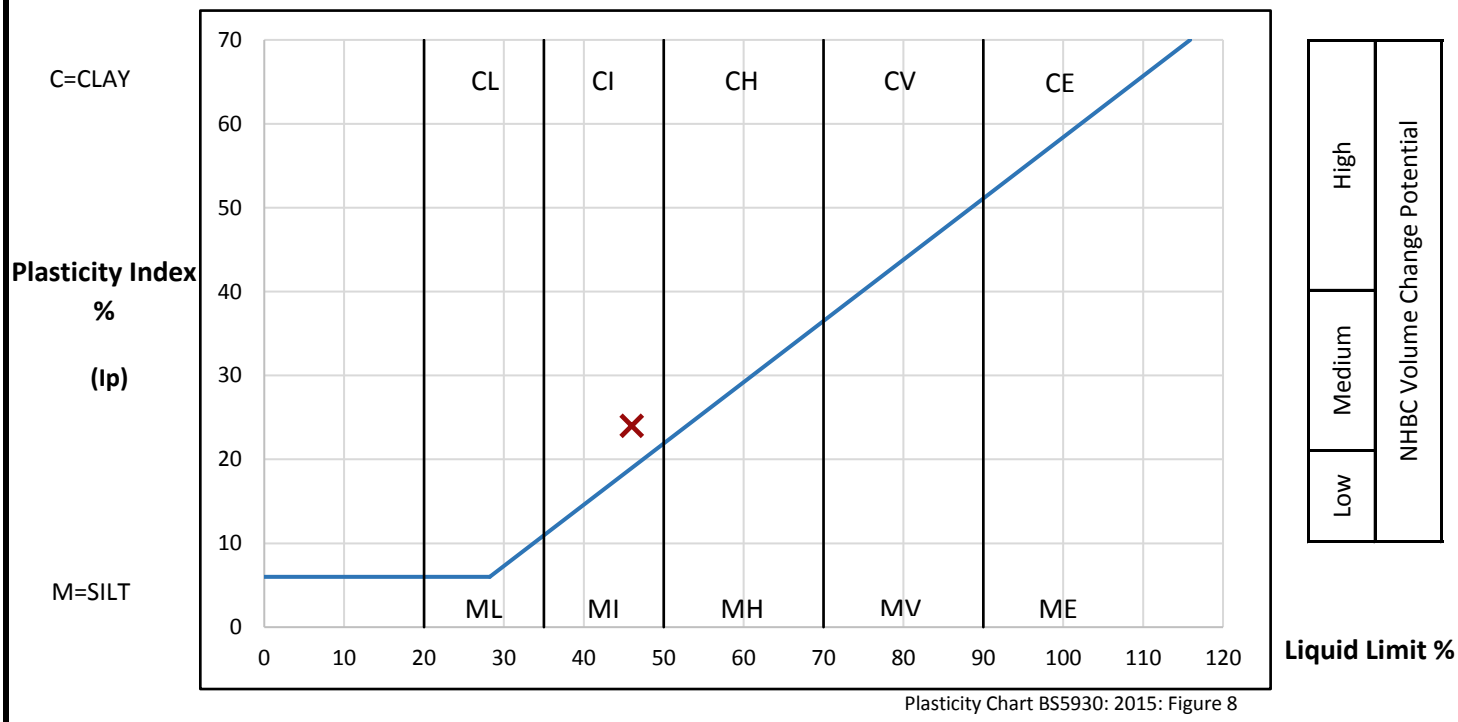
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC27	22.00	UT	36	33.0	Stiff (High strength) dark grey silty CLAY with occasional grey fine sand laminations.	

PREPARATION				Liquid Limit	46 %
Method of preparation		From natural		Plastic Limit	22 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	24 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.46
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

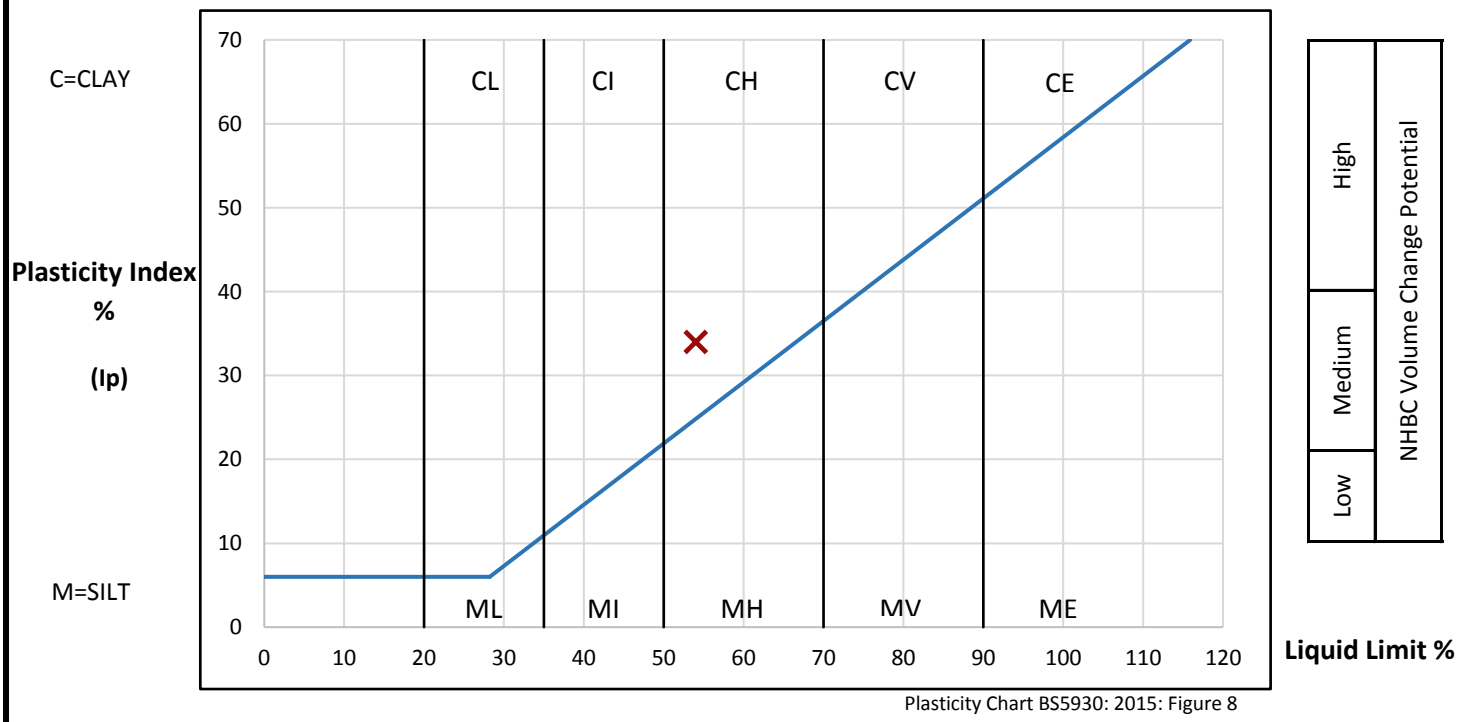
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC27	23.00	UT	39	32.1	Firm (Medium strength) dark grey CLAY with occasional light grey fine sand laminations.	

PREPARATION				Liquid Limit	54 %
Method of preparation		From natural		Plastic Limit	20 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	34 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.36
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: PART 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

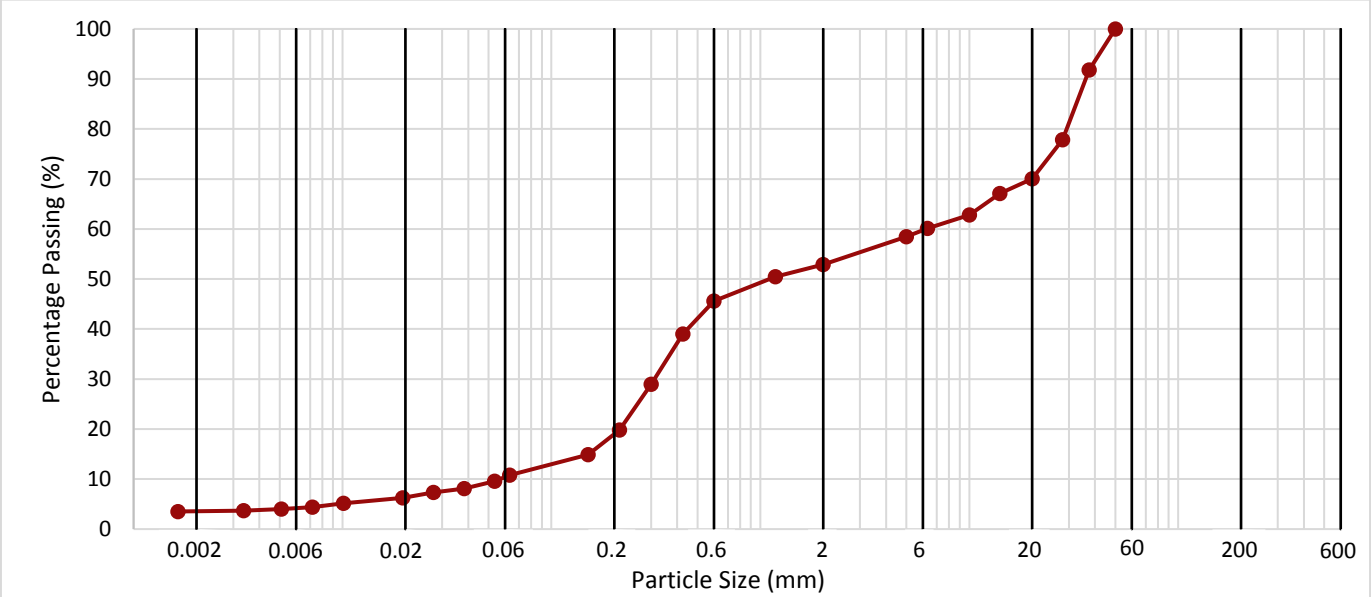
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	1.00	B	1	Dark brown silty clayey SAND and brown, black and white angular to rounded flint GRAVEL with occasional concrete fragments.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0535	10	7	
	0.0382	8		
	0.0272	7		
	0.0194	6		4
	0.0101	5		
	0.0072	4		
	0.0051	4		
	0.0034	4		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	53	42
1.18	50	
0.600	46	
0.425	39	
0.300	29	
0.212	20	
0.150	15	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		47
125		
90		
63		
50	100	
37.5	92	
28	78	
20	70	
14	67	
10	63	
6.3	60	
5	58	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

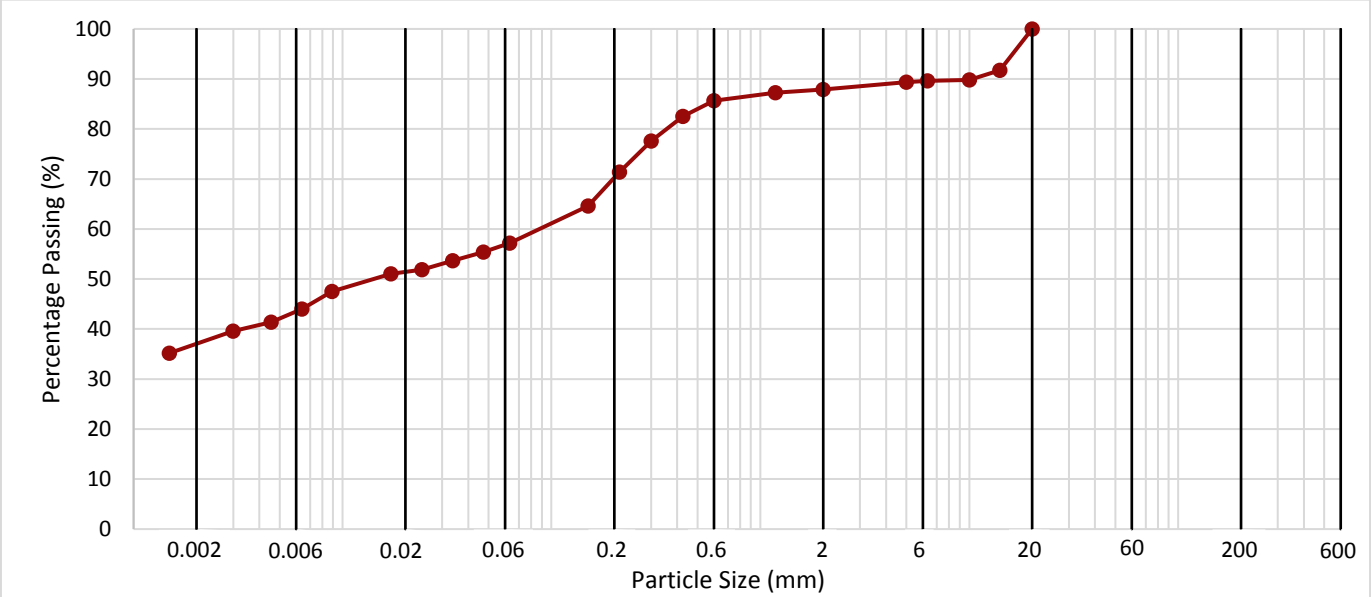
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	2.00	D	3	Soft olive brown slightly gravelly slightly sandy CLAY. Gravel is brown, black and white angular flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0472	55	20
	0.0336	54	
	0.0240	52	
	0.0170	51	Clay by Dry Mass (%)
	0.0089	48	
	0.0064	44	
	0.0046	41	37
	0.0030	40	
	0.0015	35	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	88	31
1.18	87	
0.600	86	
0.425	83	
0.300	78	
0.212	71	
0.150	65	
0.063	57	

Fines By Dry Mass (%)	
<0.063mm	57

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		12
125		
90		
63		
50		
37.5		
28		
20	100	
14	92	
10	90	
6.3	90	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

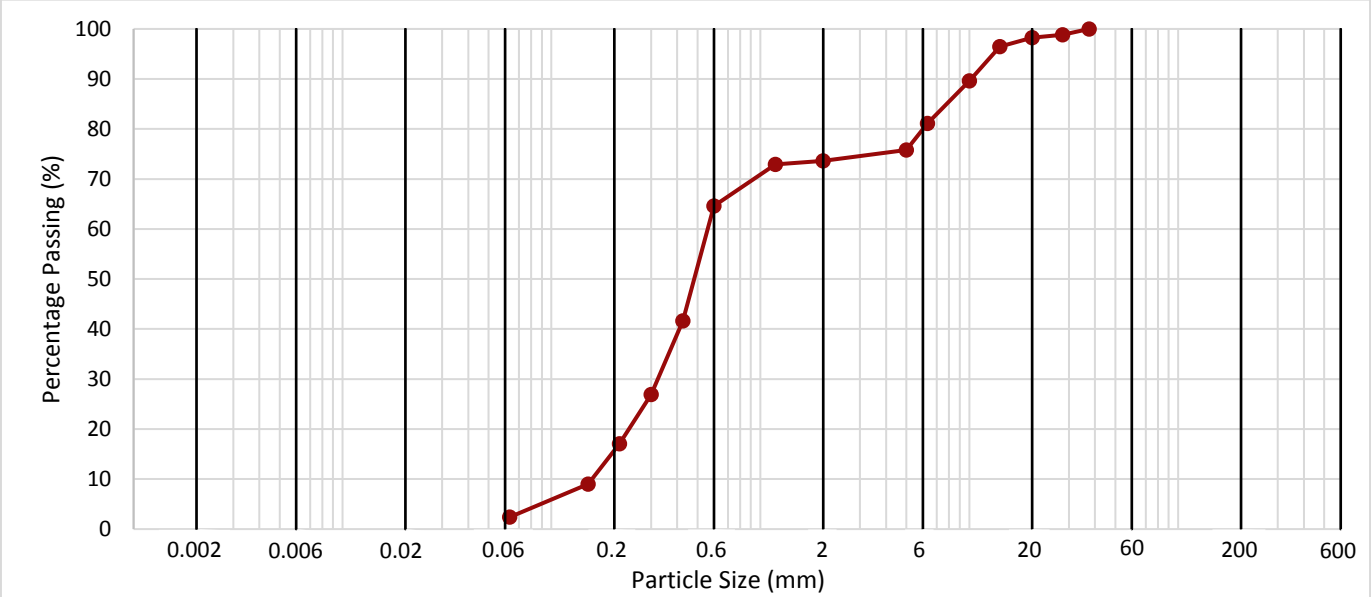
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	4.90	B	8	Orange very gravelly slightly silty SAND. Gravel is black, brown and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	74	72
1.18	73	
0.600	65	
0.425	42	
0.300	27	
0.212	17	
0.150	9	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		26
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	96	
10	90	
6.3	81	
5	76	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

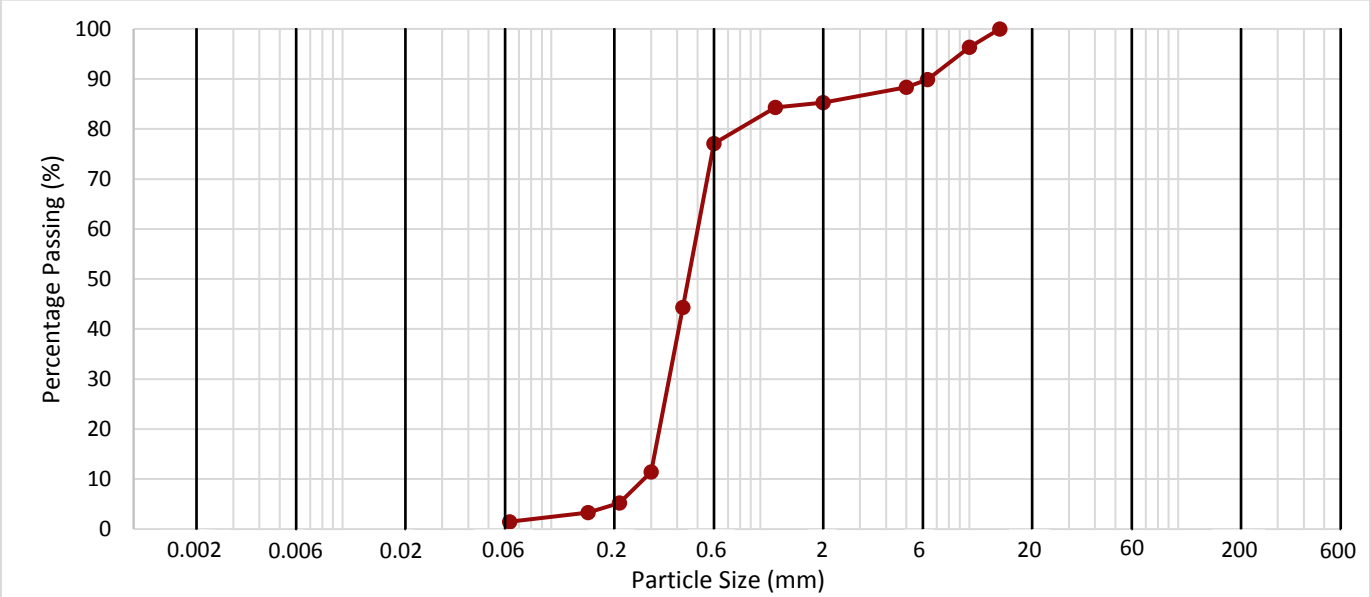
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	7.00	D	13	Yellowish brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	85	84
1.18	84	
0.600	77	
0.425	44	
0.300	11	
0.212	5	
0.150	3	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		15
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	96	
6.3	90	
5	88	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

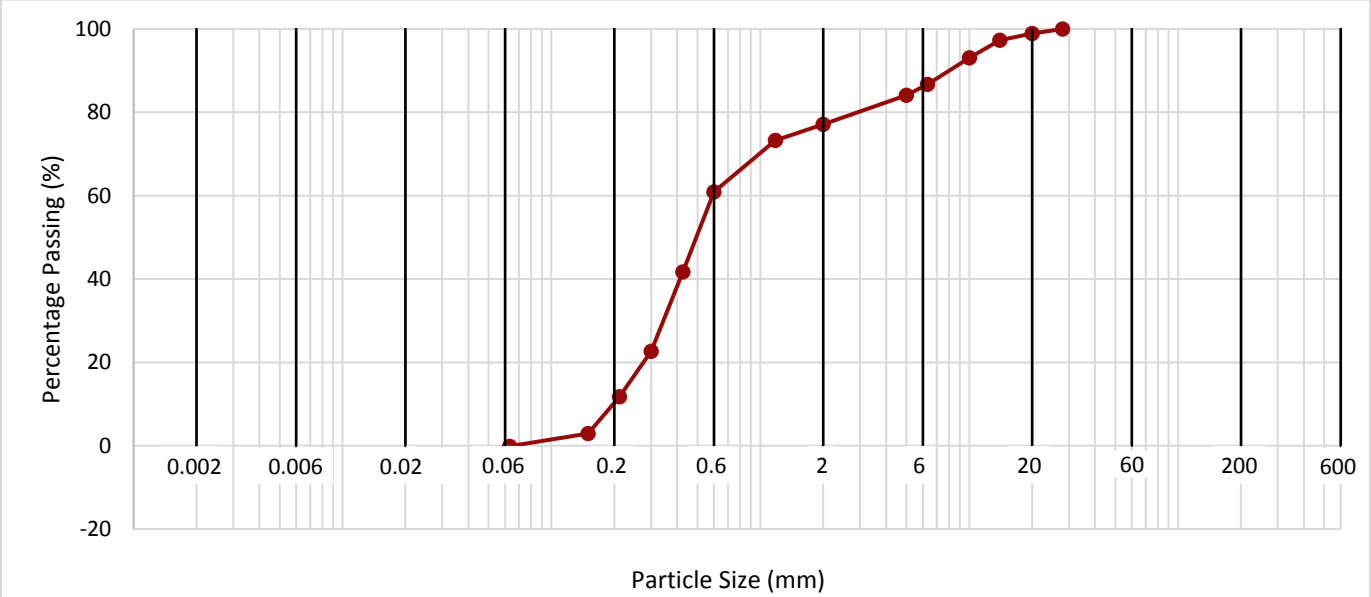
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	9.40	B	18	Light brown very gravelly SAND. Gravel is black and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	77	77
1.18	73	
0.600	61	
0.425	42	
0.300	23	
0.212	12	
0.150	3	
0.063	0	

Fines By Dry Mass (%)	
<0.063mm	0

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		23
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	97	
10	93	
6.3	87	
5	84	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

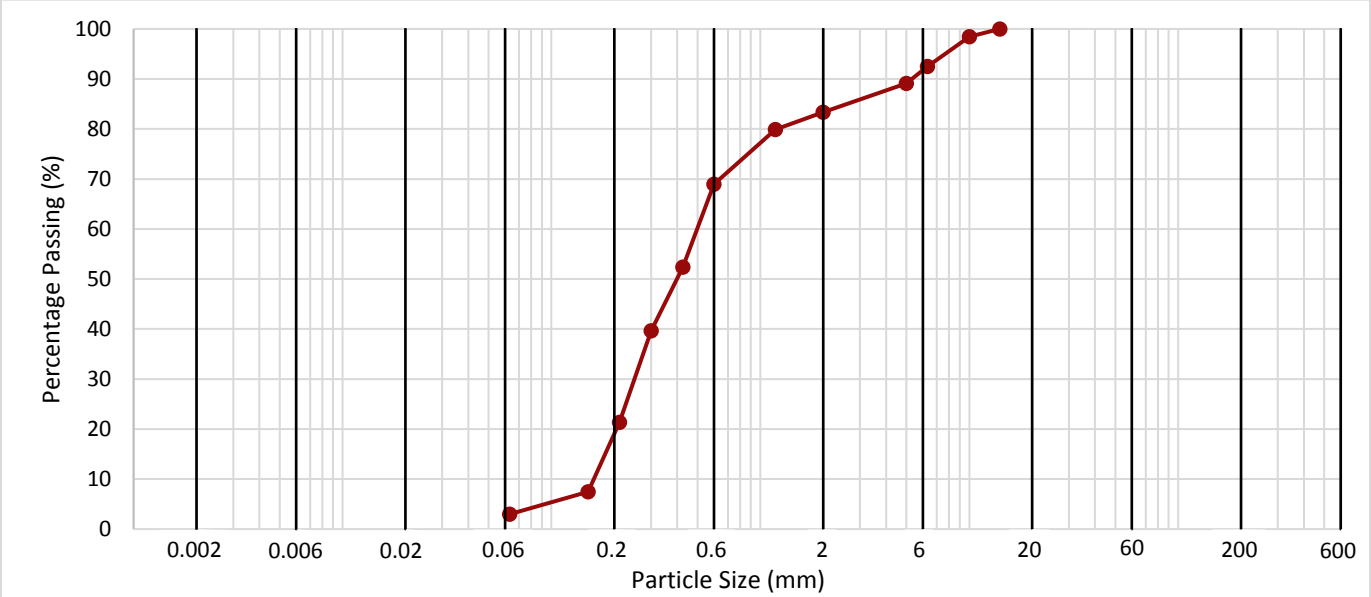
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	11.70	B	23	Greyish brown gravelly slightly silty SAND. Gravel is black, white and brown angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	83	80
1.18	80	
0.600	69	
0.425	52	
0.300	40	
0.212	21	
0.150	7	
0.063	3	

Fines By Dry Mass (%)	
<0.063mm	3

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		17
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	98	
6.3	92	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

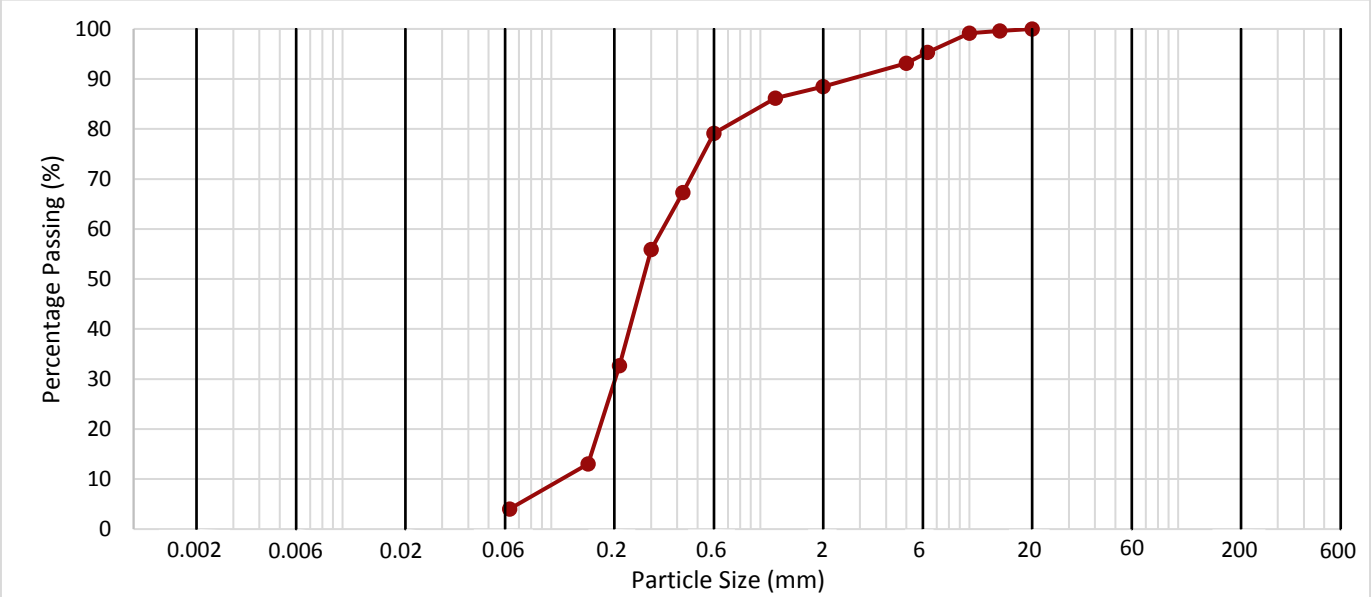
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	13.70	B	27	Light brown gravelly slightly silty SAND. Gravel is black and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	88	**84**
1.18	86	
0.600	79	
0.425	67	
0.300	56	
0.212	33	
0.150	13	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	**4**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**12**
125		
90		
63		
50		
37.5		
28		
20	100	
14	100	
10	99	
6.3	95	
5	93	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

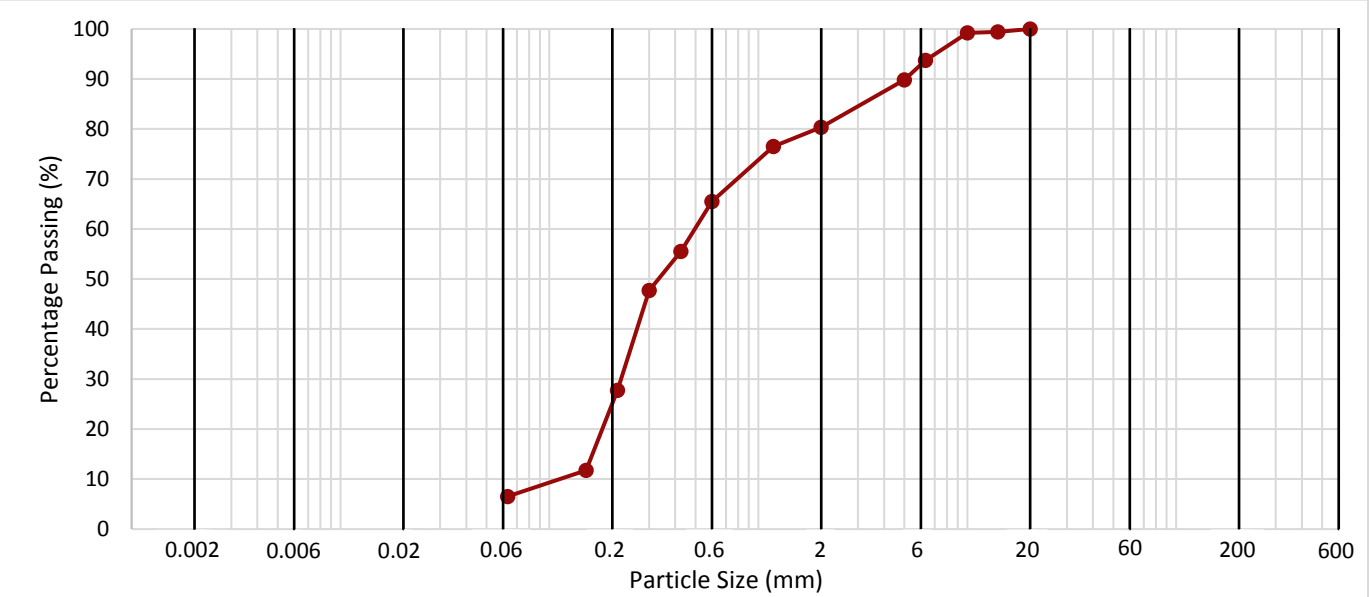
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	16.70	B	33	Light olive brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	80	73
1.18	76	
0.600	66	
0.425	56	
0.300	48	
0.212	28	
0.150	12	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		20
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	99	
6.3	94	
5	90	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

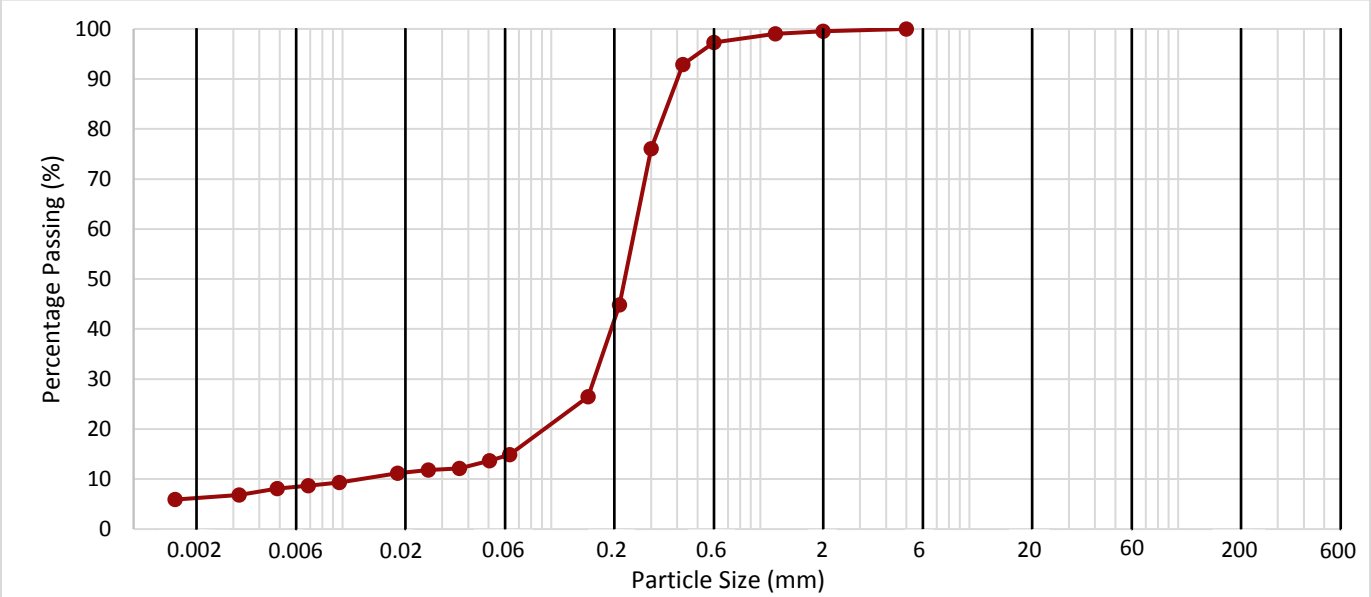
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	19.00	D	39	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0505	14	9	
	0.0363	12		
	0.0258	12		
	0.0183	11		
	0.0096	9		
	0.0069	9		6
	0.0049	8		
	0.0032	7		
	0.0016	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	85
1.18	99	
0.600	97	
0.425	93	
0.300	76	
0.212	45	
0.150	26	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

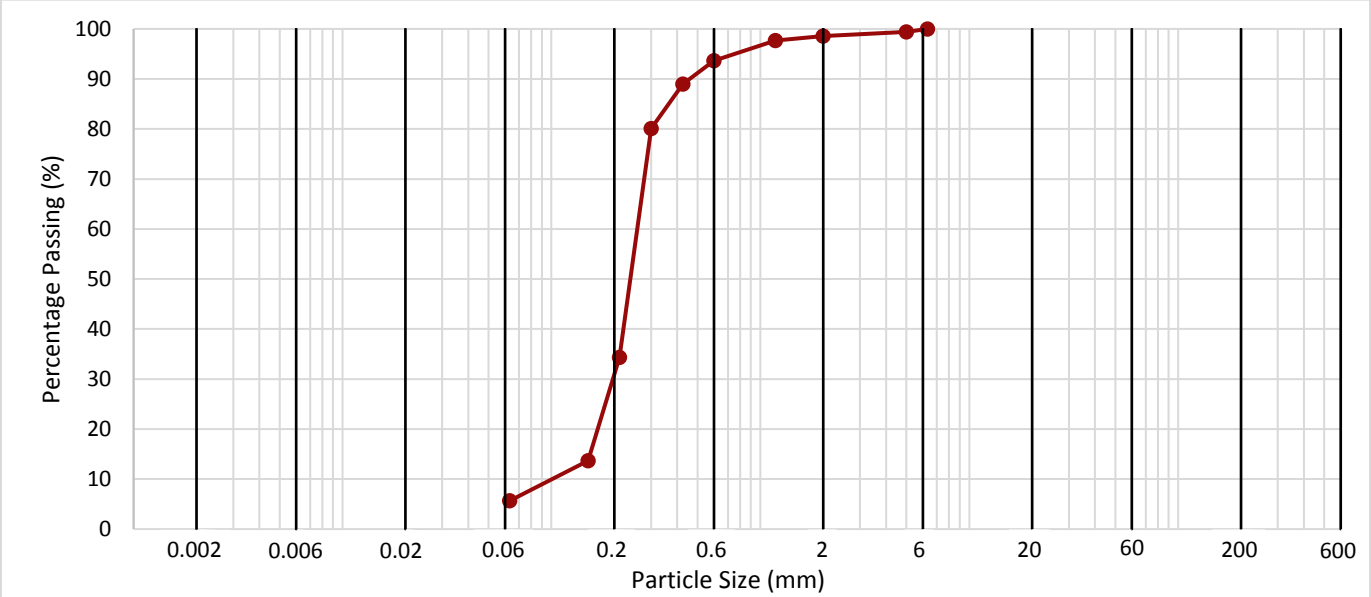
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	21.60	B	44	Olive grey slightly gravelly silty SAND. Gravel is flint and quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**93**
1.18	98	
0.600	94	
0.425	89	
0.300	80	
0.212	34	
0.150	14	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	**6**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

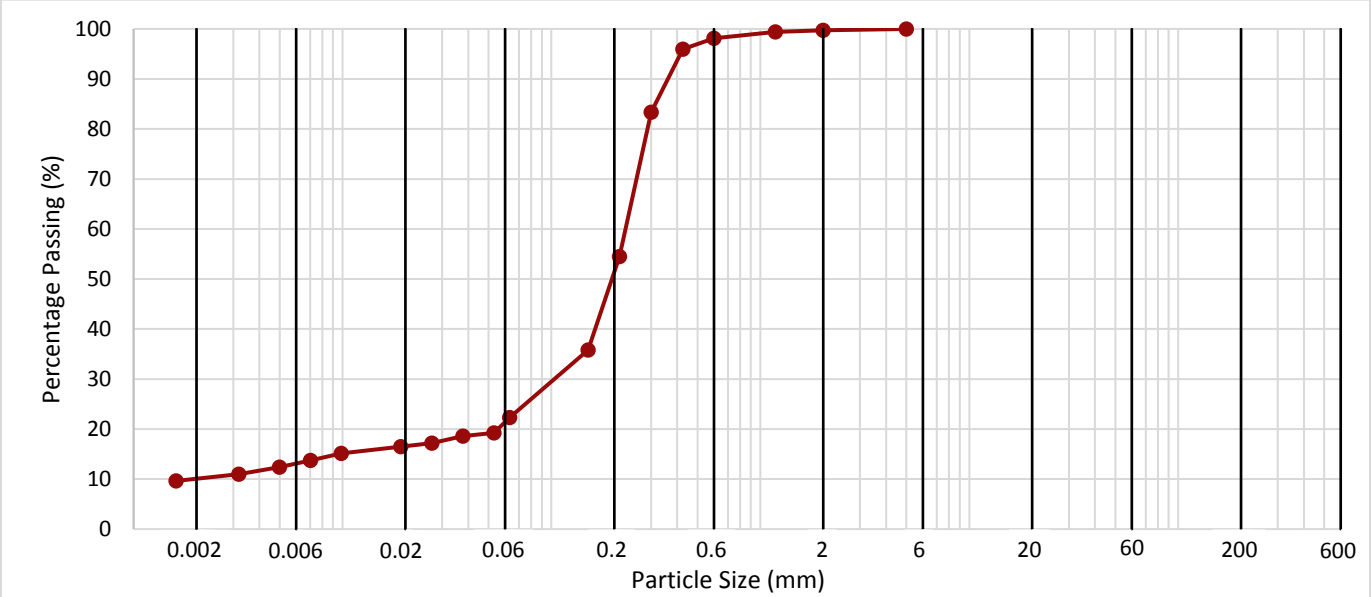
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	25.70	B	52	Dark grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0531	19	12	
	0.0377	19		
	0.0268	17		
	0.0190	17		10
	0.0099	15		
	0.0070	14		
	0.0050	12		
	0.0032	11		
	0.0016	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	78
1.18	99	
0.600	98	
0.425	96	
0.300	83	
0.212	55	
0.150	36	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

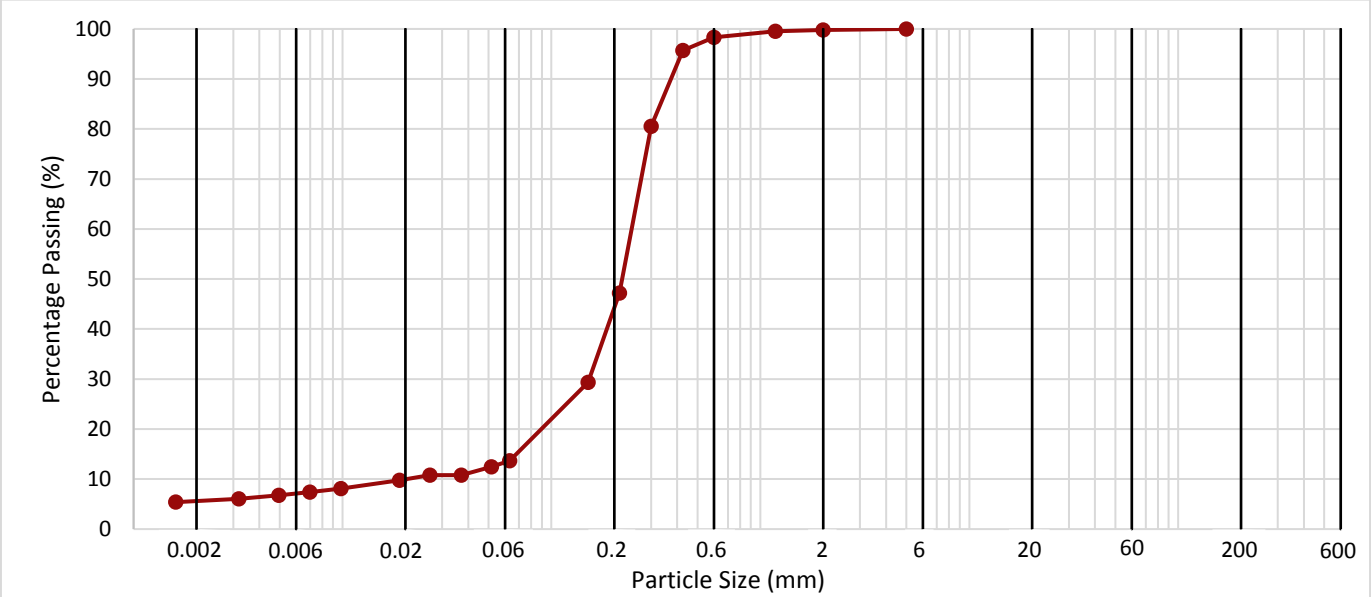
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	27.60	B	56	Dark grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0516	12	8
	0.0371	11	
	0.0263	11	
	0.0187	10	Clay by Dry Mass (%)
	0.0098	8	
	0.0070	7	
	0.0049	7	6
	0.0032	6	
	0.0016	5	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	86
1.18	100	
0.600	98	
0.425	96	
0.300	81	
0.212	47	
0.150	29	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

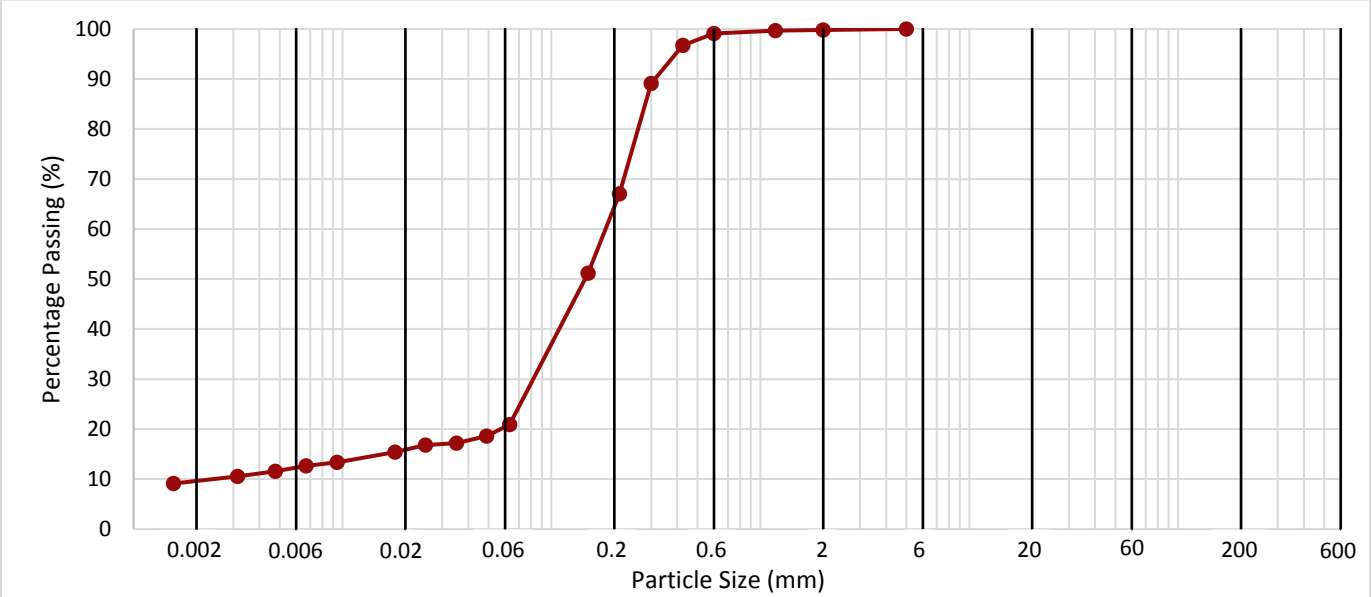
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	29.60	B	60	Dark grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0490	19	**11**
	0.0351	17	
	0.0249	17	
	0.0179	15	**Clay by Dry Mass (%)**
	0.0094	13	
	0.0067	13	
	0.0048	12	**10**
	0.0031	11	
	0.0016	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	**79**
1.18	100	
0.600	99	
0.425	97	
0.300	89	
0.212	67	
0.150	51	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	**21**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

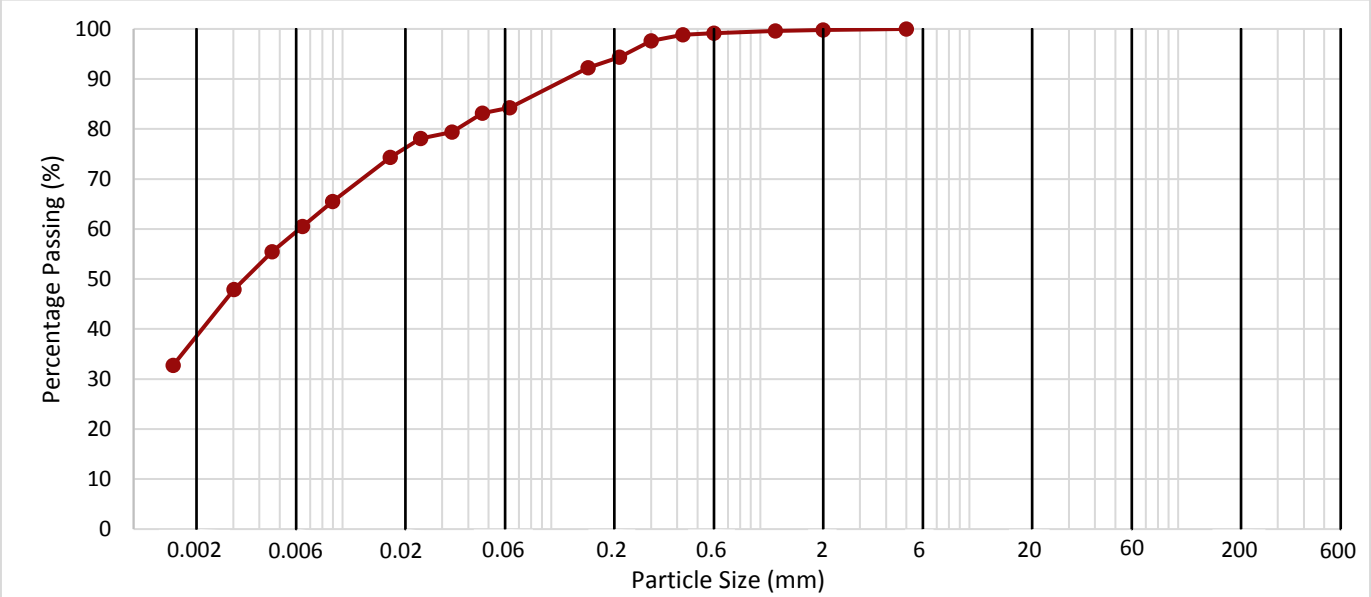
0998

Contract	Lake Lothing, Lowestoft
Serial No.	S31644-6

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	33.80	B	68	Soft olive grey slightly sandy silty slightly organic CLAY	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0467	83	47	
0.0334	79		
0.0237	78		
0.0169	74		
0.0090	66		
0.0064	60		
0.0046	55		37
0.0030	48		
0.0015	33		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	16
1.18	100	
0.600	99	
0.425	99	
0.300	98	
0.212	94	
0.150	92	
0.063	84	

Fines By Dry Mass (%)	
<0.063mm	84

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

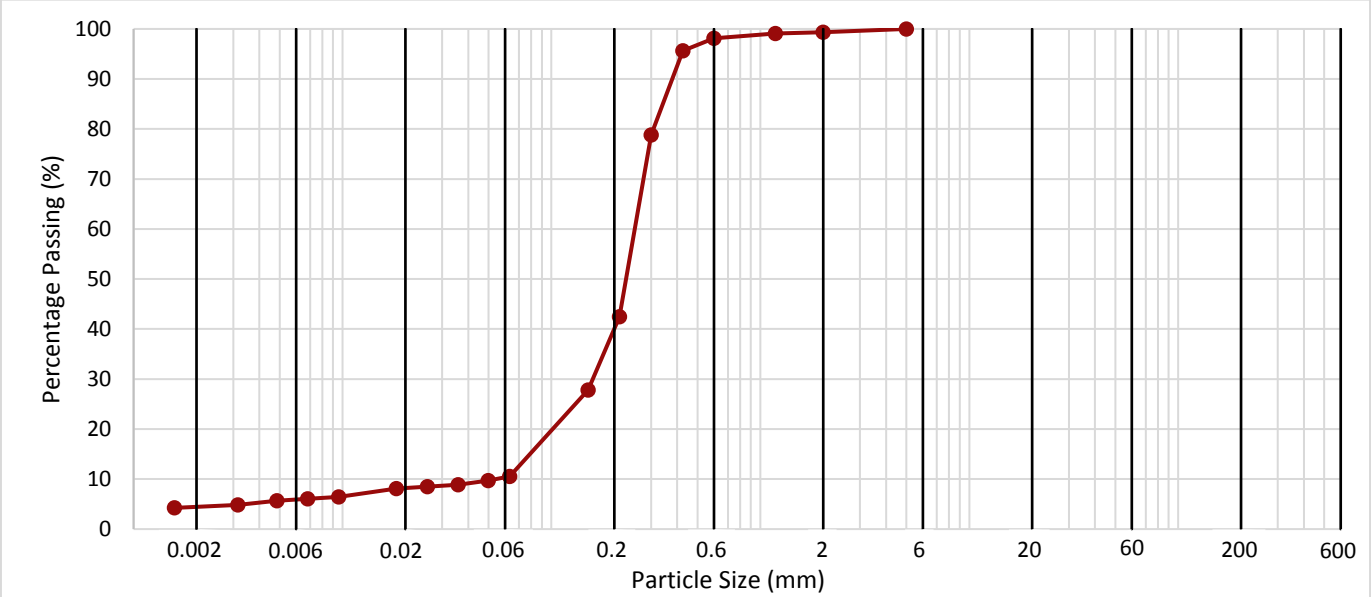
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	35.60	B	72	Olive grey slightly gravelly silty slightly clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0499	10	7	
	0.0357	9		
	0.0254	8		
	0.0181	8		4
	0.0096	6		
	0.0068	6		
	0.0049	6		
	0.0032	5		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	88
1.18	99	
0.600	98	
0.425	96	
0.300	79	
0.212	42	
0.150	28	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

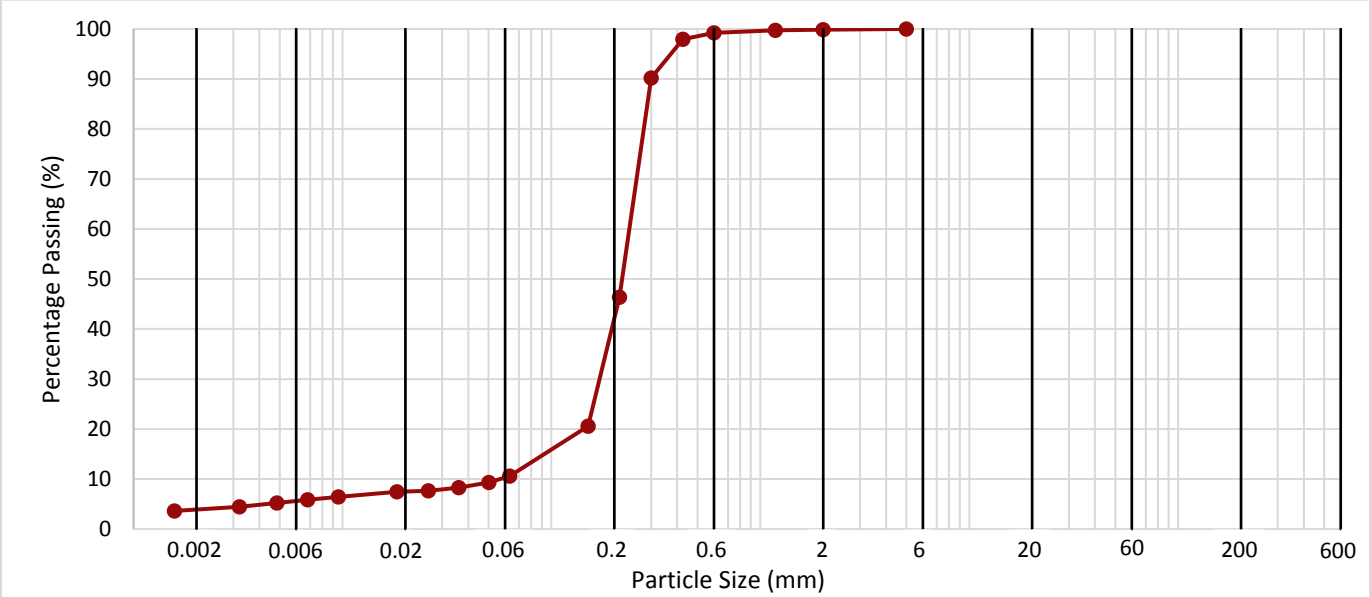
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC14	38.60	B	78	Olive grey silty slightly clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0501	9	7	
	0.0360	8		
	0.0257	8		
	0.0182	7		4
	0.0096	6		
	0.0068	6		
	0.0048	5		
	0.0032	4		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	100	
0.600	99	
0.425	98	
0.300	90	
0.212	46	
0.150	21	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

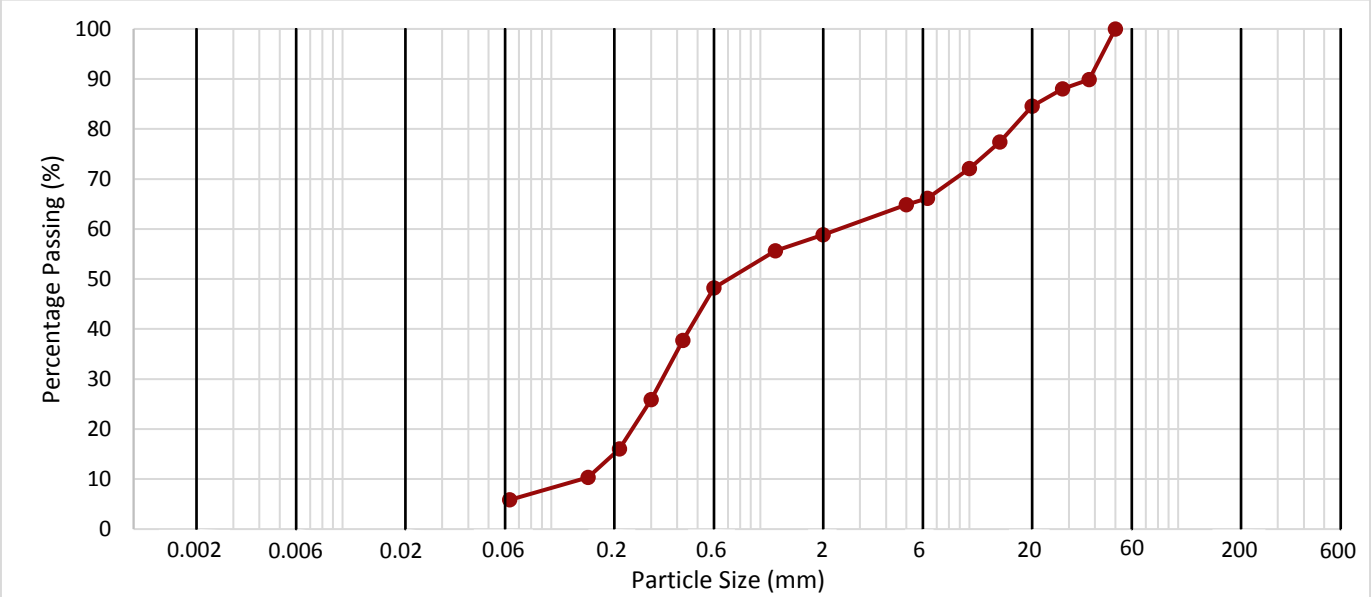
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	0.50 - 0.80	B	2	Brown very gravelly silty SAND with occasional brick and concrete fragments. Gravel is brown, black and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	59	53
1.18	56	
0.600	48	
0.425	38	
0.300	26	
0.212	16	
0.150	10	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		41
125		
90		
63		
50	100	
37.5	90	
28	88	
20	85	
14	77	
10	72	
6.3	66	
5	65	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

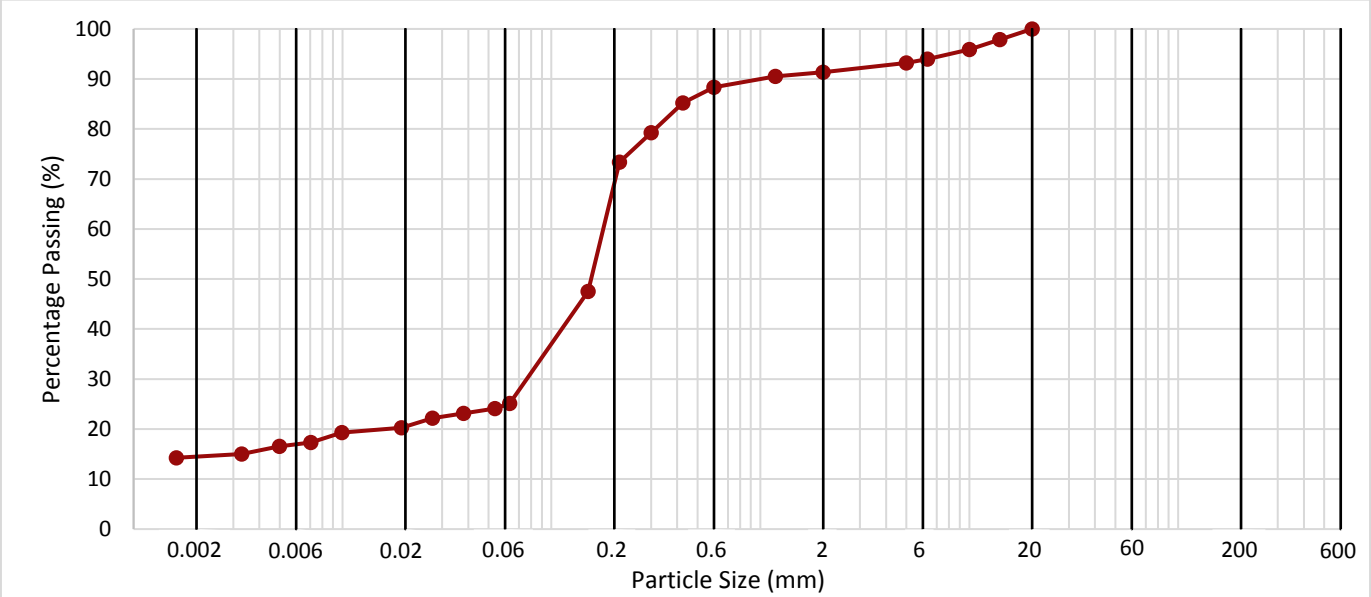
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	1.20	B	4	Soft yellowish brown slightly gravelly very sandy CLAY with occasional orange brown mottling. Gravel is brown, white and black angular to rounded flint.	Description based on possible engineering behaviour.

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0536	24	11	
	0.0380	23		
	0.0270	22		
	0.0192	20		
	0.0099	19		
	0.0070	17		
	0.0050	17		14
	0.0033	15		
	0.0016	14		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	91	66
1.18	90	
0.600	88	
0.425	85	
0.300	79	
0.212	73	
0.150	48	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	25

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		9
125		
90		
63		
50		
37.5		
28		
20	100	
14	98	
10	96	
6.3	94	
5	93	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

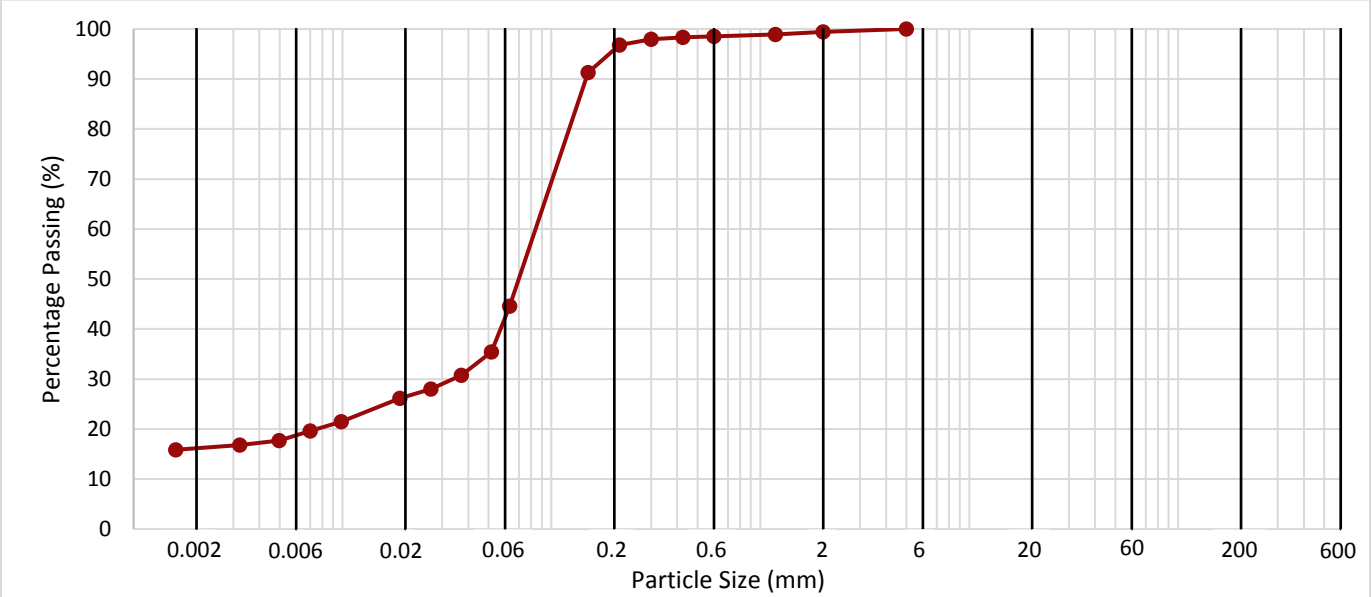
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	2.00	U	5	Very soft brownish yellow slightly gravelly sandy silty CLAY with occasional light grey mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0516	35	29
	0.0371	31	
	0.0265	28	
	0.0188	26	Clay by Dry Mass (%)
	0.0098	21	
	0.0070	20	
	0.0050	18	16
	0.0032	17	
	0.0016	16	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	54
1.18	99	
0.600	98	
0.425	98	
0.300	98	
0.212	97	
0.150	91	
0.063	45	

Fines By Dry Mass (%)	
<0.063mm	45

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

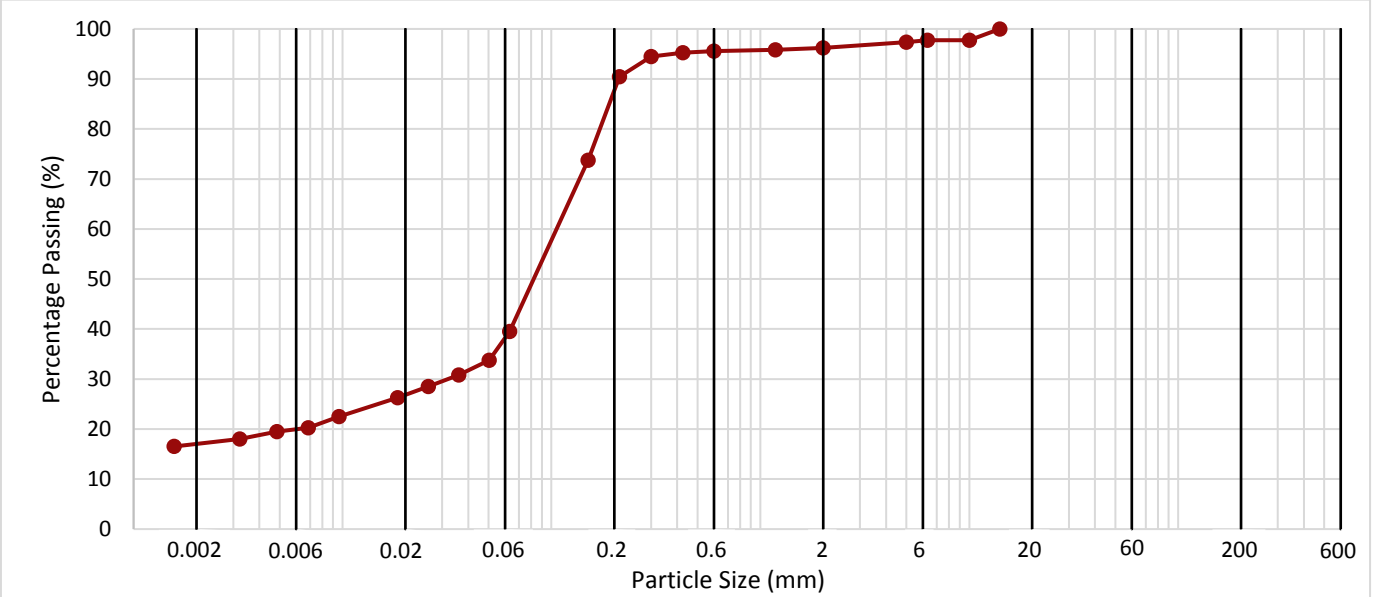
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	3.00	B	8	Very soft brownish yellow slightly gravelly sandy silty CLAY. Gravel is fine weak sandstone.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0503	34	23
0.0360	31	
0.0257	29	
0.0184	26	Clay by Dry Mass (%)
0.0096	23	
0.0069	20	
0.0049	20	17
0.0032	18	
0.0016	17	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	56
1.18	96	
0.600	96	
0.425	95	
0.300	94	
0.212	90	
0.150	74	
0.063	40	

Fines By Dry Mass (%)	
<0.063mm	40

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	98	
6.3	98	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

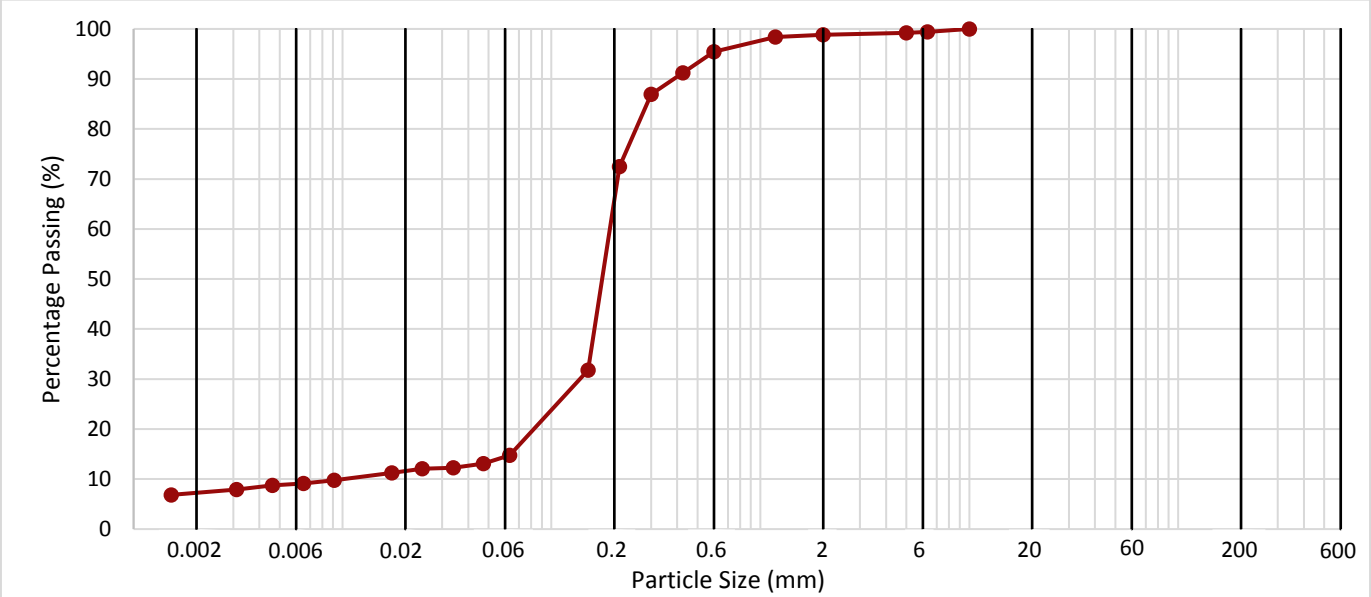
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	6.00	B	14	Brownish yellow slightly gravelly silty clayey SAND with rare bluish grey pockets. Gravel is flint and quartzite.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0472	13	8	
	0.0339	12		
	0.0240	12		
	0.0172	11		
	0.0091	10		
	0.0065	9		7
	0.0046	9		
	0.0031	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	98	
0.600	95	
0.425	91	
0.300	87	
0.212	72	
0.150	32	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

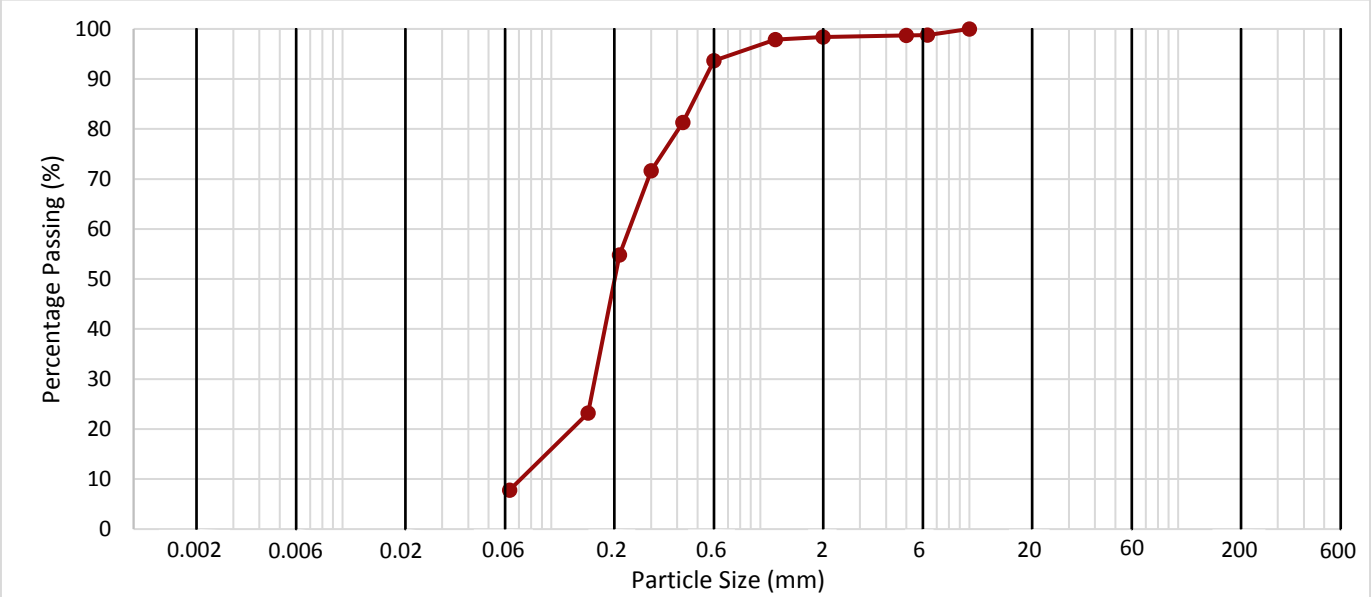
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	9.00	D	17	Light olive brown slightly gravelly silty SAND. Gravel is black, brown and white angular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	90
1.18	98	
0.600	94	
0.425	81	
0.300	72	
0.212	55	
0.150	23	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	8

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

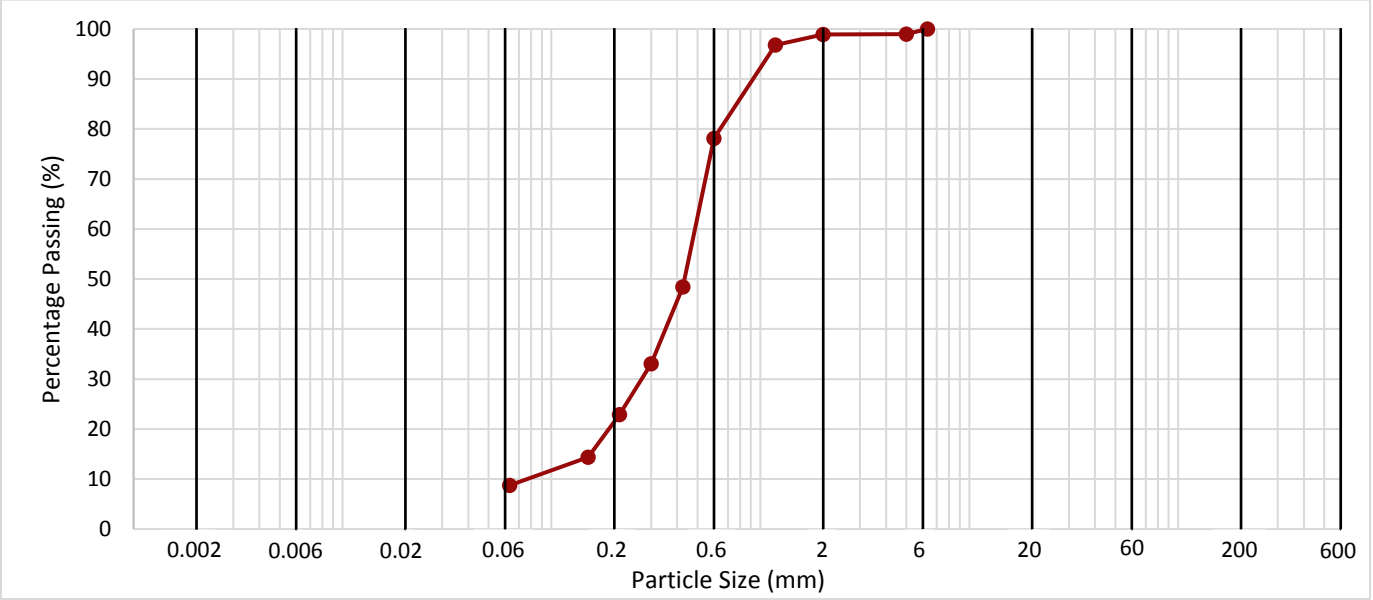
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	10.00	B	20	Yellowish brown slightly gravelly silty SAND. Gravel is flint and quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**90**
1.18	97	
0.600	78	
0.425	48	
0.300	33	
0.212	23	
0.150	14	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	**9**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

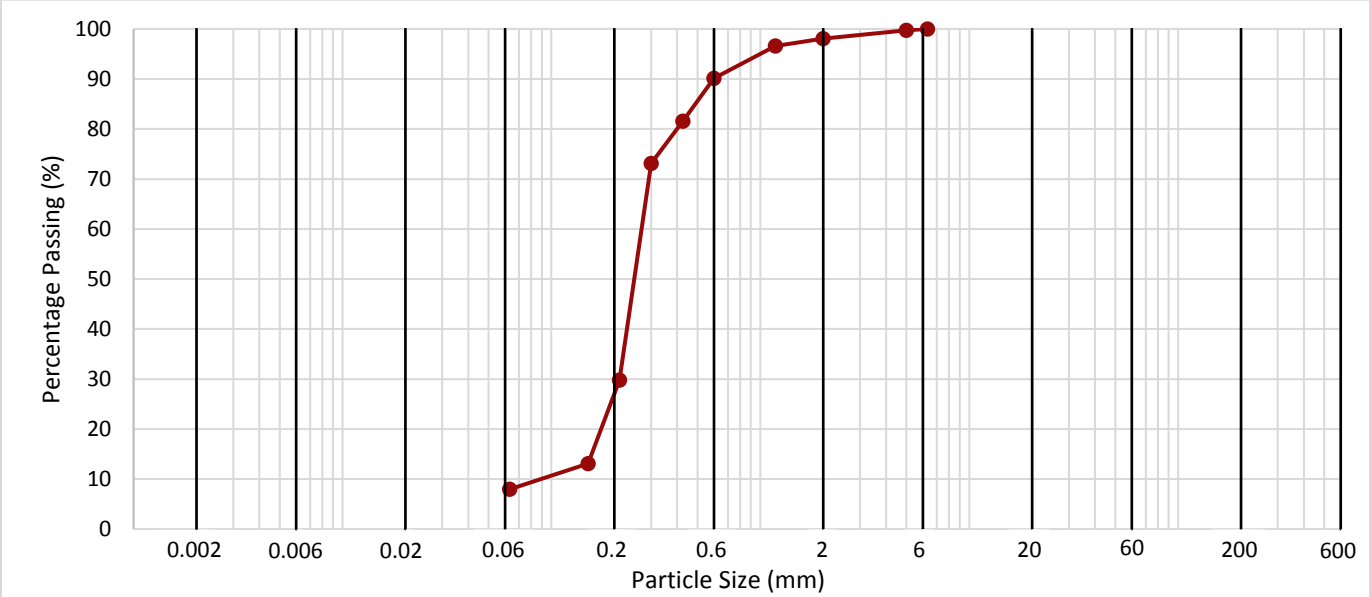
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	14.00	B	30	Olive slightly gravelly silty SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	98	**90**
1.18	97	
0.600	90	
0.425	82	
0.300	73	
0.212	30	
0.150	13	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	**8**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**2**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

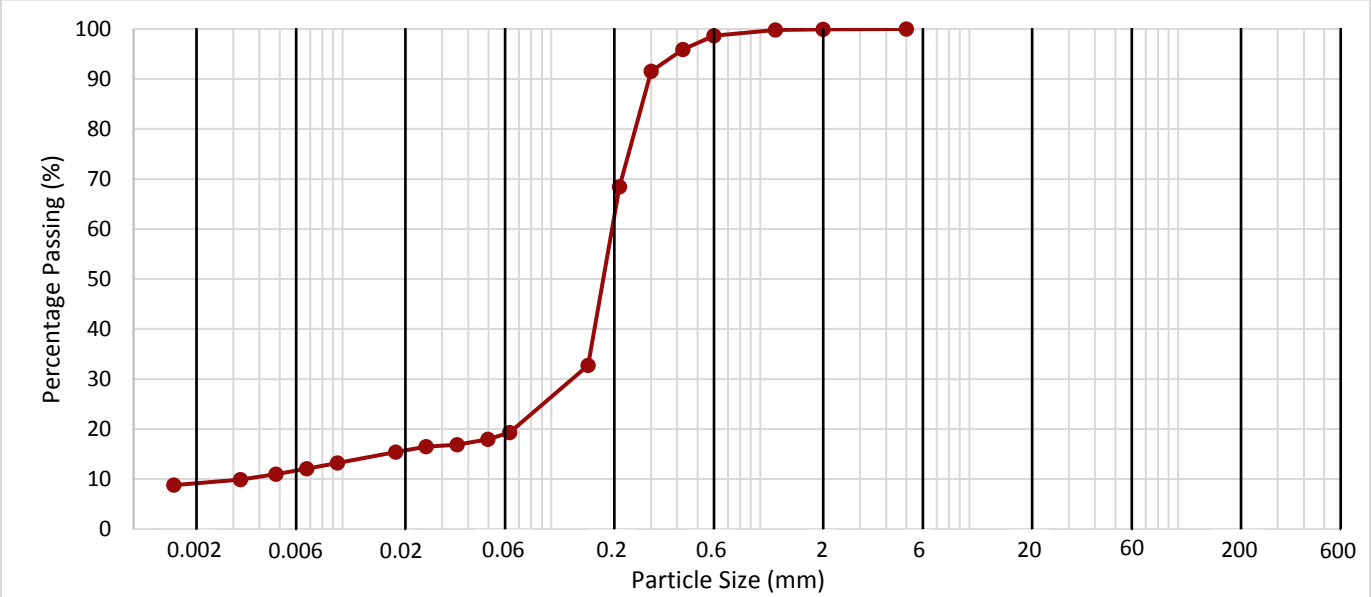
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	17.00	B	37	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0496	18	10
0.0354	17	
0.0252	16	
0.0180	15	Clay by Dry Mass (%)
0.0095	13	
0.0067	12	
0.0048	11	9
0.0032	10	
0.0016	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	81
1.18	100	
0.600	99	
0.425	96	
0.300	92	
0.212	68	
0.150	33	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

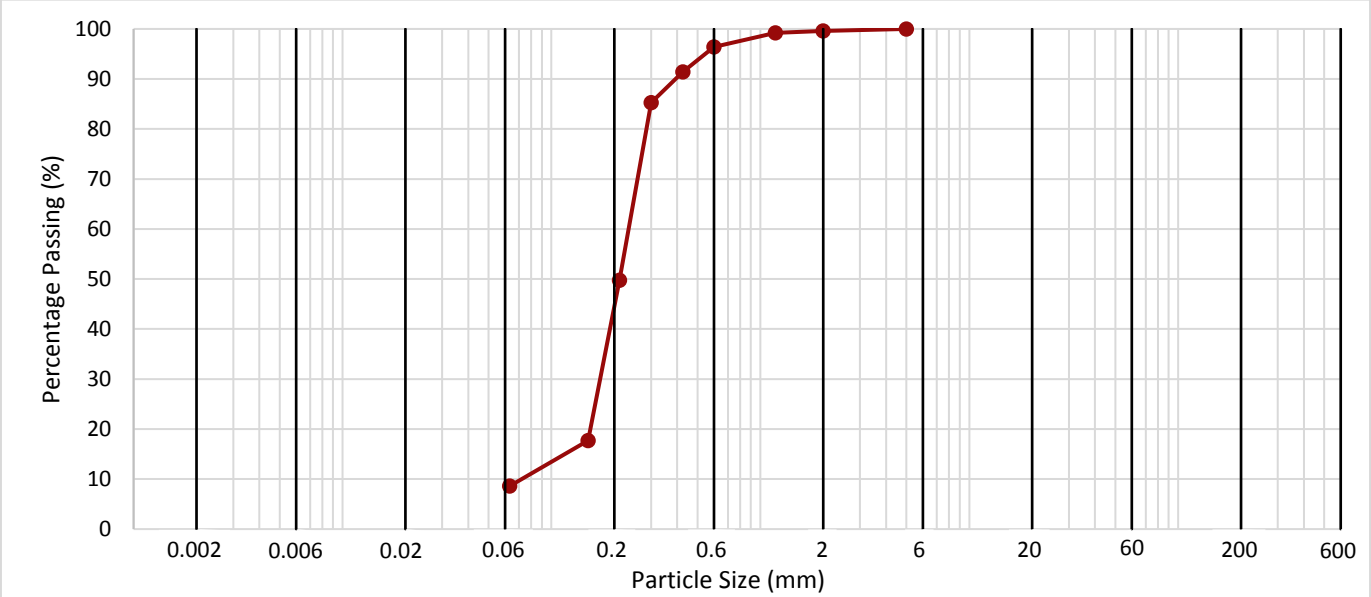
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	21.00	B	45	Olive grey silty slightly clayey slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	91
1.18	99	
0.600	96	
0.425	91	
0.300	85	
0.212	50	
0.150	18	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	9

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

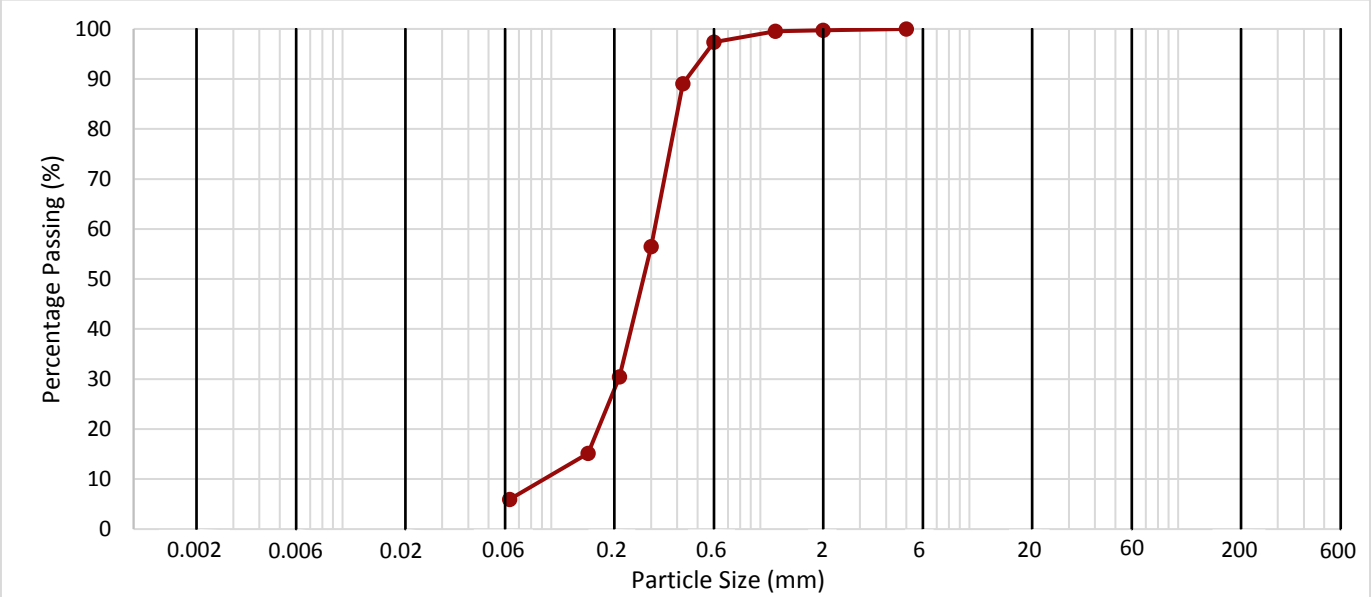
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	24.00	B	50	Dark grey silty SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**94**
1.18	100	
0.600	97	
0.425	89	
0.300	57	
0.212	30	
0.150	15	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	**6**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

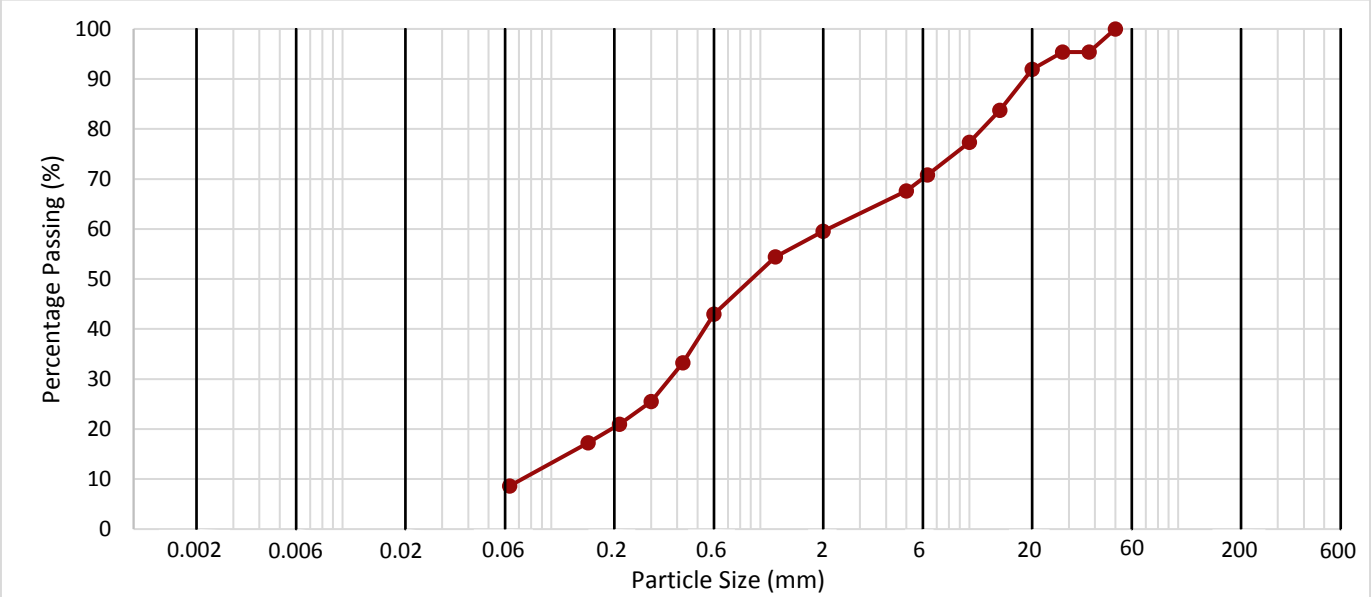
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	2.00	B	1	Brown and dark greyish brown very gravelly silty clayey SAND with rare shell fragments. Gravel is black, white and brown angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	60	51
1.18	54	
0.600	43	
0.425	33	
0.300	25	
0.212	21	
0.150	17	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	9

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		40
125		
90		
63		
50	100	
37.5	95	
28	95	
20	92	
14	84	
10	77	
6.3	71	
5	68	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

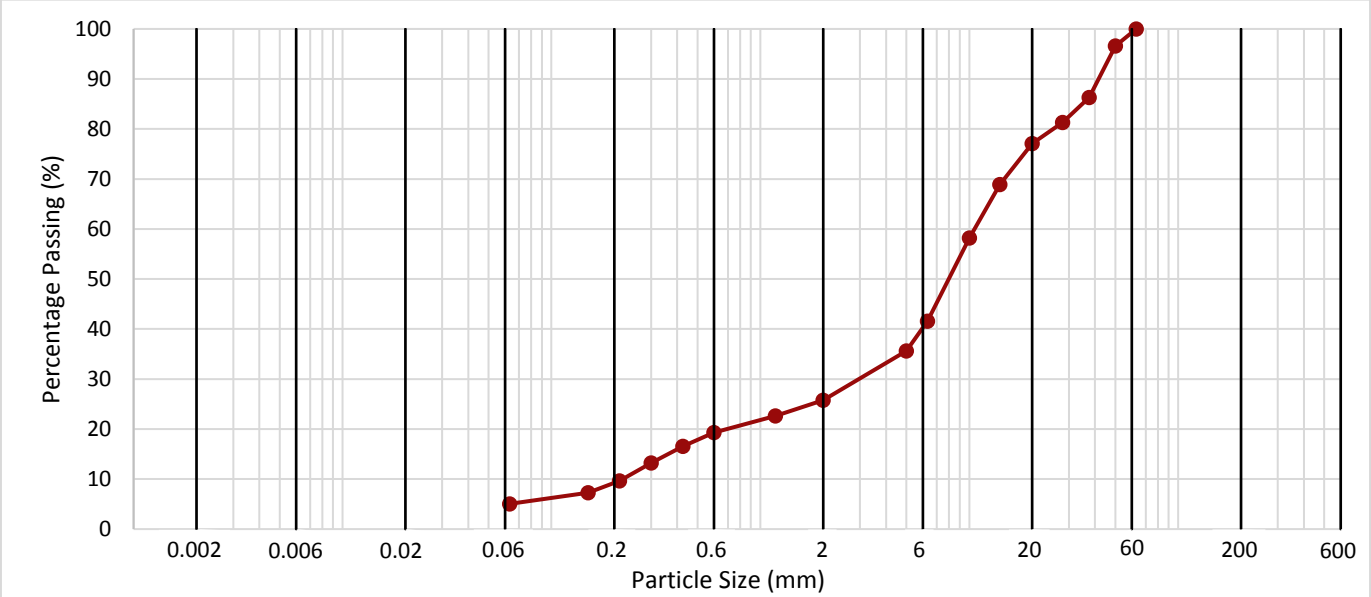
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	4.00	B	4	Black, white and brown very sandy silty angular to rounded GRAVEL. Sand is brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	26	21
1.18	23	
0.600	19	
0.425	17	
0.300	13	
0.212	10	
0.150	7	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		74
125		
90		
63	100	
50	97	
37.5	86	
28	81	
20	77	
14	69	
10	58	
6.3	42	
5	36	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

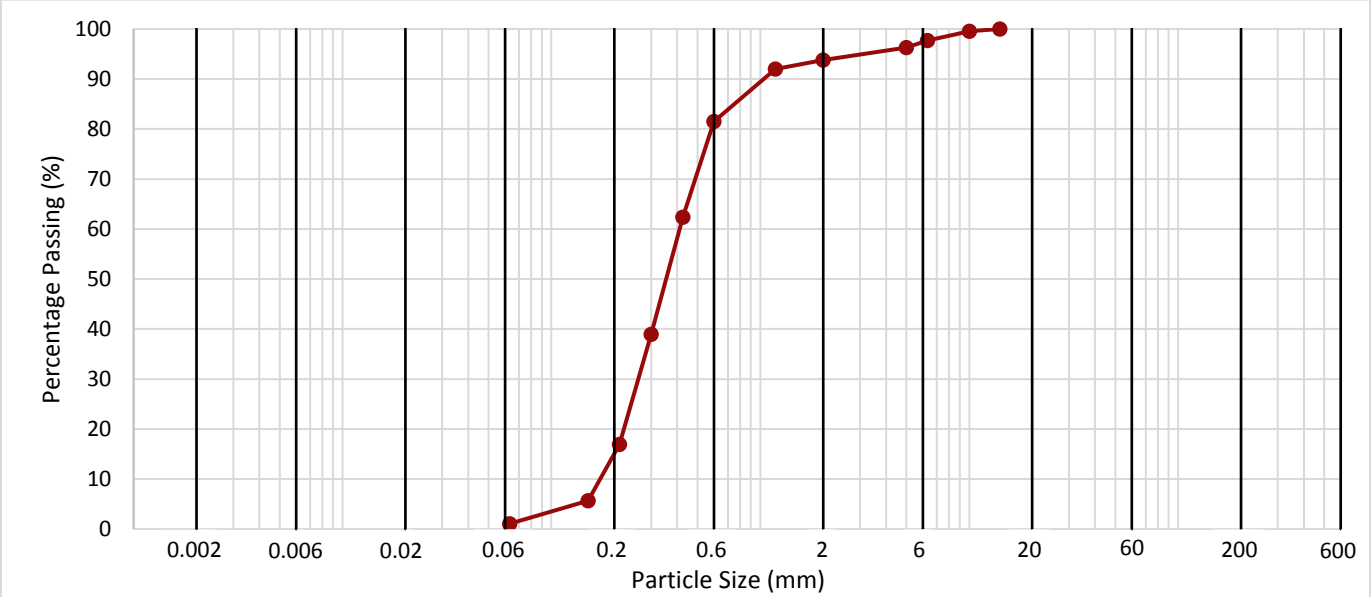
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	9.00	B	11	Light olive brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	94	93
1.18	92	
0.600	82	
0.425	62	
0.300	39	
0.212	17	
0.150	6	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		6
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	100	
6.3	98	
5	96	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

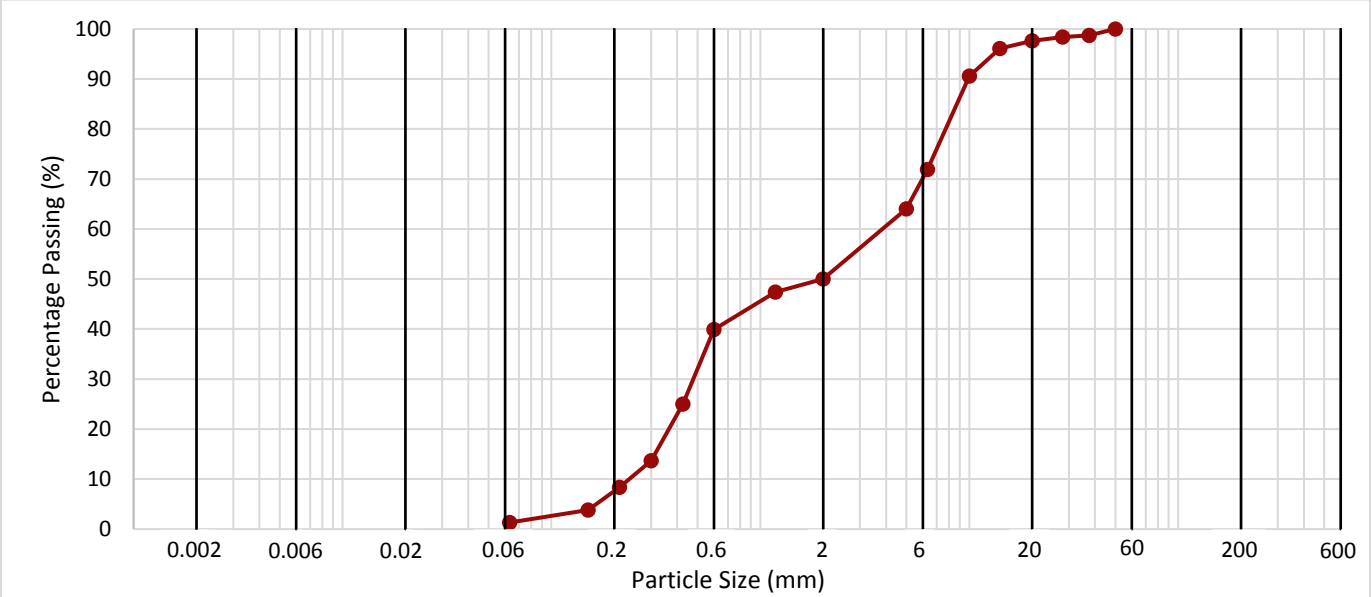
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	13.00	B	17	Light brown slightly silty SAND and black, white and brown angular to subrounded flint GRAVEL.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	50	49
1.18	47	
0.600	40	
0.425	25	
0.300	14	
0.212	8	
0.150	4	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		50
125		
90		
63		
50	100	
37.5	99	
28	98	
20	98	
14	96	
10	91	
6.3	72	
5	64	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

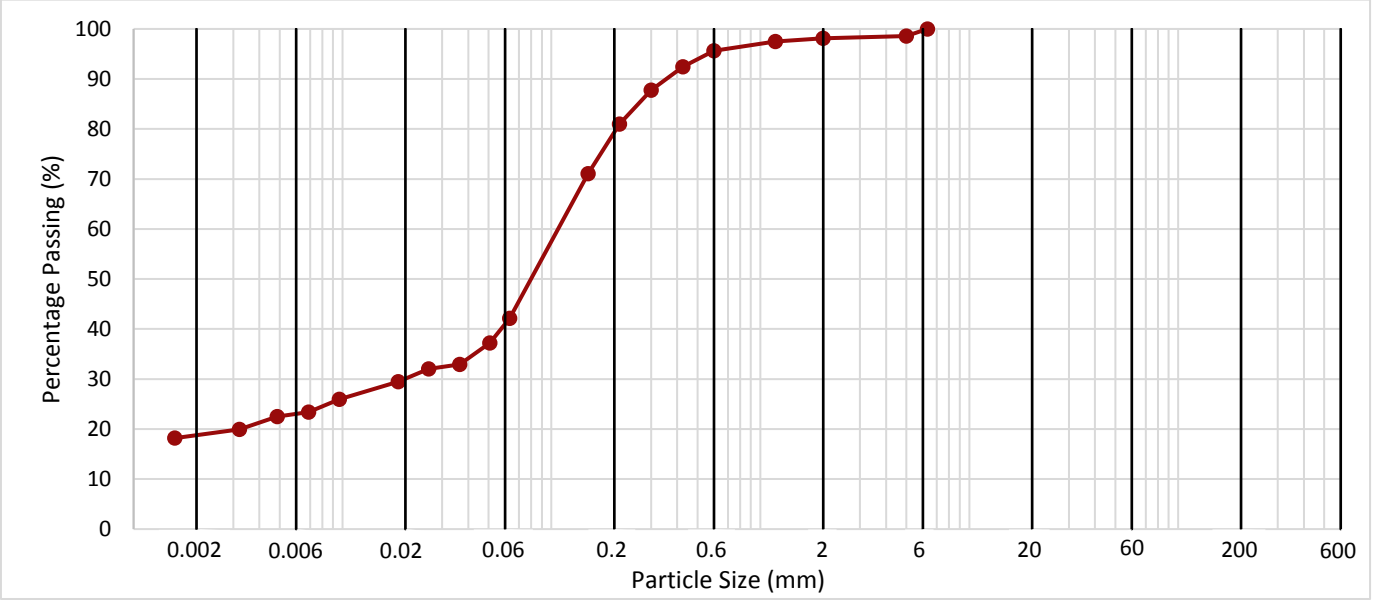
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	13.70	D	18	Soft mottled dark grey and orangish brown slightly gravelly sandy CLAY. Gravel is flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0507	37	**23**
	0.0364	33	
	0.0258	32	
	0.0184	29	**Clay by Dry Mass (%)**
	0.0096	26	
	0.0069	23	
	0.0049	23	**19**
	0.0032	20	
	0.0016	18	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	**56**
1.18	98	
0.600	96	
0.425	92	
0.300	88	
0.212	81	
0.150	71	
0.063	42	

Fines By Dry Mass (%)	
<0.063mm	**42**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**2**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

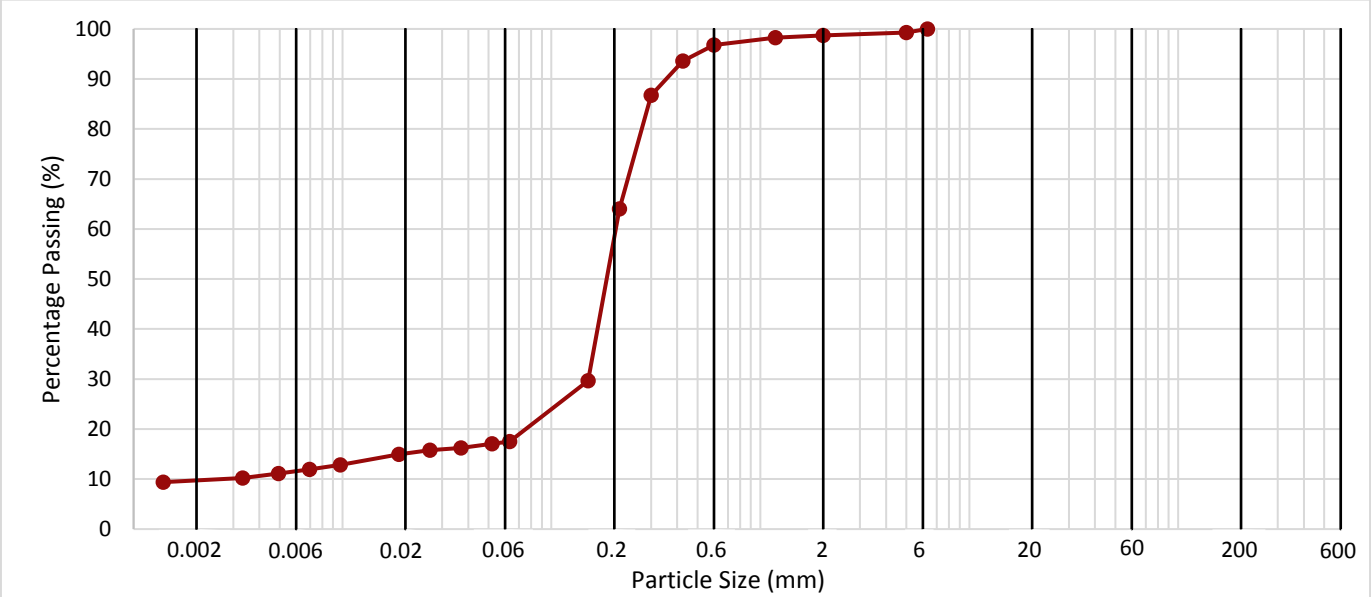
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	17.00	B	26	Olive brown slightly gravelly silty clayey SAND. Gravel is angular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0519	17	8
	0.0369	16	
	0.0262	16	
	0.0186	15	Clay by Dry Mass (%)
	0.0098	13	
	0.0069	12	
	0.0049	11	10
	0.0033	10	
	0.0014	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	81
1.18	98	
0.600	97	
0.425	94	
0.300	87	
0.212	64	
0.150	30	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

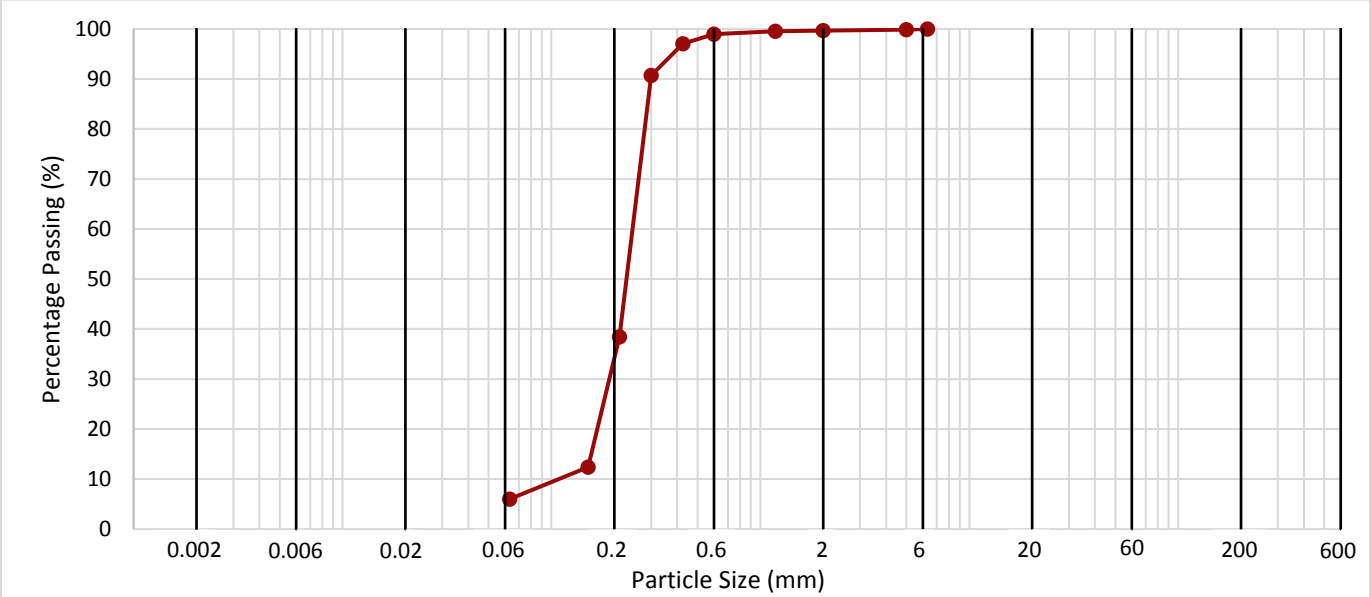
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	21.00	B	34	Greyish brown silty SAND with rare black and white angular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**94**
1.18	100	
0.600	99	
0.425	97	
0.300	91	
0.212	38	
0.150	12	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	**6**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

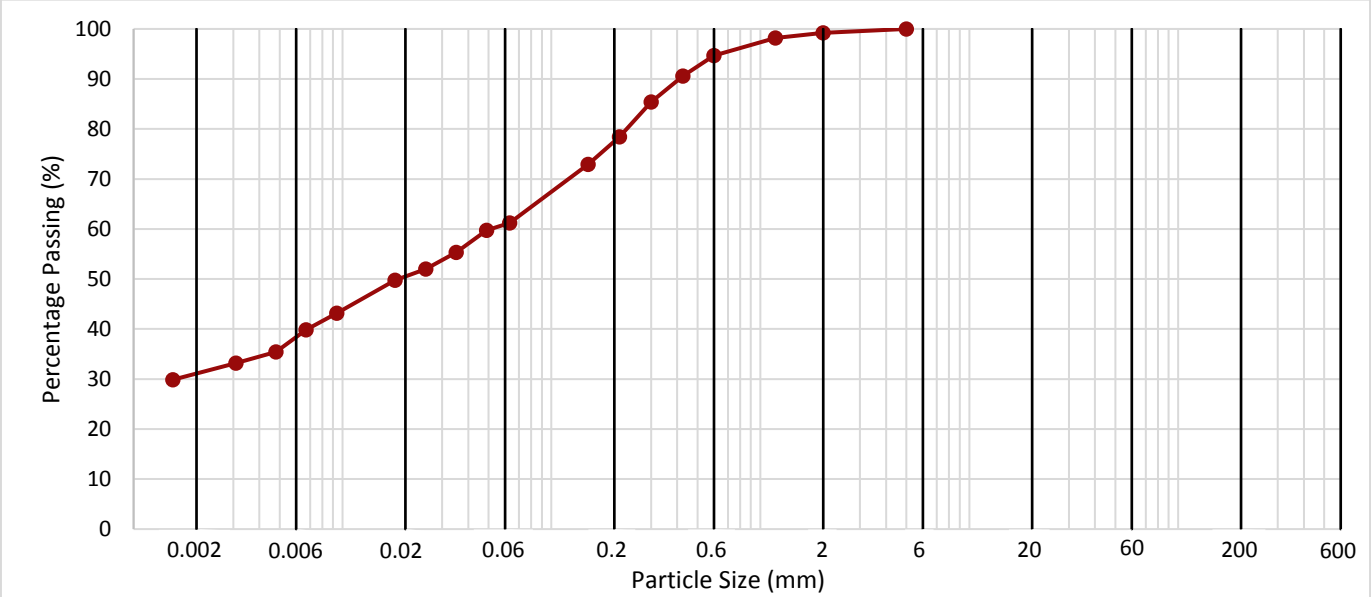
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	23.00	B	40	Very soft dark grey sandy silty CLAY with occasional shell and fossil debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0489	60	30
0.0351	55	
0.0250	52	
0.0178	50	Clay by Dry Mass (%)
0.0094	43	
0.0067	40	
0.0048	35	31
0.0031	33	
0.0015	30	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	38
1.18	98	
0.600	95	
0.425	91	
0.300	85	
0.212	78	
0.150	73	
0.063	61	

Fines By Dry Mass (%)	
<0.063mm	61

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

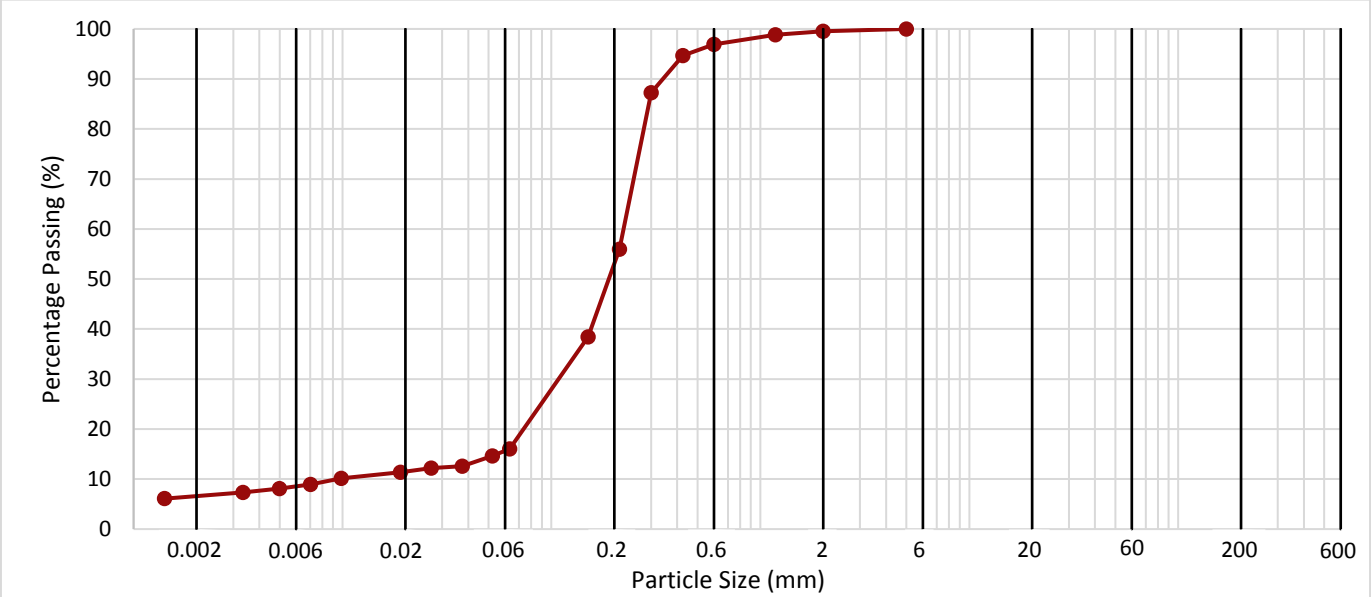
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	27.00	B	48	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0522	15	10
0.0375	13	
0.0266	12	
0.0189	11	Clay by Dry Mass (%)
0.0099	10	
0.0070	9	
0.0050	8	6
0.0033	7	
0.0014	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	84
1.18	99	
0.600	97	
0.425	95	
0.300	87	
0.212	56	
0.150	38	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

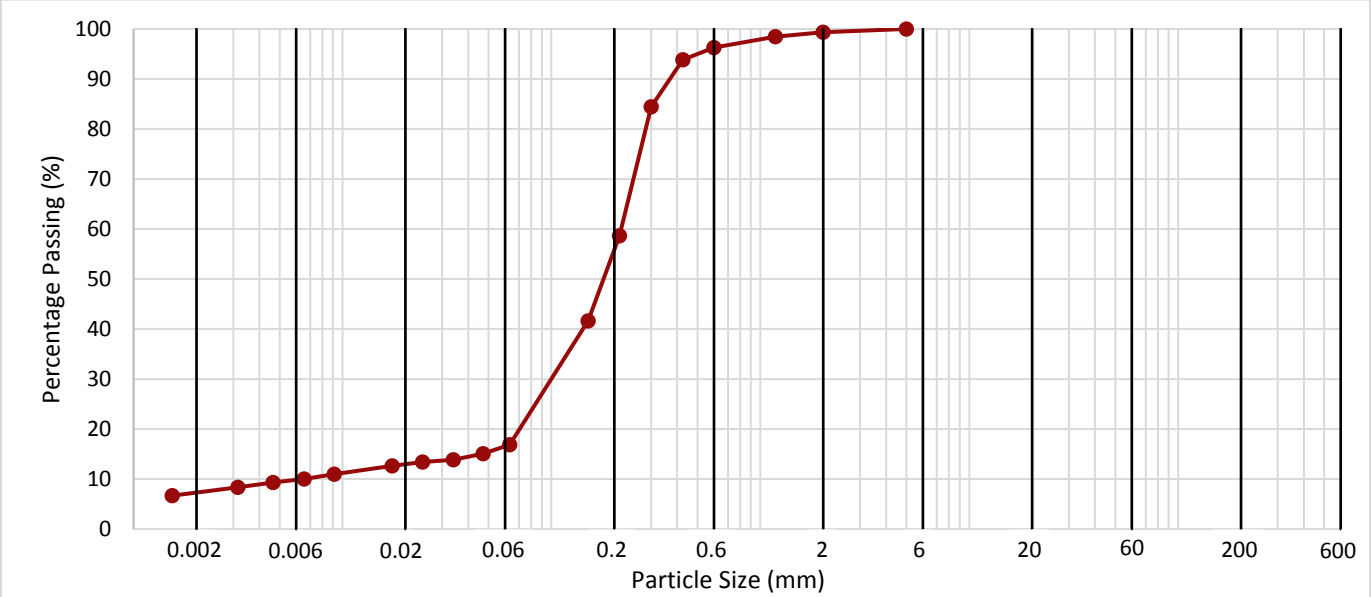
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	32.50	B	58	Olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0471	15	10	
	0.0339	14		
	0.0242	13		
	0.0173	13		7
	0.0091	11		
	0.0065	10		
	0.0047	9		
	0.0032	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	82
1.18	98	
0.600	96	
0.425	94	
0.300	84	
0.212	59	
0.150	42	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

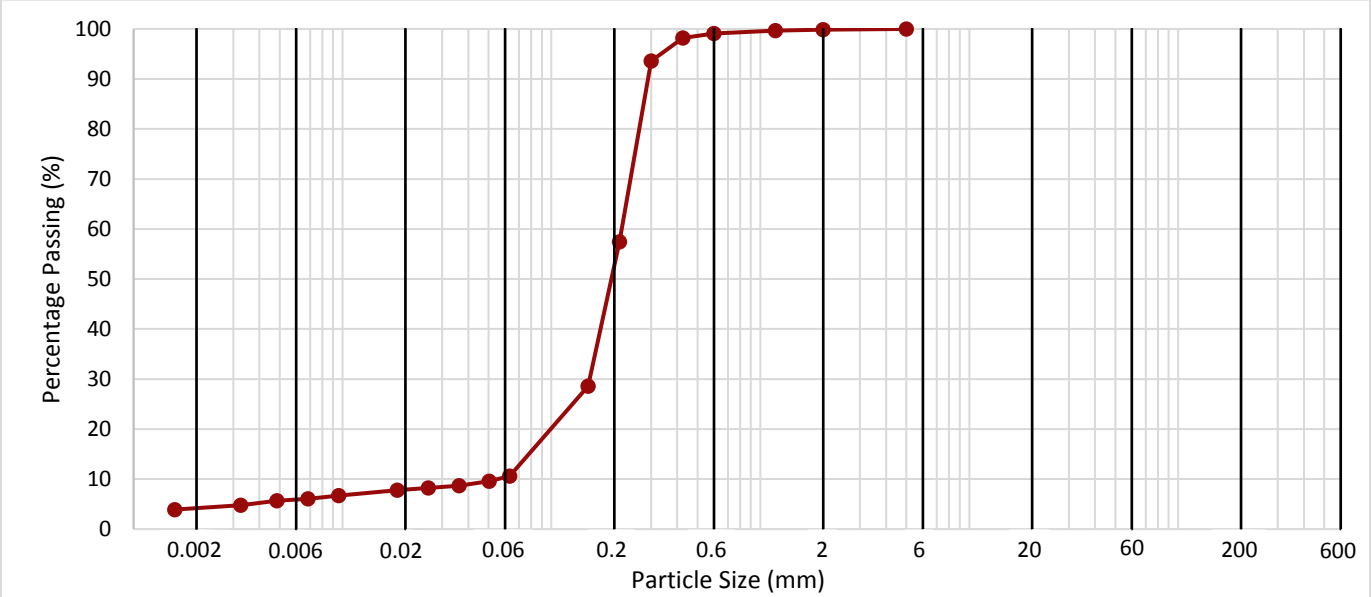
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	36.50	B	66	Olive grey silty slightly clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0504	10	7
	0.0361	9	
	0.0257	8	
	0.0183	8	Clay by Dry Mass (%)
	0.0096	7	
	0.0068	6	
	0.0048	6	4
	0.0033	5	
	0.0016	4	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	100	
0.600	99	
0.425	98	
0.300	94	
0.212	57	
0.150	29	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

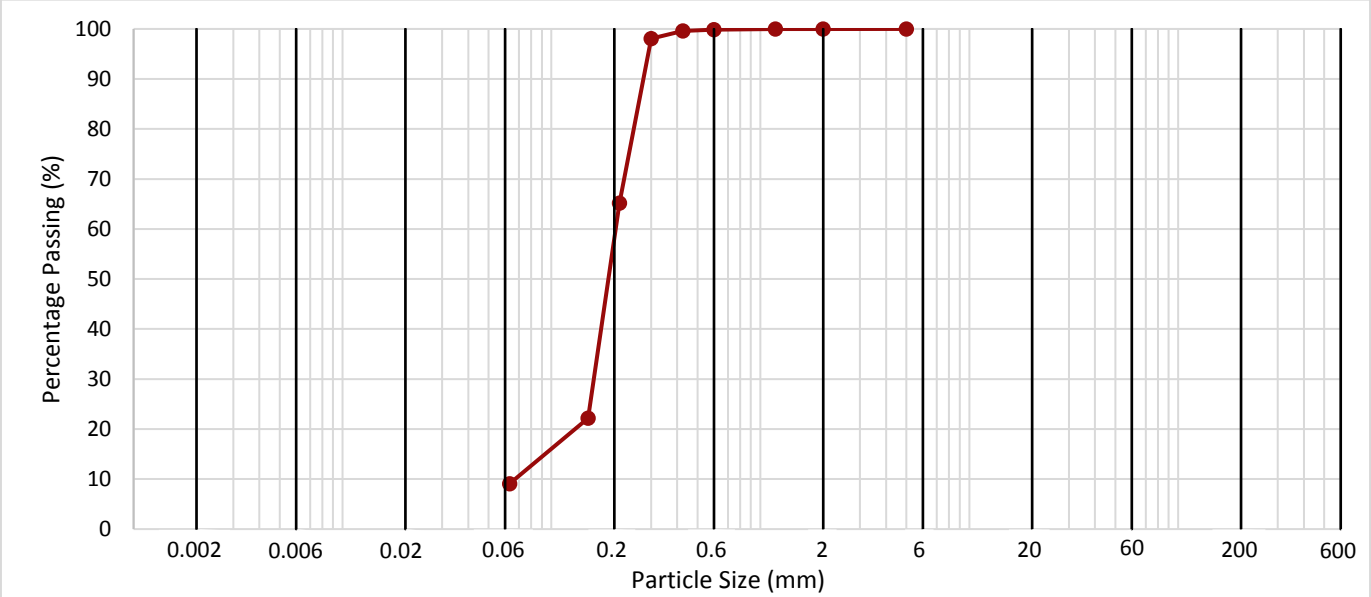
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	40.50	B	74	Olive grey silty slightly clayey slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	91
1.18	100	
0.600	100	
0.425	100	
0.300	98	
0.212	65	
0.150	22	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	9

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

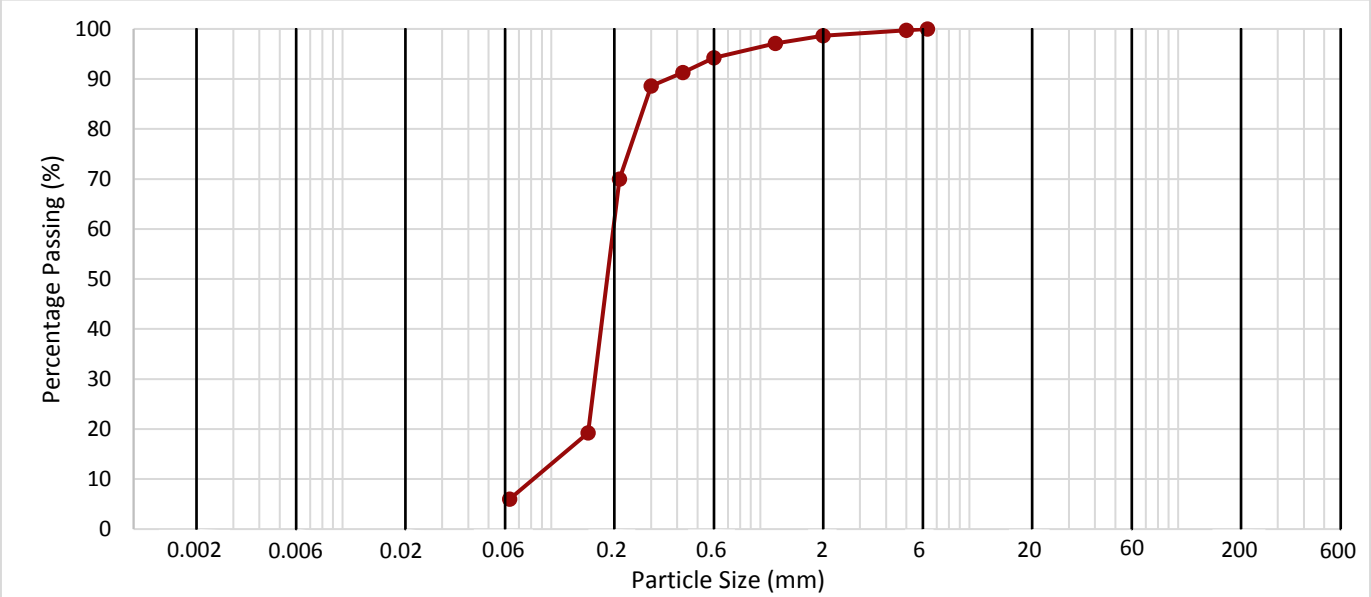
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	44.20	B	81	Olive grey silty slightly clayey slightly organic SAND with occasional shell deris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	93
1.18	97	
0.600	94	
0.425	91	
0.300	89	
0.212	70	
0.150	19	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

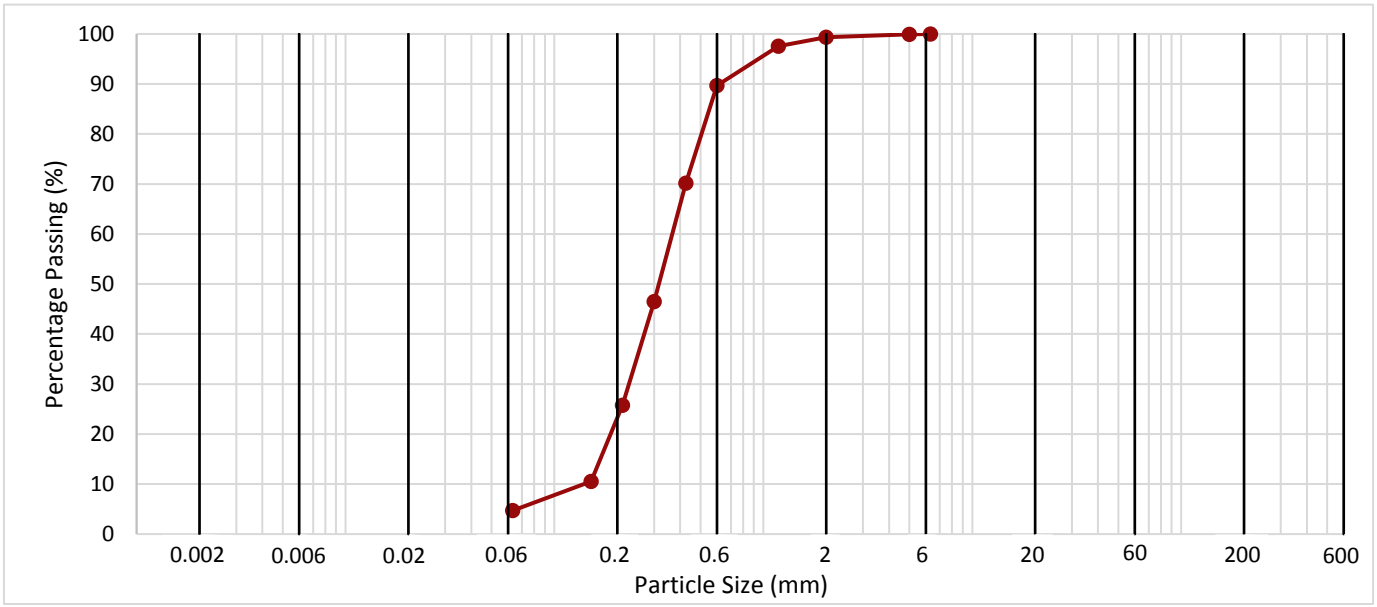
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	47.50	B	89	Grey silty SAND with rare shell fragments.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**94**
1.18	98	
0.600	90	
0.425	70	
0.300	46	
0.212	26	
0.150	11	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	**5**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

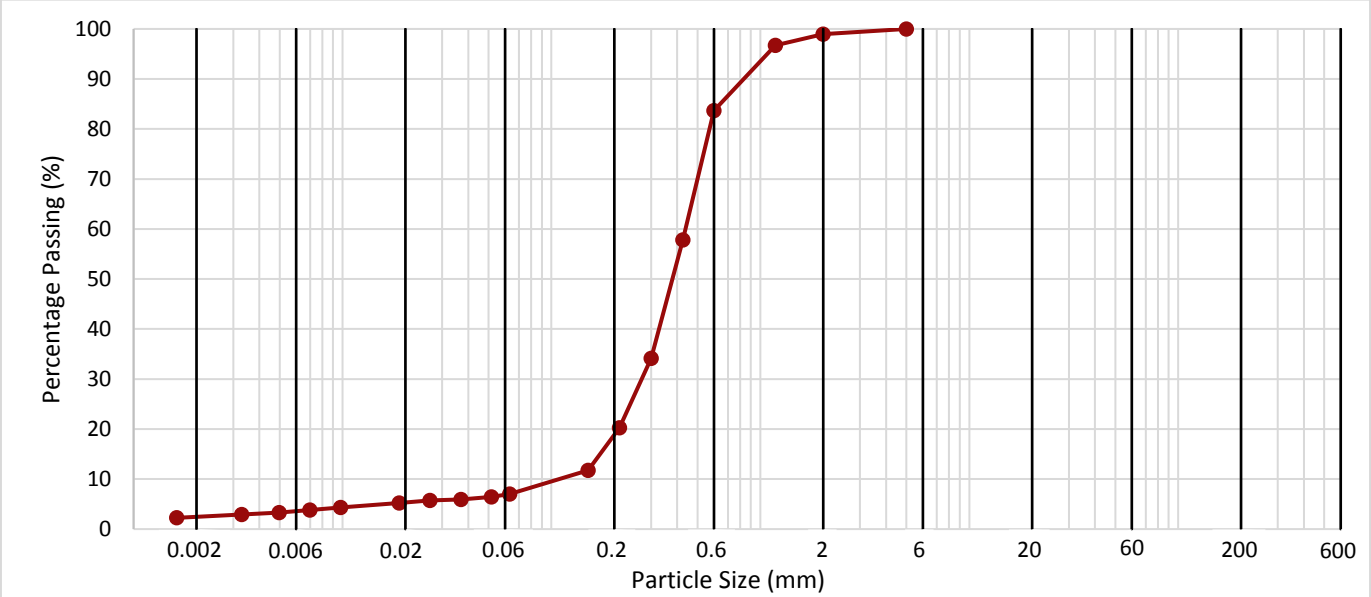
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC27	50.00	D	93	Olive silty slightly clayey SAND with rare shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not Required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0517	6	5	
	0.0369	6		
	0.0262	6		
	0.0187	5		
	0.0098	4		
	0.0070	4		
	0.0050	3		2
	0.0033	3		
	0.0016	2		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	92
1.18	97	
0.600	84	
0.425	58	
0.300	34	
0.212	20	
0.150	12	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC14	23.00	UT	47	35.6	1.88	1.39	499	111	56			Firm (Medium strength) dark grey silty CLAY with occasional fine sand laminations.
BHC14	23.00	UT	47	31.3	2.03	1.55	751	61	31			Soft (Low strength) dark grey silty CLAY with occasional fine sand laminations.
BHC27	22.00	UT	36	33.0	1.96	1.47	402	172	86			Stiff (High strength) dark grey silty CLAY with occasional grey fine sand laminations.
BHC27	22.00	UT	36	32.0	1.97	1.49	799	223	112			Stiff (High strength) dark grey silty CLAY with occasional olive grey mottling, and grey fine sand laminations.
BHC27	23.00	UT	39	32.1	1.89	1.43	402	128	64			Firm (Medium strength) dark grey CLAY with occasional light grey fine sand laminations.
BHC27	23.00	UT	39	32.0	1.91	1.45	799	196	98			Stiff (High strength) dark grey CLAY with grey fine sand laminations.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

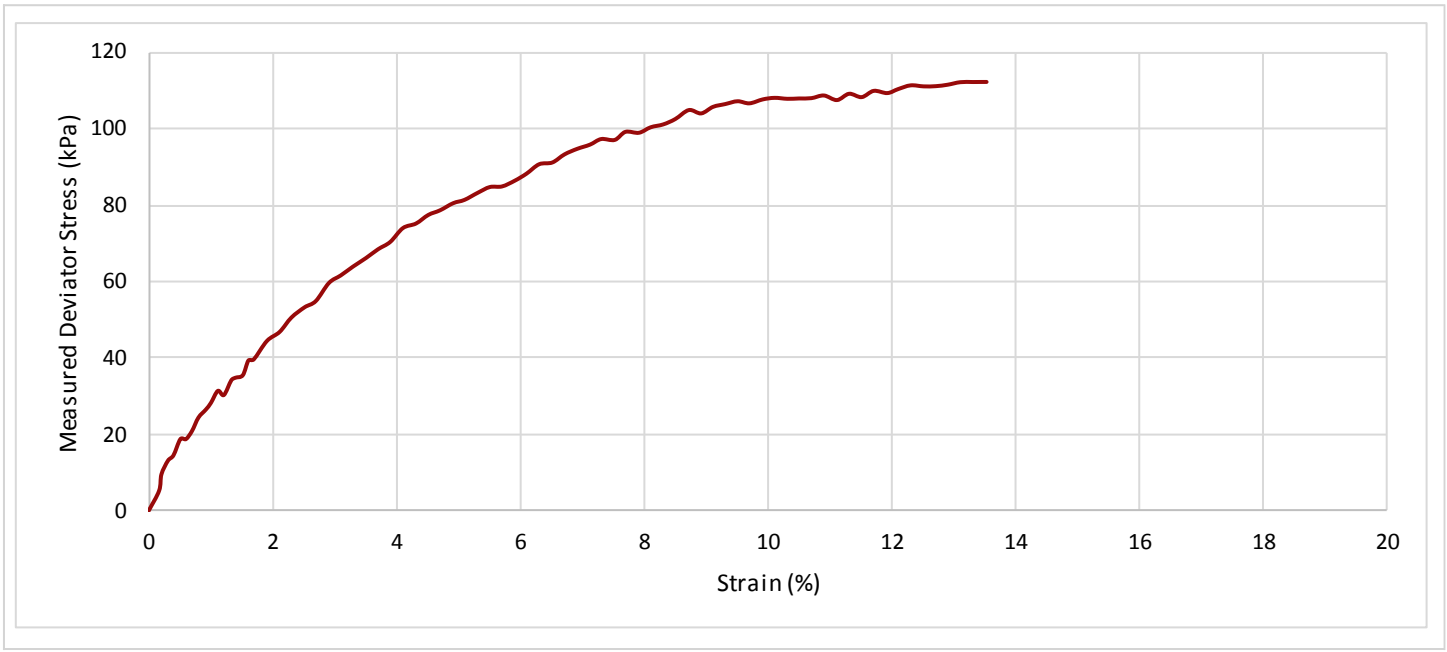
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC14	23.00	UT	47	Firm (Medium strength) dark grey silty CLAY with occasional fine sand laminations.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.04	174.1	102.9	2720	35.6	1.88	1.39

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	499	13.5	0.8	\	111	56		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

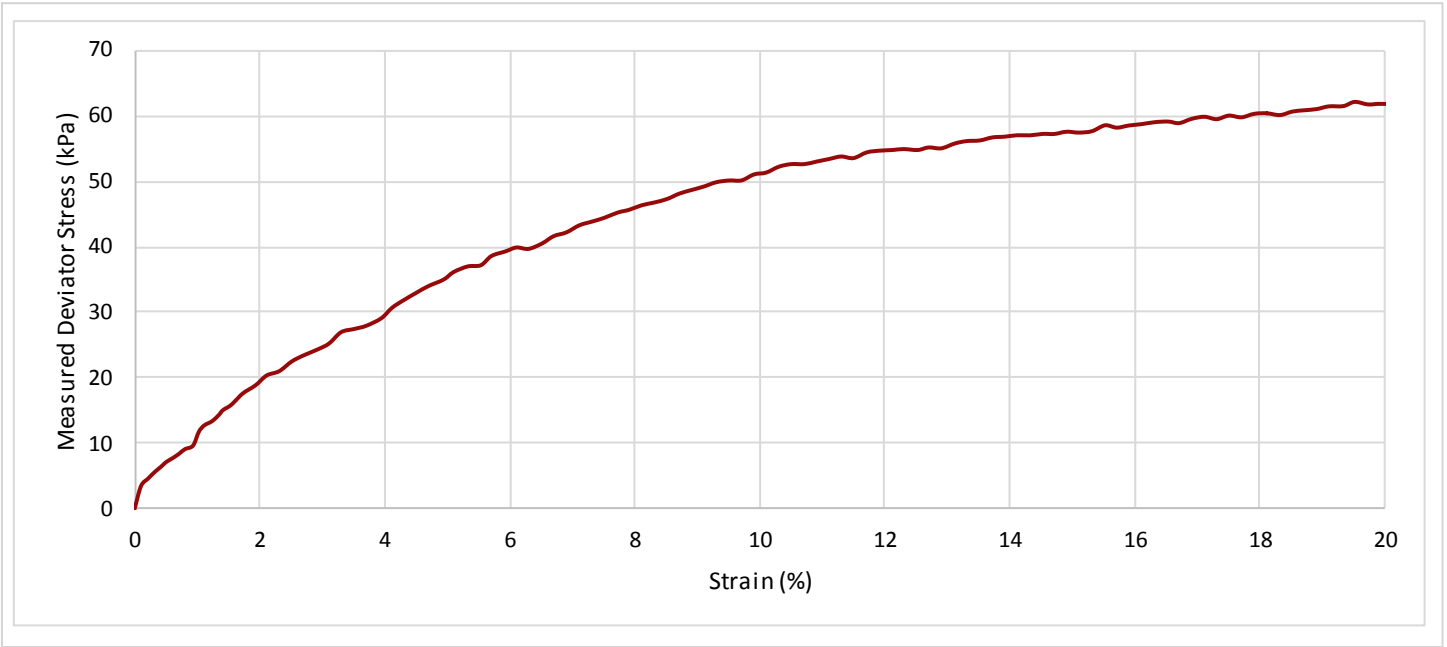
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC14	23.00	UT	47	Soft (Low strength) dark grey silty CLAY with occasional fine sand laminations.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.21	168.8	101.4	2761	31.3	2.03	1.55

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	751	19.5	1.1	\	61	31		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

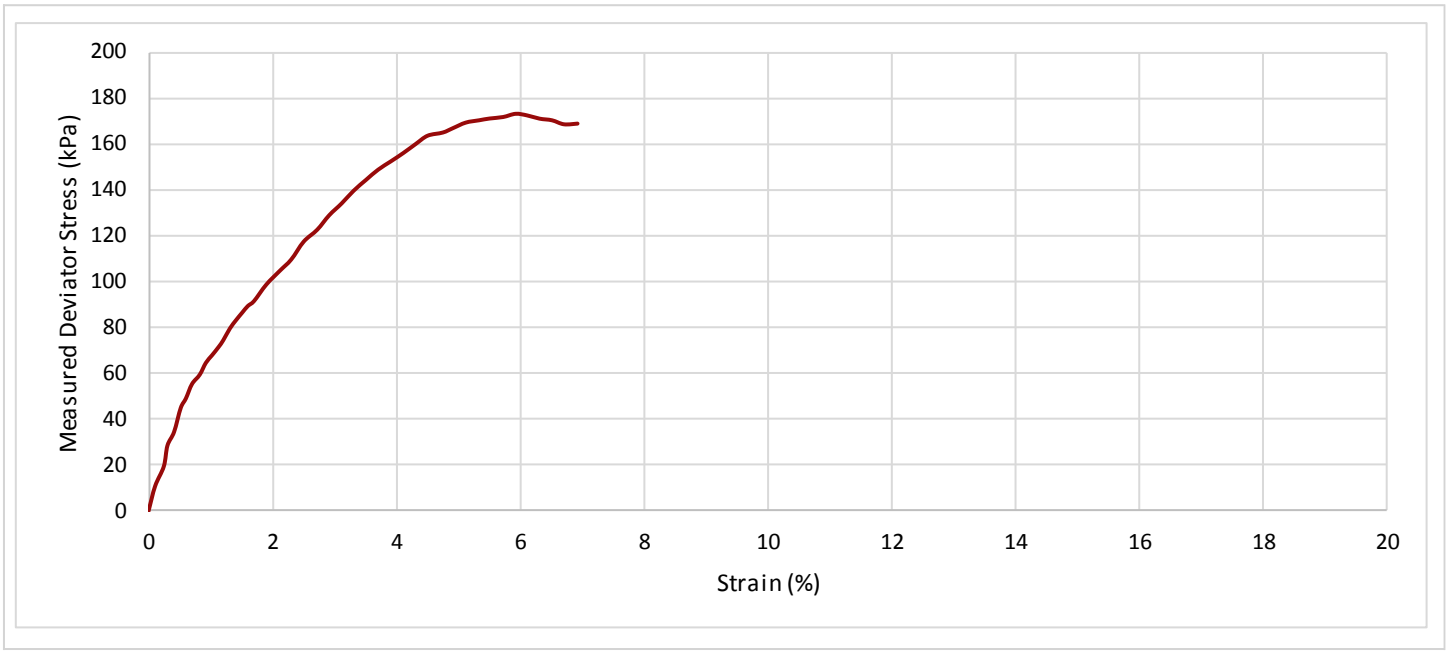
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC27	22.00	UT	36	Stiff (High strength) dark grey silty CLAY with occasional grey fine sand laminations.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.04	157.4	100.2	2435	33.0	1.96	1.47

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	402	5.9	0.5	\	172	86		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

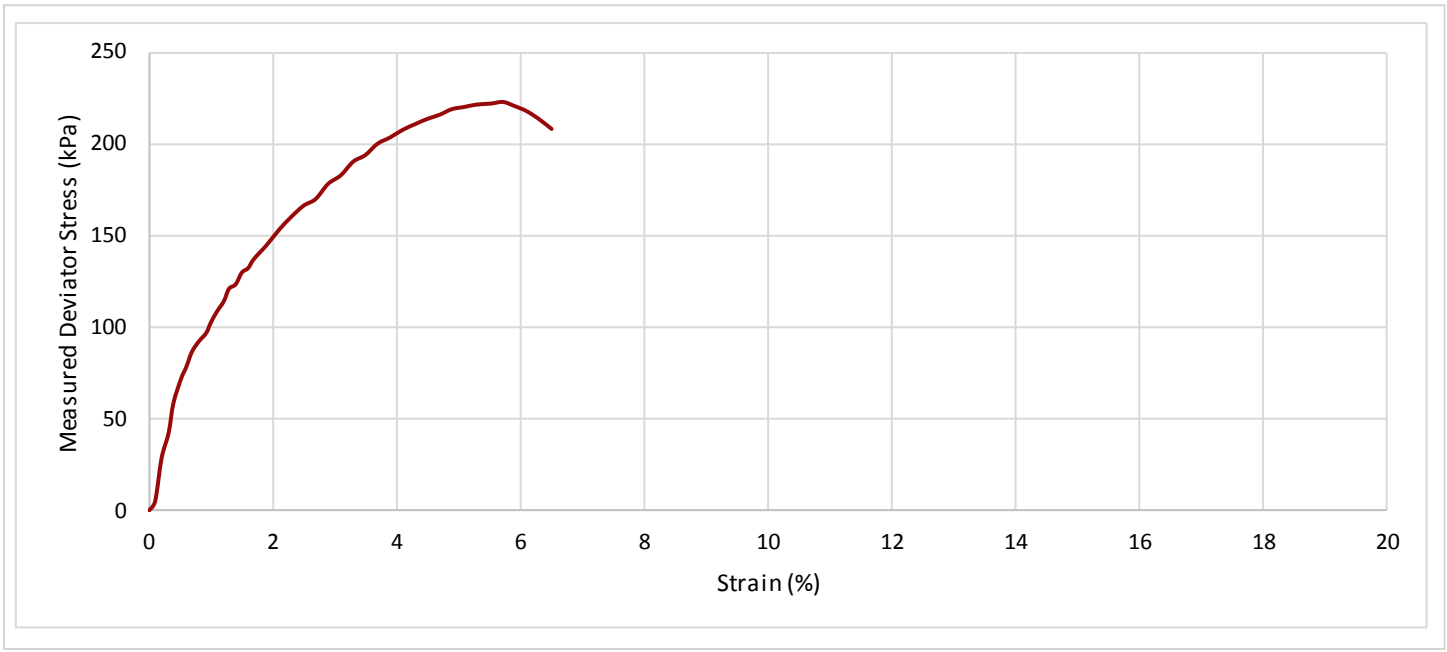
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC27	22.00	UT	36	Stiff (High strength) dark grey silty CLAY with occasional olive grey mottling, and grey fine sand laminations.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.20	183.8	100.8	2881	32.0	1.97	1.49

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	799	5.7	0.5	\	223	112		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

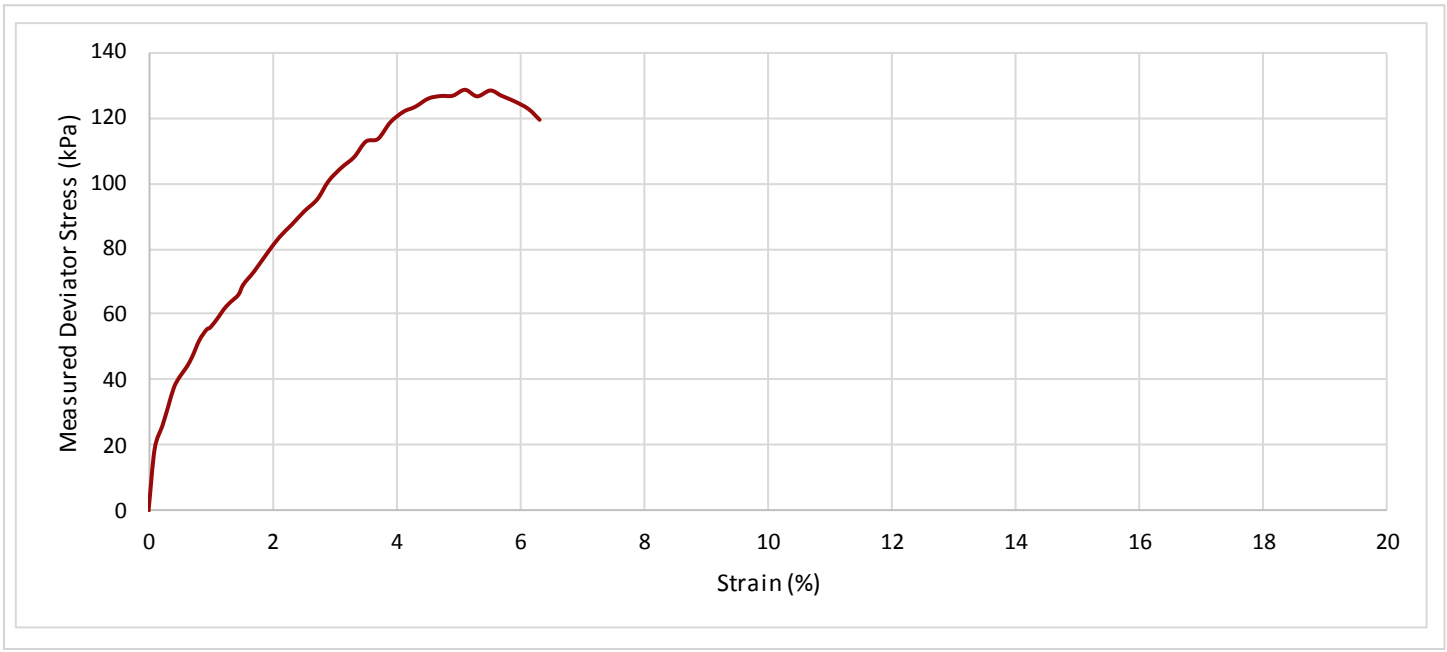
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC27	23.00	UT	39	Firm (Medium strength) dark grey CLAY with occasional light grey fine sand laminations.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.06	167.6	101.2	2550	32.1	1.89	1.43

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	402	5.1	0.4	\	128	64		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

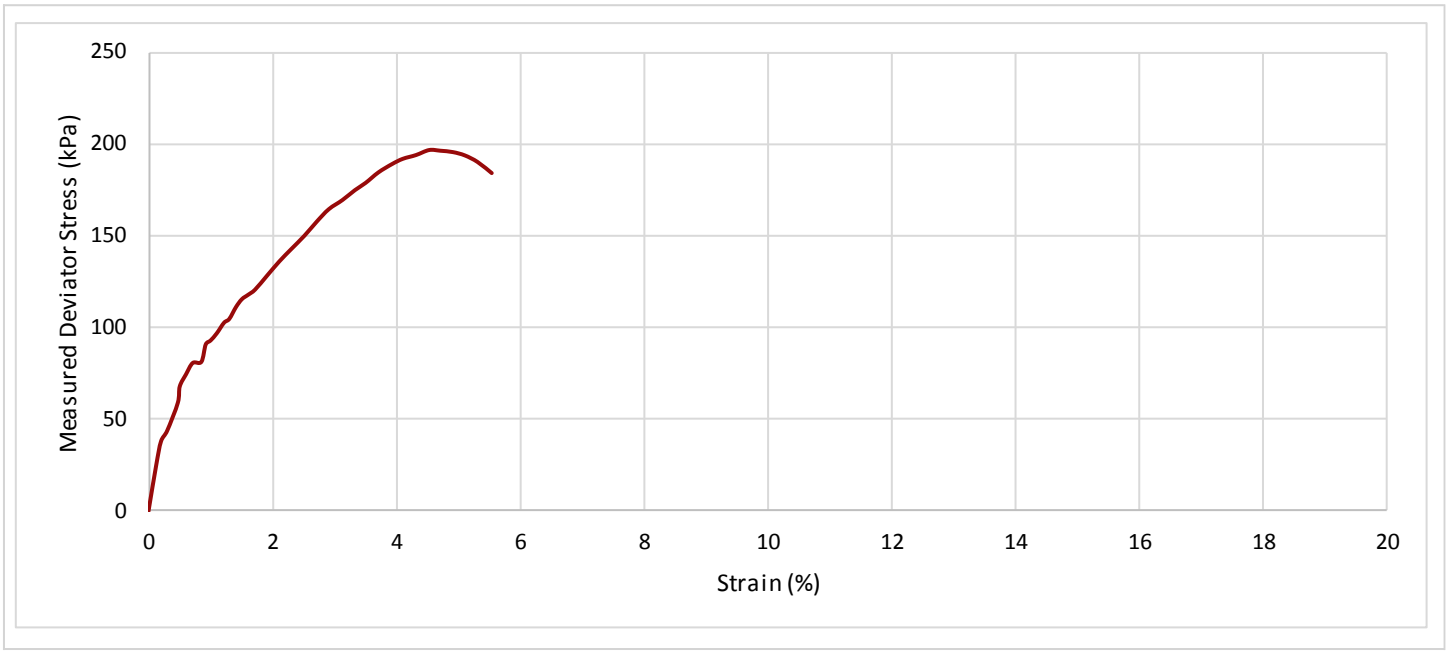
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC27	23.00	UT	39	Stiff (High strength) dark grey CLAY with grey fine sand laminations.	Premature failure at 4.5% strain.

Initial Specimen	Depth of Top of Specimen (m)	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
	23.24	167.6	100.7	2552	32.0	1.91	1.45

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	799	4.5	0.4	\	196	98		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS1377: Part7: 1990:8 Definitive Method, 1990:9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

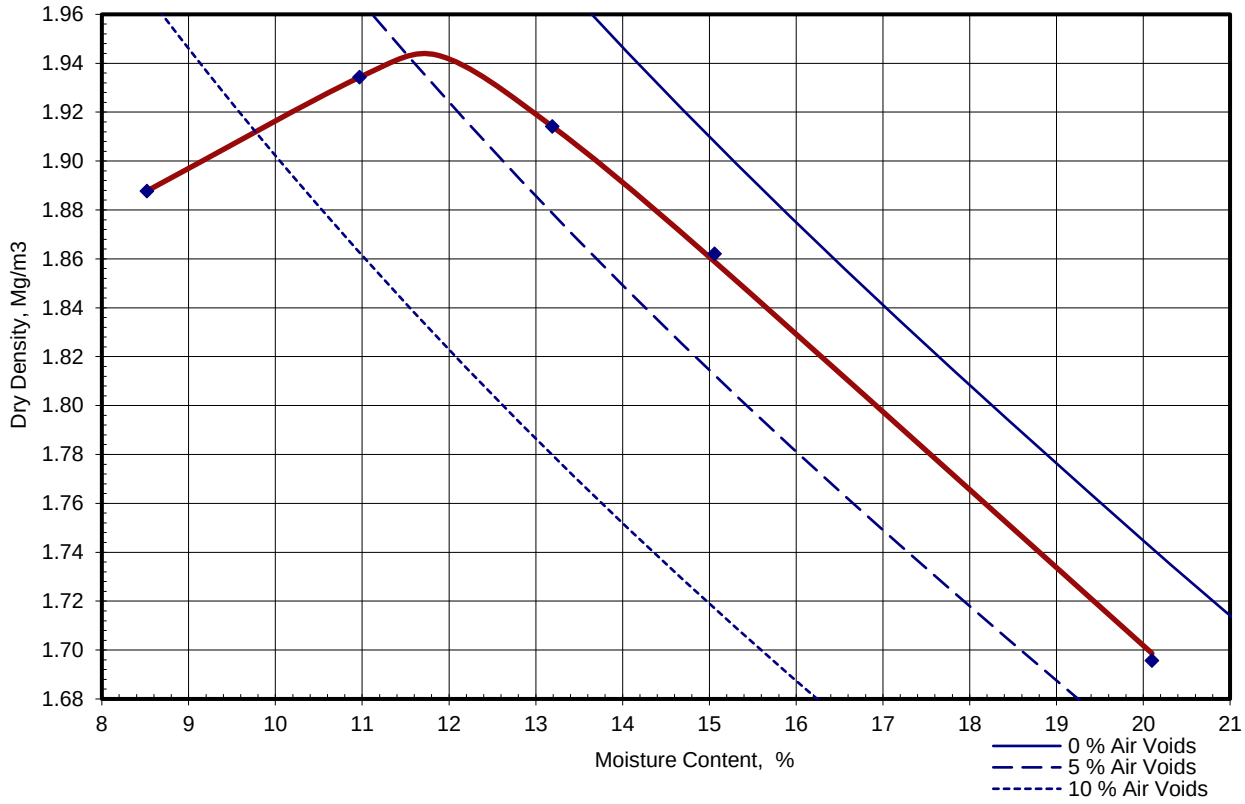
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC22	1.20	B	4	20.1	Soft yellowish brown slightly gravelly very sandy CLAY with occasional orange brown mottling. Gravel is brown, white and black angular to rounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	0.0 %	Single or Separate Samples	Separate
Grading Zone	1	Particle Density (Assumed)	2.68
Mould Type	Proctor	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.94 Mg/m³**	**Optimum Water Content**	**12 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

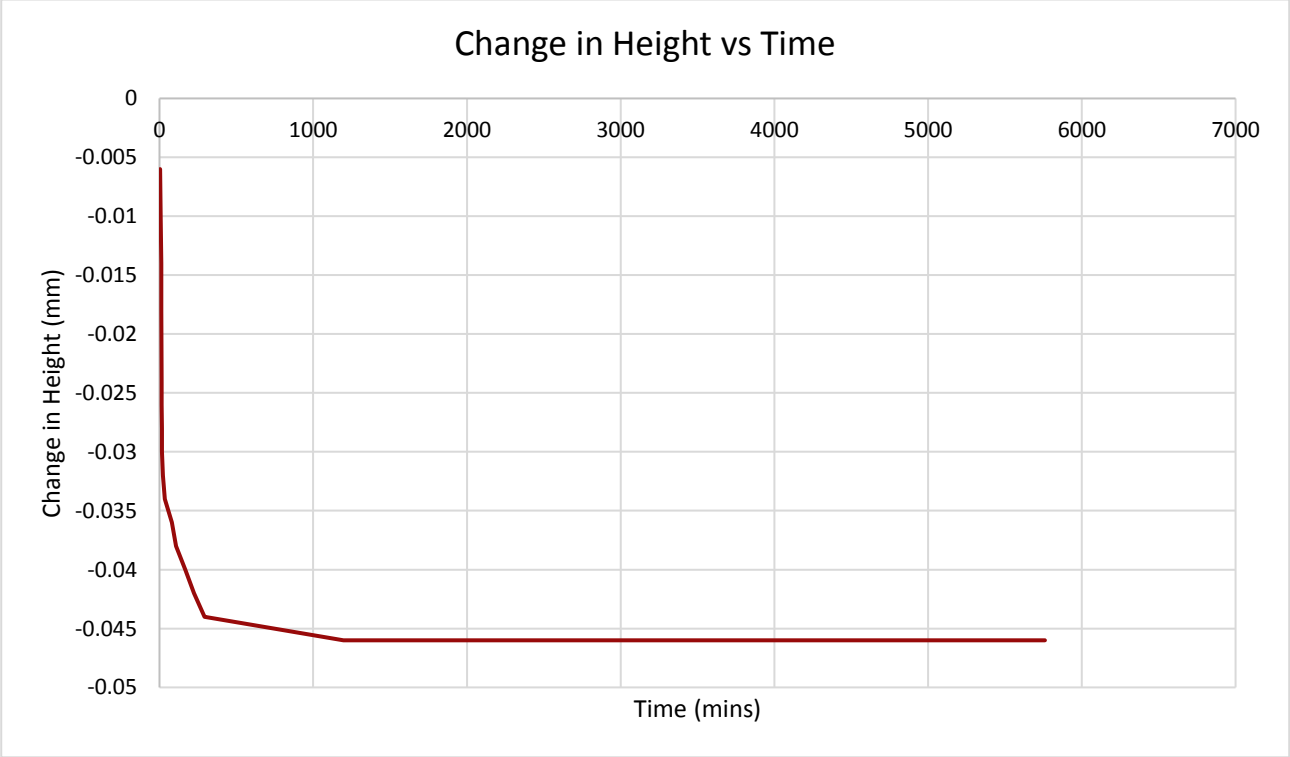
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC22	1.2	B	4	Soft yellowish brown slightly gravelly very sandy CLAY with occasional orange brown mottling. Gravel is brown, white and black angular to rounded flint.	

After Soaking

Water Contents	Top (%)	15.6	Bulk Density	1.93	Dry Density	1.75
	Bottom (%)	15.2				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**-0.046**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 18/04/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-6**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC22	1.20	B	4	Soft yellowish brown slightly gravelly very sandy CLAY with occasional orange brown mottling. Gravel is brown, white and black angular to rounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density.

Material Retained on 20mm Sieve Removed		0.0	%
Intitial Specimen Details:	Bulk Density	1.95	Mg/m³
	Dry Density	1.75	Mg/m³

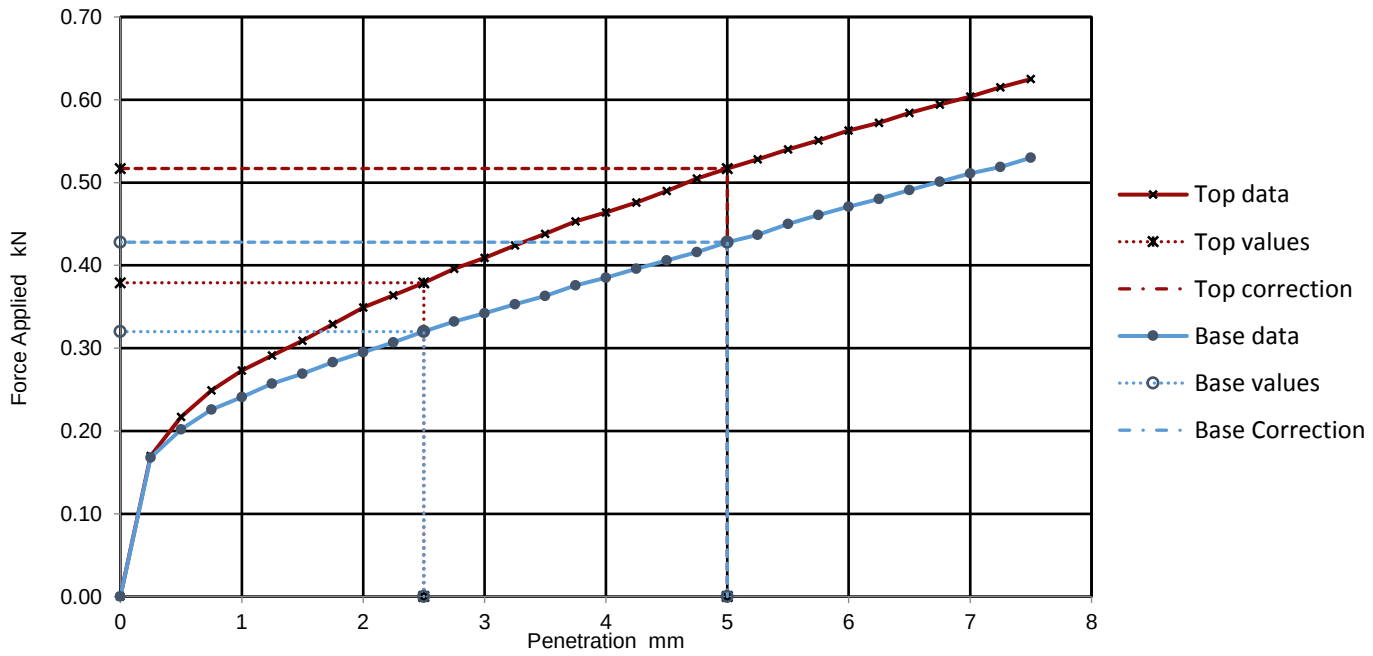
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	167	mins
Amount of Swell Recorded	-0.046	mm
Initial Water Content	11.5	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	2.9	2.6	2.9	2.7	15.6
BASE	No	2.4	2.1	2.4		15.2

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-09241-1
Initial Date of Issue:	11-Apr-2018
Client	Soil Property Testing
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG
Contact(s):	Jon Garner
Project	S31644-6 Lake Lothing

Quotation No.:	Q17-10468	**Date Received:**	05-Apr-2018
Order No.:	S31644-6	**Date Instructed:**	05-Apr-2018
No. of Samples:	11		
Turnaround (Wkdays):	5	**Results Due:**	11-Apr-2018
Date Approved:	11-Apr-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-6 Lake Lothing

Client: Soil Property Testing				**Chemtest Job No.:**	18-09241	18-09241	18-09241	18-09241	18-09241	18-09241	18-09241	18-09241	18-09241	18-09241	18-09241
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	602234	602235	602236	602237	602238	602239	602240	602241	602242	602243	602244
Order No.: S31644-6				Client Sample Ref.:	BHC14	BHC14	BHC14	BHC14	BHC14	BHC22	BHC22	BHC27	BHC27	BHC27	BHC27
				Client Sample ID.:	B2	D3	B18	B46	B72	U5	B8	D2	D18	B52	D71
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.80	2.00	9.40	22.60	35.60	2.00	3.00	3.00	13.70	29.00	39.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020	16	1.1	9.6	22	14	15	17	11	13	17	24
pH (2.5:1)	N	2010		N/A	[A] 8.3		[A] 8.5	[A] 7.5	[A] 8.5		[A] 8.5	[A] 8.0	[A] 7.3	[A] 8.3	[A] 8.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.056		< 0.010	0.22	0.14		0.15	0.061	0.056	0.11	0.10
Total Sulphur	U	2175	%	0.010	[A] 0.034		[A] < 0.010	[A] 0.72	[A] 0.22		[A] 0.040	[A] 0.030	[A] 0.049	[A] 0.26	[A] 0.18
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.020		[A] < 0.010	[A] 0.16	[A] 0.042		[A] 0.044	[A] 0.011	[A] 0.012	[A] 0.053	[A] 0.035
Organic Matter BS1377	N	2930	%	0.10		[A] 0.10				[A] 0.20					

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
602234	BHC14	B2		A	Plastic Bag
602235	BHC14	D3		A	Plastic Tub 500g
602236	BHC14	B18		A	Plastic Bag
602237	BHC14	B46		A	Plastic Bag
602238	BHC14	B72		A	Plastic Bag
602239	BHC22	U5		A	Plastic Bag
602240	BHC22	B8		A	Plastic Bag
602241	BHC27	D2		A	Plastic Tub 500g
602242	BHC27	D18		A	Plastic Tub 500g
602243	BHC27	B52		A	Plastic Bag
602244	BHC27	D71		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** Technical Director
- ☐ **S.P. Townend FGS** Quality Manager
- ☐ **W. Johnstone** Materials Lab Manager
- ☐ **D. Sabnis** Operations Manager

[redacted]

Date Received: 22/03/2018

Samples Tested Between: 22/03/2018 **and** 15/05/2018

Remarks:

For the attention of Mr J Glenwright
Your Reference No: 2543,GI

Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2 (a) UKAS - United Kingdom Accreditation Service
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-7**	**Target Date**	03/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	Organic Content (Dichromat	CBR inc. compaction	Soaked CBR Swelling Measu	Compaction 2.5kg	Brownfield Site - Pyrite prese	Liquid/Plastic Limits	Triaxial Test Single Stage									Sample Remarks
BHC15	B	2	0.30	1	1			1															
BHC15	B	4	0.80	1		1			1	1	1													
BHC15	DS	6	1.70		1							1												
BHC15	B	12	4.60	1	1																			
BHC15	B	16	6.60		1																			
BHC15	B	22	9.60	1	1																			
BHC15	B	31	13.60				1																	
BHC15	B	41	18.60	1			1					1												
BHC15	B	49	22.60				1																	
BHC15	UT	50	23.00	1									1	2										
BHC15	UT	52	24.00	1									1	2										
BHC15	B	53	24.60				1																	
BHC15	B	59	27.60	1			1																	
BHC15	B	67	31.60				1																	
BHC15	B	75	35.60				1																	
BHC15	B	83	39.60		1																			
BHC17	B	2	0.40	1		1		1																
BHC17	B	4	1.00	1	1				1	1	1													
BHC17	B	6	1.20	1		1																		
BHC17	D	9	2.60					1				1												
BHC17	B	12	3.00			1																		
BHC17	B	19	5.00	1	1																			
BHC17	B	25	9.00	1	1																			
BHC17	B	32	15.00	1			1																	
BHC17	UT	39	19.00	1									1	1										
BHC17	B	40	19.00				1																	
BHC17	B	44	21.00				1																	
BHC17	UT	46	22.00	1									1	2										
BHC17	B	49	23.00				1																	
BHC17	UT	50	24.00	1									1	2										
BHC17	DS	51	24.60									1												
BHC17	B	53	25.00	1			1																	
BHC17	B	59	28.00				1																	
BHC17	B	67	32.00	1			1																	
BHC17	B	73	35.00		1																			

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-7**	**Target Date**	03/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	Organic Content (Dichromat	CBR inc. compaction	Soaked CBR Swelling Measu	Compaction 2.5kg	Brownfield Site - Pyrite pres	Liquid/Plastic Limits	Triaxial Test Single Stage								Sample Remarks
BHC17	B	79	38.00		1																	
Totals				**19**	**11**	**4**	**14**	**3**	**2**	**2**	**2**	**4**	**5**	**9**								**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC15	0.30	B	2	**6.0**	Brown, black and white angular to subrounded flint GRAVEL in a soft dark brown organic sandy clay matrix	
BHC15	0.80	B	4	**6.6**	Brown, black and white angular to rounded flint GRAVEL and black silty SAND with rare firm very dark brown clayey lumps.	
BHC15	4.60	B	12	**18.5**	Light brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	
BHC15	9.60	B	22	**17.1**	Yellowish brown slightly gravelly slightly silty SAND. Gravel is black, white and brown angular to subrounded flint.	
BHC15	18.60	B	41	**23.2**	Dark olive grey silty clayey slightly organic SAND.	
BHC15	23.00	UT	50	**32.9**	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, fine sand laminations, and slightly organic pockets.	
BHC15	23.00	UT	50	**31.2**	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, fine sand laminations, and slightly organic pockets.	
BHC15	24.00	UT	52	**39.5**	Firm (Medium strength) dark grey slightly sandy turning to sandy silty slightly organic CLAY. Sand is fine to medium.	
BHC15	24.00	UT	52	**28.8**	Firm (Medium strength) dark grey slightly sandy turning to sandy silty slightly organic CLAY. Sand is fine to medium.	
BHC15	27.60	B	59	**27.4**	Olive grey silty clayey slightly organic SAND.	
BHC17	0.40	B	2	**12.4**	Black gravelly silty clayey SAND with occasional crushed cinder, and rare brick fragments. Gravel is brown, black and white angular to rounded flint.	
BHC17	1.00	B	4	**8.1**	Brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	
BHC17	1.20	B	6	**14.1**	Brown slightly gravelly silty SAND with frequent lumps of soft yellowish brown clay. Gravel is black, brown and white angular to subrounded flint.	
BHC17	5.00	B	19	**14.6**	Light brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC17	9.00	B	25	**22.5**	Yellowish brown slightly gravelly slightly silty SAND. Gravel is brown, black and white angular flint.	
BHC17	15.00	B	32	**31.8**	Light olive brown slightly gravelly silty clayey SAND. Gravel is fine to medium flint and quartzite.	
BHC17	19.00	UT	39	**17.2**	Stiff (High strength) grey slightly sandy silty CLAY. Sand is fine to medium.	
BHC17	22.00	UT	46	**30.2**	Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.	
BHC17	22.00	UT	46	**29.0**	Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.	
BHC17	24.00	UT	50	**35.7**	Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.	
BHC17	24.00	UT	50	**31.6**	Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.	
BHC17	25.00	B	53	**38.3**	Dark olive grey silty clayey slightly organic SAND.	
BHC17	32.00	B	67	**29.5**	Olive grey silty clayey slightly organic SAND with rare shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC15	23.00	UT	50	**32.9**	57	25	32	0.25	From Natural	0 (A)		48	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, fine sand laminations, and slightly organic pockets.	CH
BHC15	24.00	UT	52	**39.5**	41	13	28	0.95	From Natural	0 (A)		24	Firm (Medium strength) dark grey slightly sandy turning to sandy silty slightly organic CLAY. Sand is fine to medium.	CIO
BHC17	19.00	UT	39	**17.2**	23	11	12	0.52	From Natural	0 (A)		28	Stiff (High strength) grey slightly sandy silty CLAY. Sand is fine to medium.	CLO
BHC17	22.00	UT	46	**30.2**	44	18	26	0.47	From Natural	0 (A)		24	Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.	CI
BHC17	24.00	UT	50	**35.7**	60	27	33	0.26	From Natural	0 (A)		24	Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.	CH

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

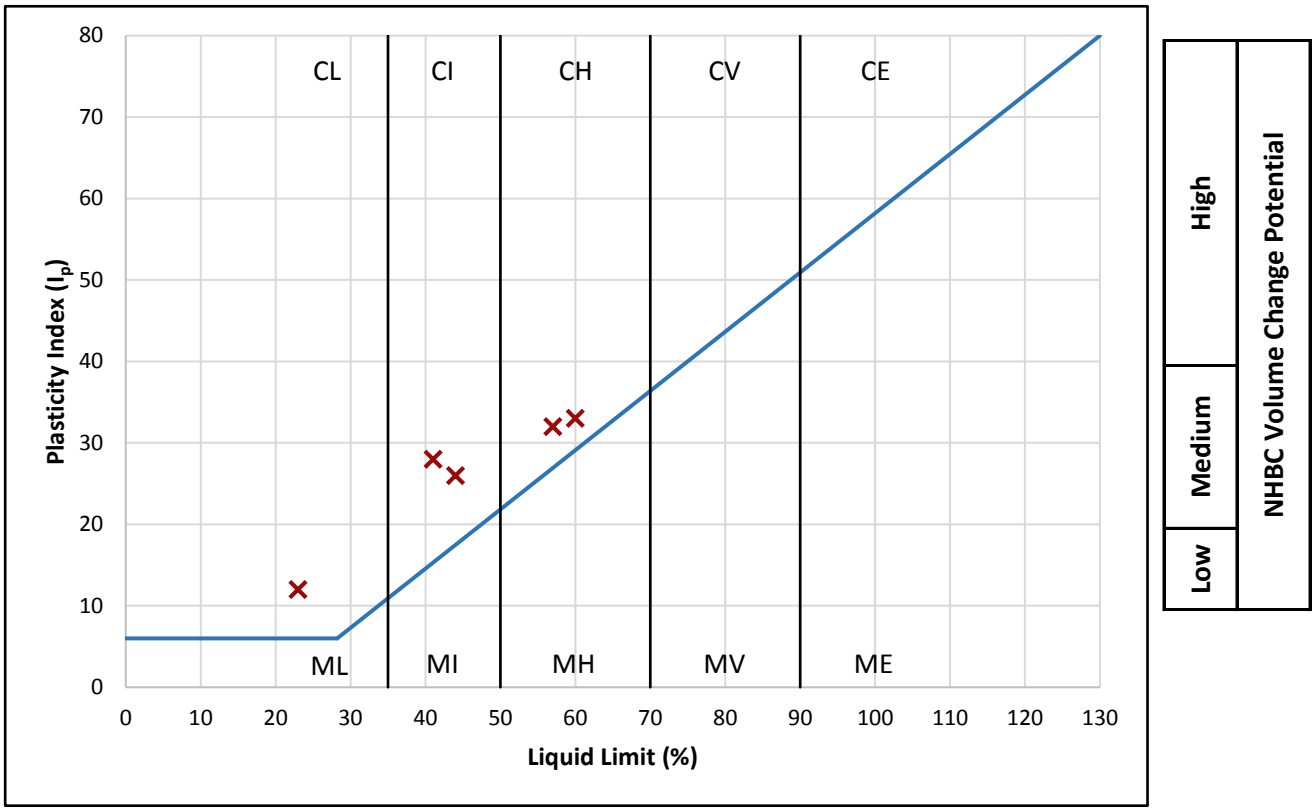
DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

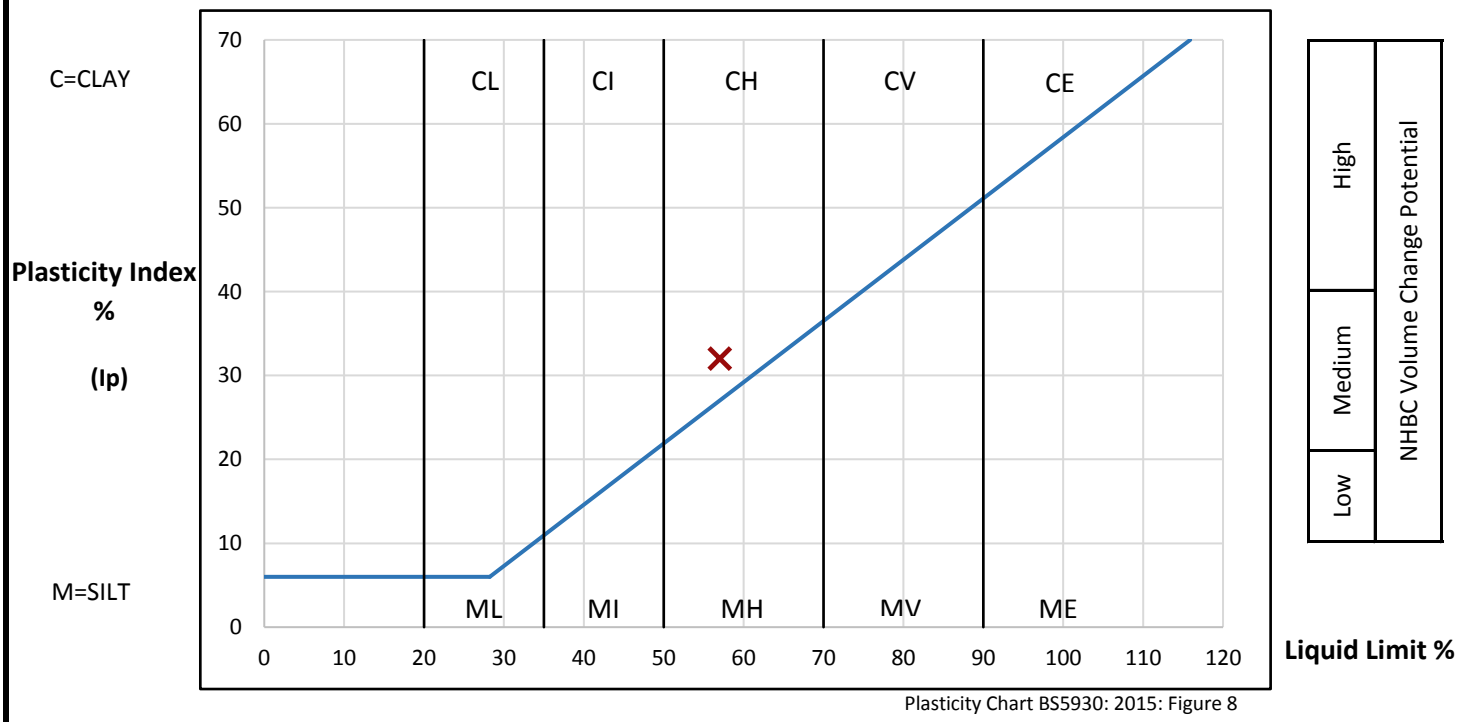
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC15	23.00	UT	50	32.9	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, fine sand laminations, and slightly organic pockets.	

PREPARATION				Liquid Limit	57 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	32 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.25
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	48 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

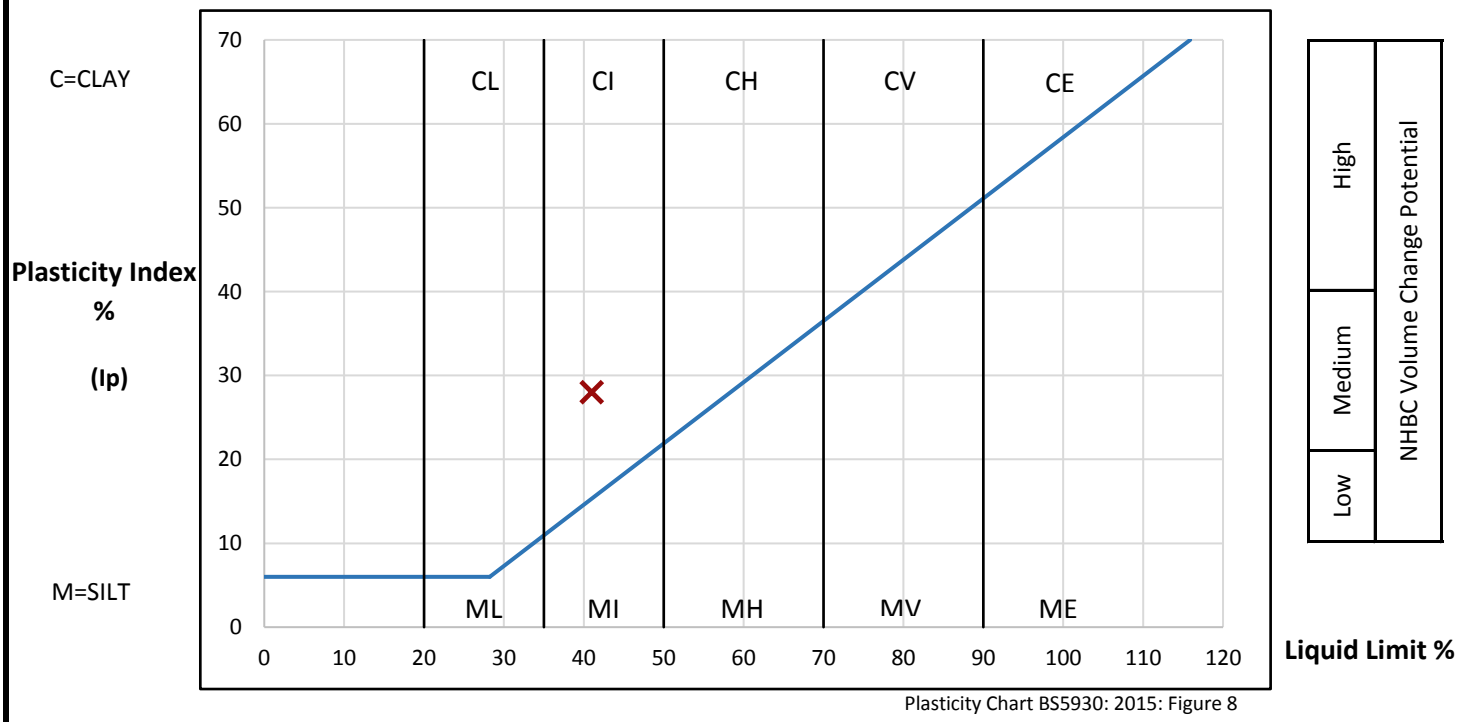
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC15	24.00	UT	52	39.5	Firm (Medium strength) dark grey slightly sandy turning to sandy silty slightly organic CLAY. Sand is fine to medium.	

PREPARATION				Liquid Limit	41 %
Method of preparation		From natural		Plastic Limit	13 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	28 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.95
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

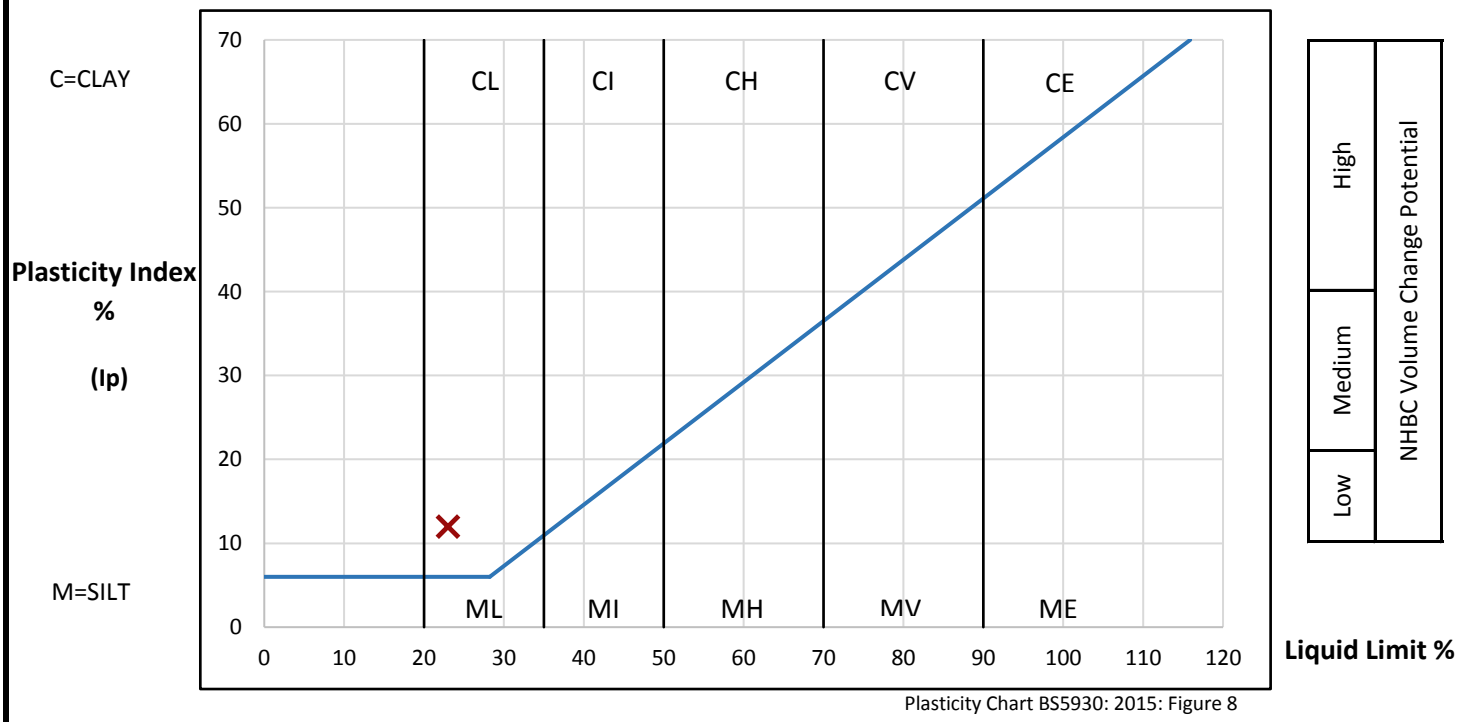
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC17	19.00	UT	39	17.2	Stiff (High strength) grey slightly sandy silty CLAY. Sand is fine to medium.	

PREPARATION				Liquid Limit	23 %
Method of preparation		From natural		Plastic Limit	11 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	12 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.52
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

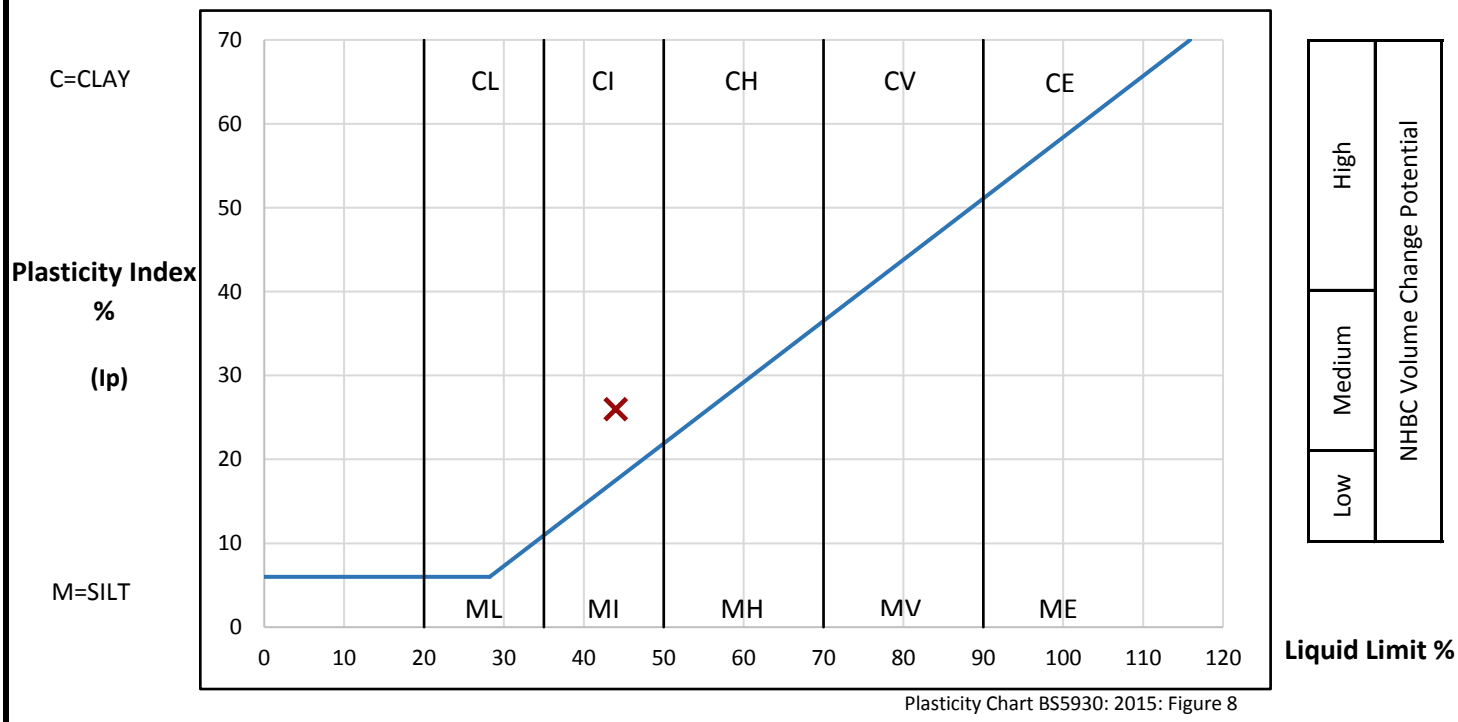
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC17	22.00	UT	46	30.2	Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.	

PREPARATION			Liquid Limit	44 %
Method of preparation		From natural	Plastic Limit	18 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	26 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.47
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

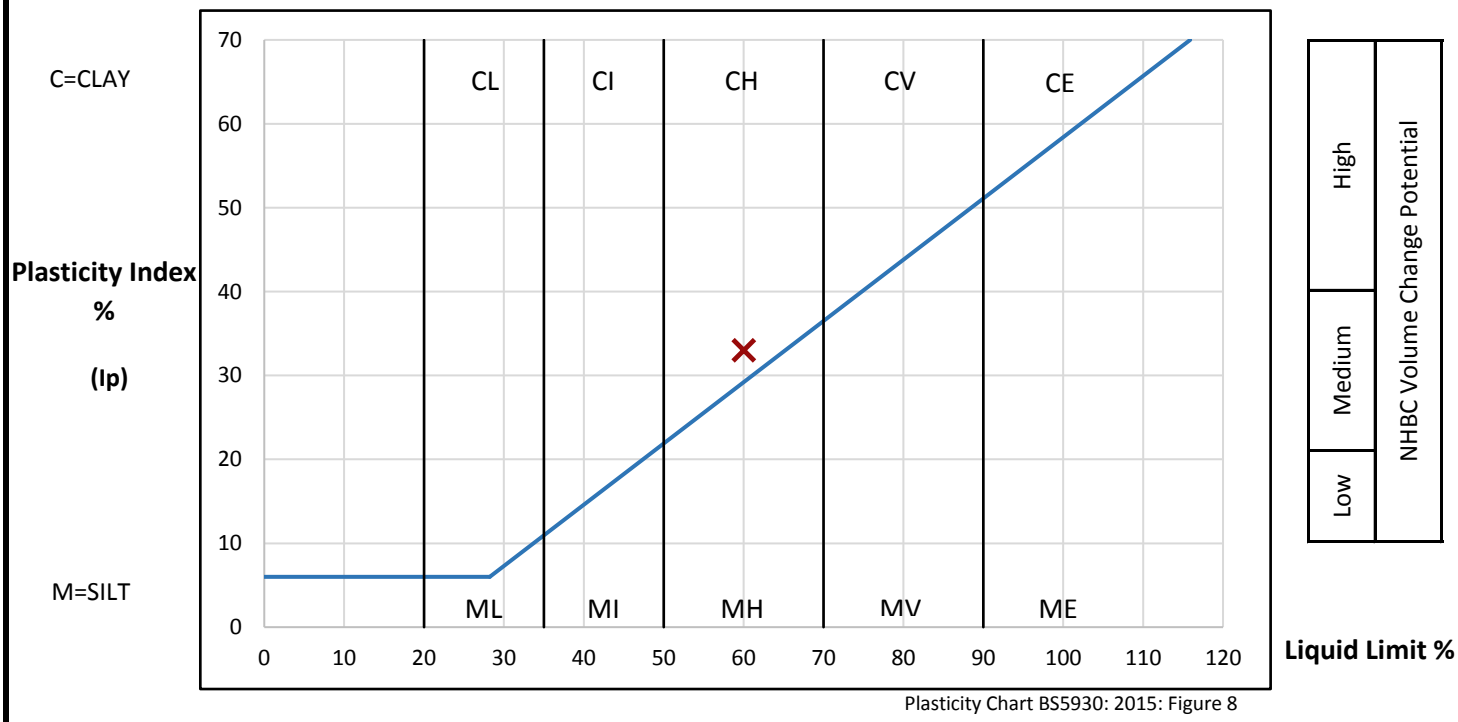
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC17	24.00	UT	50	35.7	Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.	

PREPARATION				Liquid Limit	60 %
Method of preparation		From natural		Plastic Limit	27 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	33 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.26
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

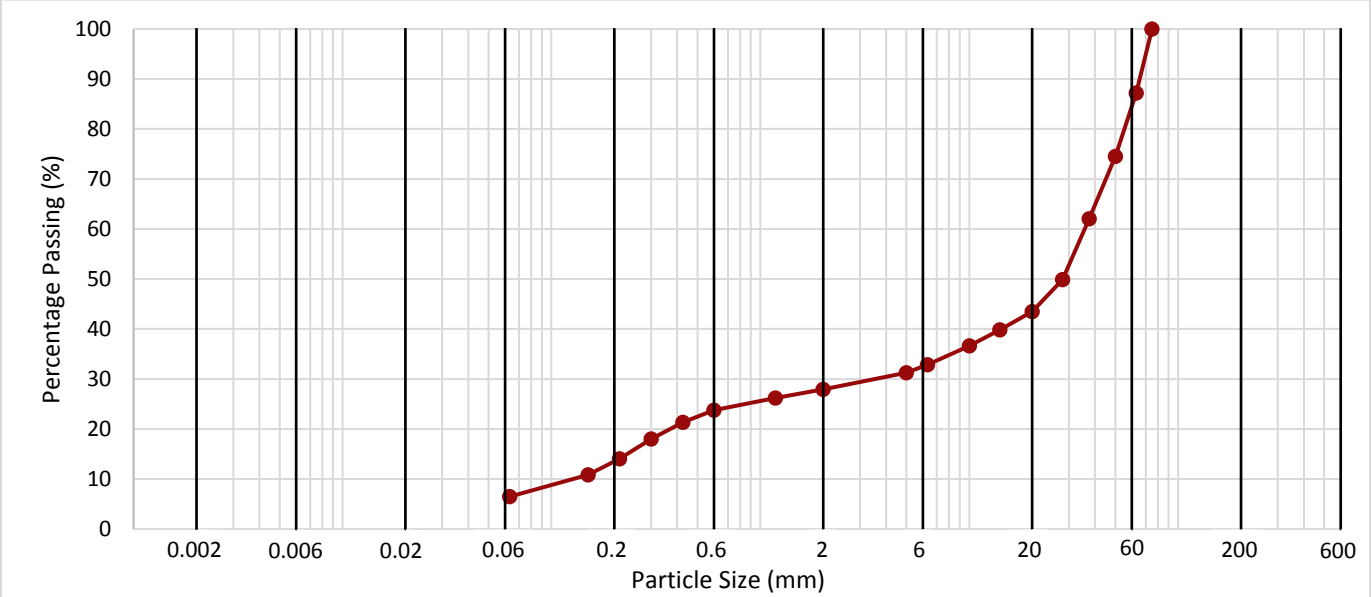
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	0.30	B	2	Brown, black and white angular to subrounded flint GRAVEL in a soft dark brown organic sandy clay matrix	Dry mass of sample required 50kg. Mass of sample submitted 7.2kg. Sample Unrepresentative BS1377:Part 2:1990 Table 3.

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	28	22
1.18	26	
0.600	24	
0.425	21	
0.300	18	
0.212	14	
0.150	11	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		72
125		
75	100	
63	87	
50	75	
37.5	62	
28	50	
20	44	
14	40	
10	37	
6.3	33	
5	31	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

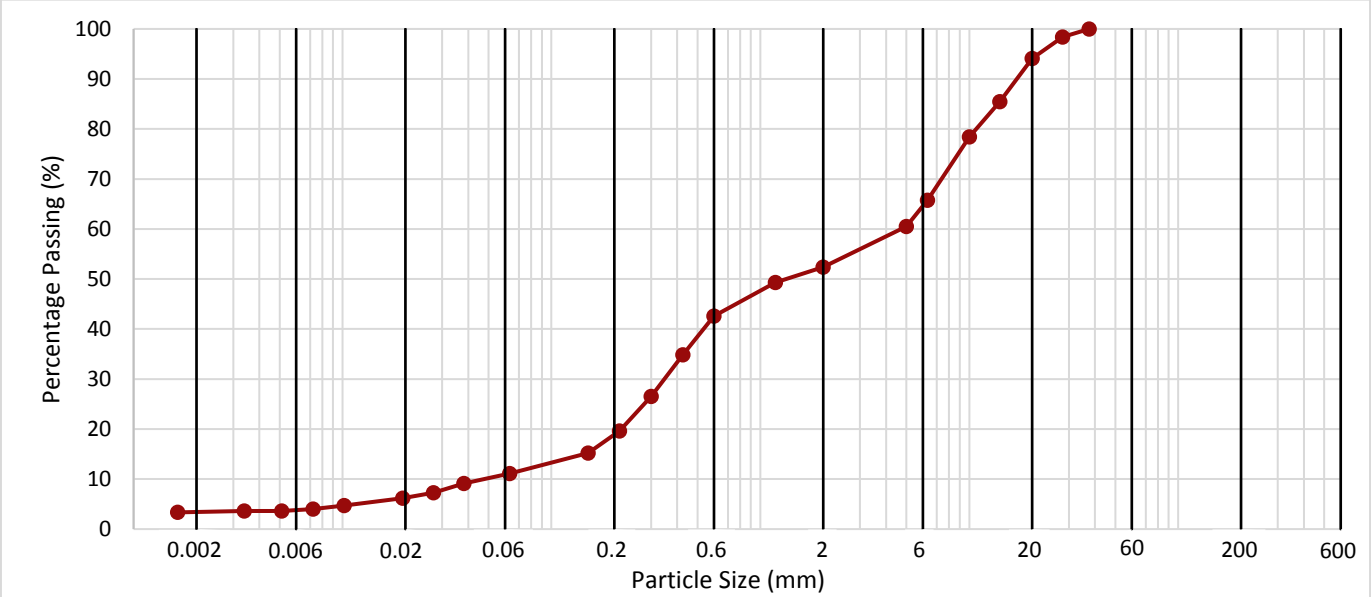
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	0.80	B	4	Brown, black and white angular to rounded flint GRAVEL and black silty SAND with rare firm very dark brown clayey lumps.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0380	9	8	
	0.0273	7		
	0.0194	6		
	0.0102	5		
	0.0072	4		
	0.0051	4		3
	0.0034	4		
	0.0016	3		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	52	41
1.18	49	
0.600	43	
0.425	35	
0.300	27	
0.212	20	
0.150	15	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		48
125		
90		
63		
50		
37.5	100	
28	98	
20	94	
14	85	
10	78	
6.3	66	
5	60	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

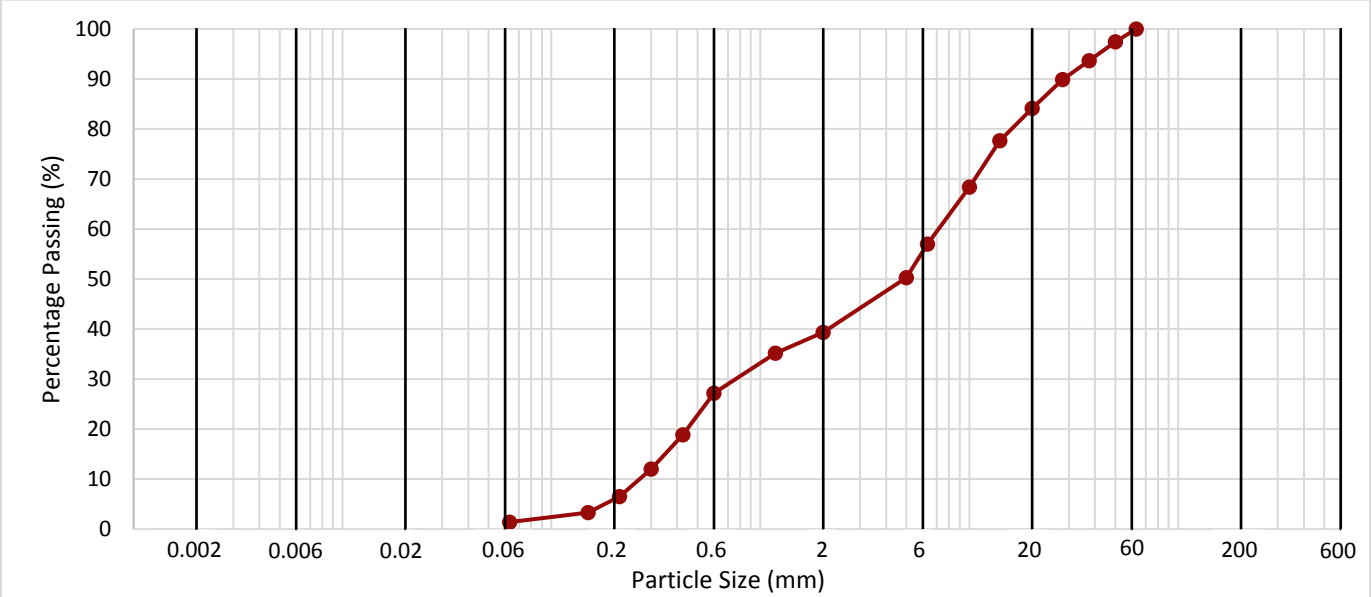
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	1.70	B	6	Brown, black and white slightly silty very sandy angular to rounded flint GRAVEL. Sand is pale brown and locally dark brown	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	39	38
1.18	35	
0.600	27	
0.425	19	
0.300	12	
0.212	7	
0.150	3	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		61
125		
90		
63	100	
50	97	
37.5	94	
28	90	
20	84	
14	78	
10	68	
6.3	57	
5	50	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

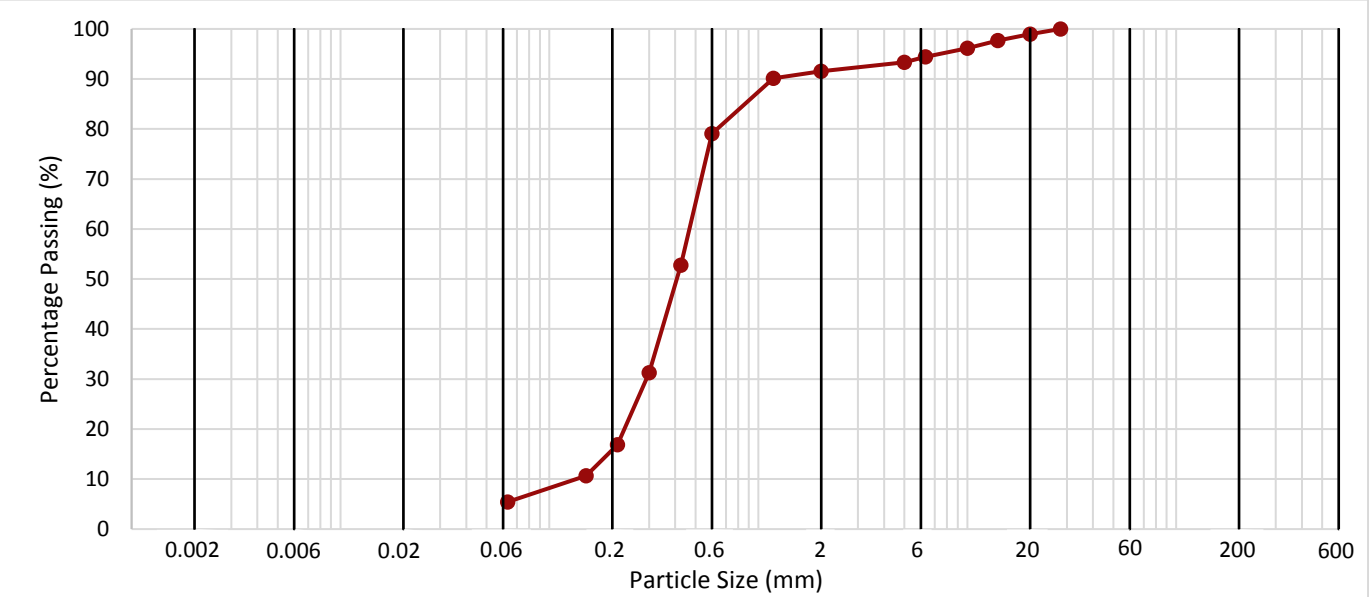
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	4.60	B	12	Light brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	92	87
1.18	90	
0.600	79	
0.425	53	
0.300	31	
0.212	17	
0.150	11	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		8
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	98	
10	96	
6.3	94	
5	93	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

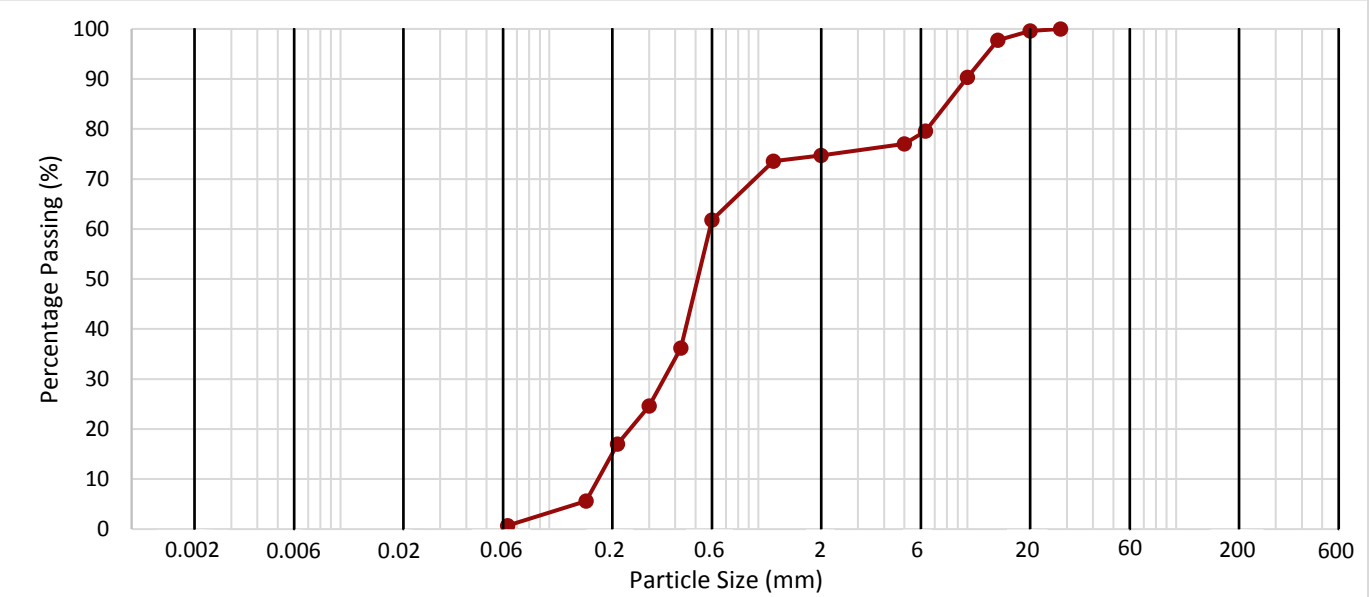
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	6.60	B	16	Orange very gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	75	74
1.18	74	
0.600	62	
0.425	36	
0.300	25	
0.212	17	
0.150	6	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		25
125		
90		
63		
50		
37.5		
28	100	
20	100	
14	98	
10	90	
6.3	80	
5	77	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

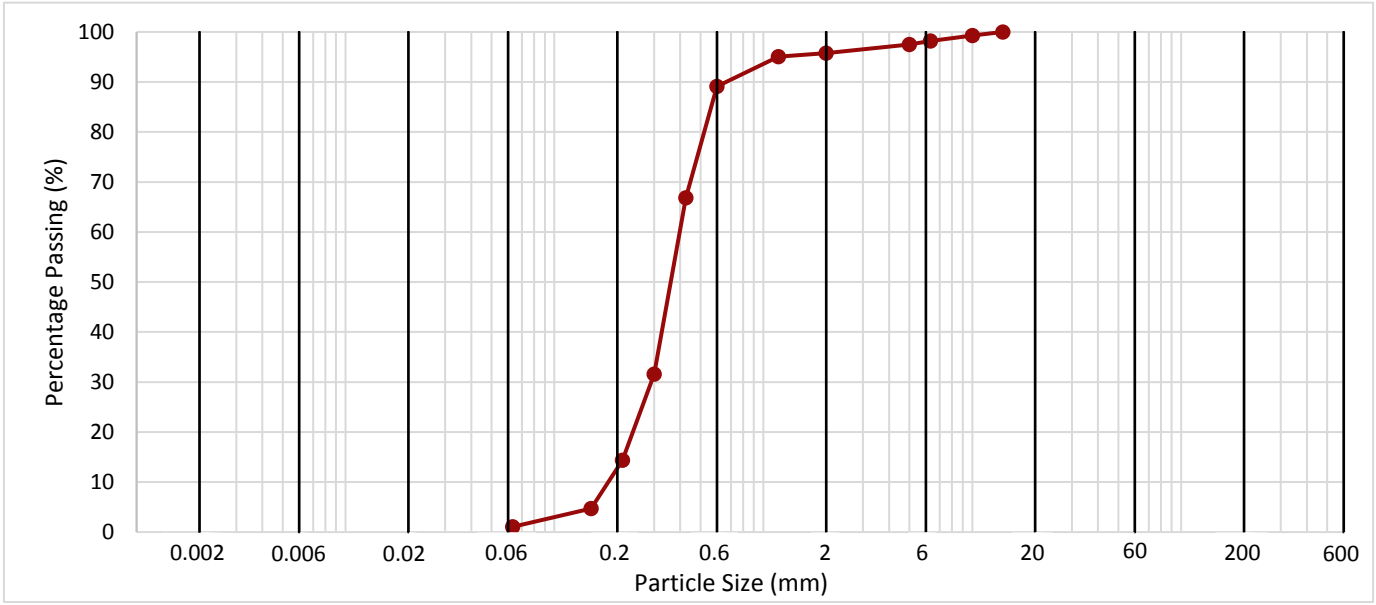
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	9.60	B	22	Yellowish brown slightly gravelly slightly silty SAND. Gravel is black, white and brown angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	95
1.18	95	
0.600	89	
0.425	67	
0.300	32	
0.212	14	
0.150	5	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	99	
6.3	98	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

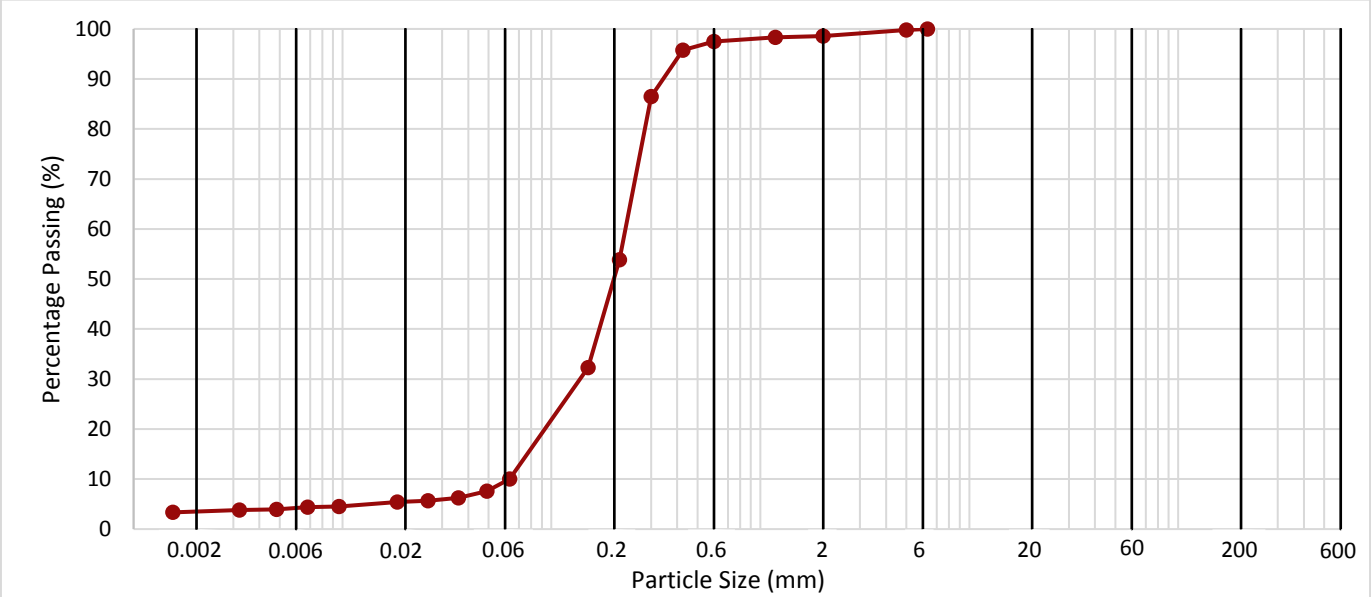
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	13.60	B	31	Brownish yellow slightly gravelly silty slightly clayey SAND. Gravel is fine angular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0492	8	7
	0.0359	6	
	0.0257	6	
	0.0183	5	Clay by Dry Mass (%)
	0.0096	5	
	0.0068	4	
	0.0048	4	3
	0.0032	4	
	0.0015	3	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	89
1.18	98	
0.600	98	
0.425	96	
0.300	86	
0.212	54	
0.150	32	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

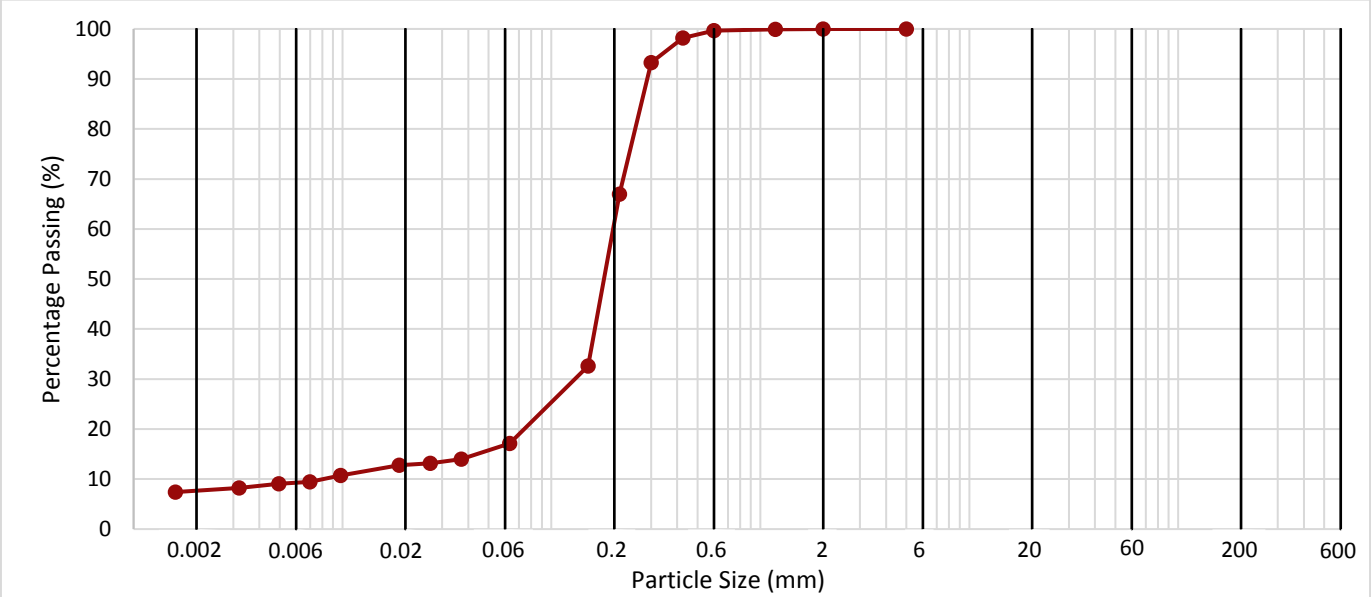
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	18.60	B	41	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0370	14	9
0.0263	13	
0.0187	13	
0.0098	11	Clay by Dry Mass (%)
0.0070	9	
0.0050	9	
0.0032	8	8
0.0016	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	83
1.18	100	
0.600	100	
0.425	98	
0.300	93	
0.212	67	
0.150	33	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

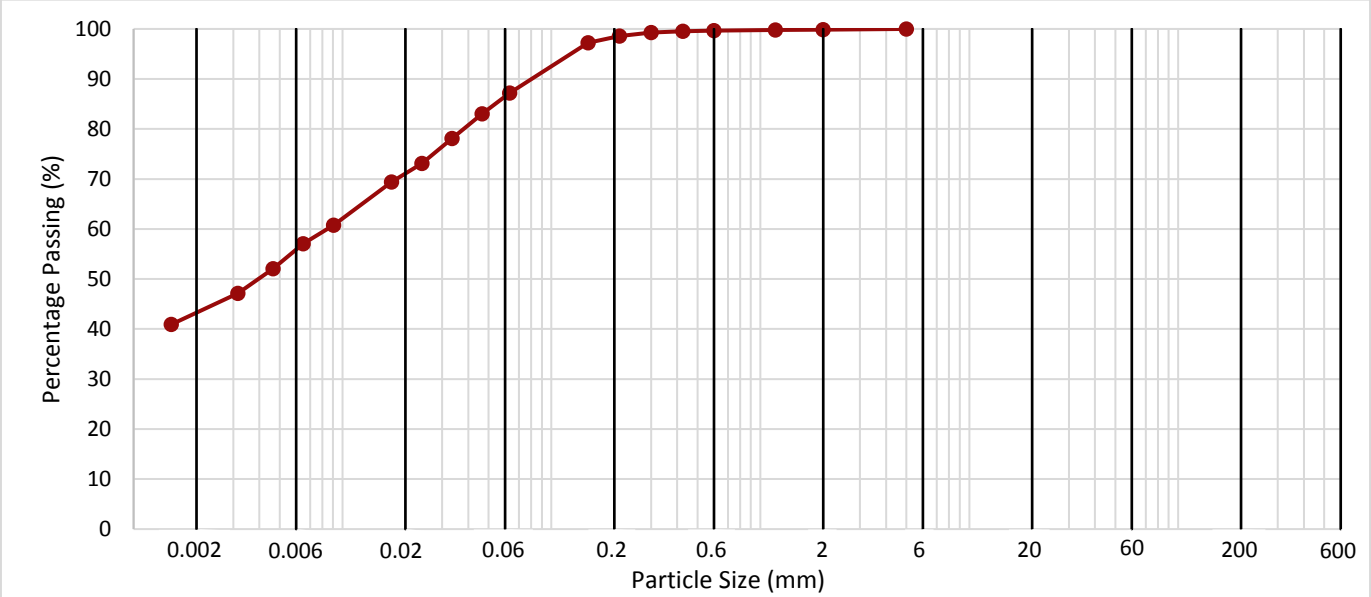
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	22.60	B	49	Firm dark grey locally oxidised to olive brown silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0465	83	44
	0.0334	78	
	0.0240	73	
	0.0171	69	Clay by Dry Mass (%)
	0.0091	61	
	0.0065	57	
	0.0046	52	43
	0.0032	47	
	0.0015	41	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	13
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	99	
0.150	97	
0.063	87	

Fines By Dry Mass (%)	
<0.063mm	87

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

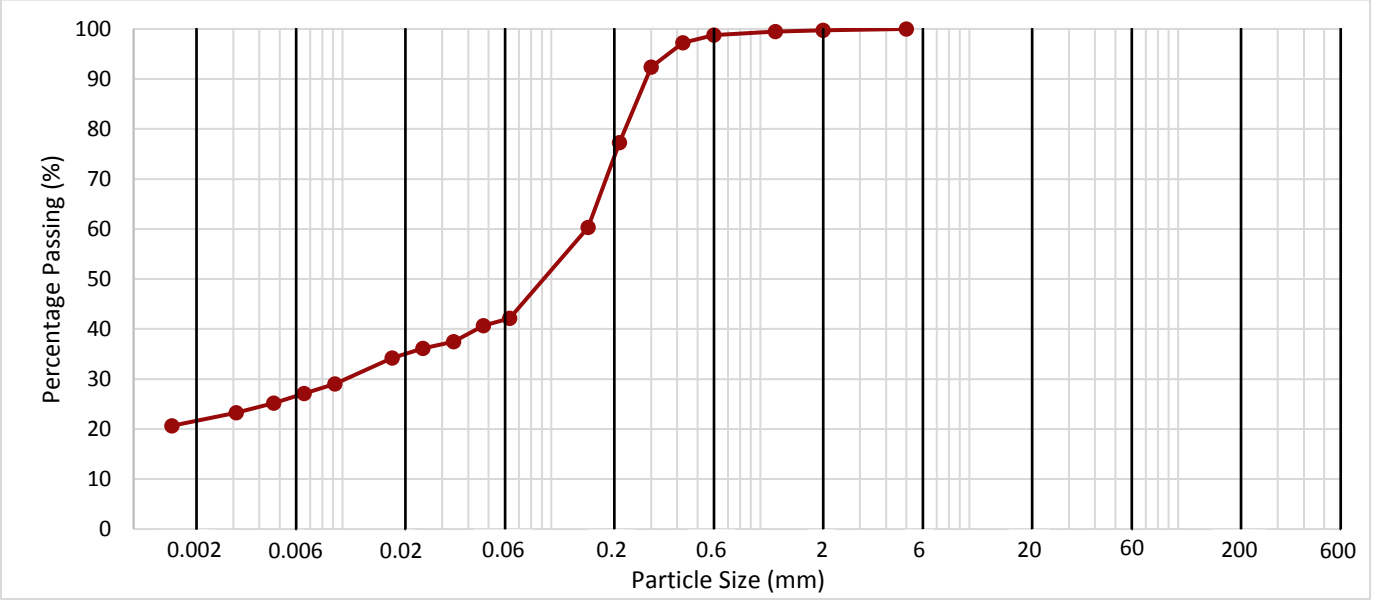
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	24.60	B	53	Very soft olive grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0473	41	21
	0.0340	37	
	0.0242	36	
	0.0173	34	Clay by Dry Mass (%)
	0.0092	29	
	0.0066	27	
	0.0047	25	21
	0.0031	23	
	0.0015	21	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	58
1.18	99	
0.600	99	
0.425	97	
0.300	92	
0.212	77	
0.150	60	
0.063	42	

Fines By Dry Mass (%)	
<0.063mm	42

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

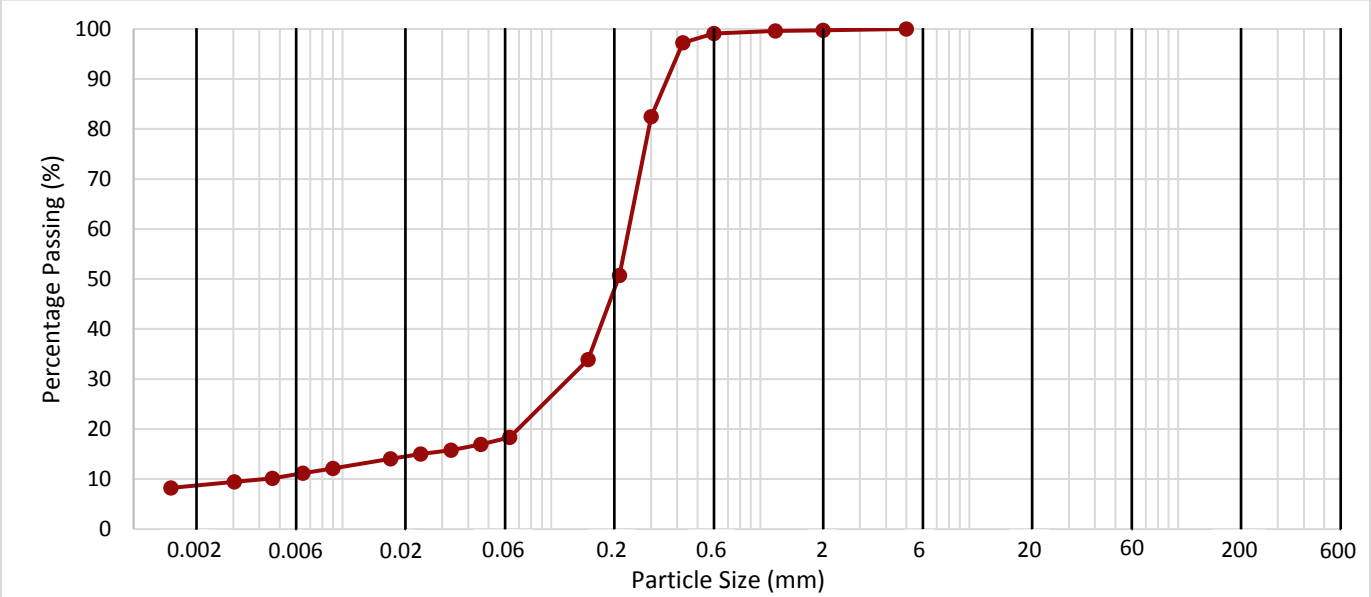
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	27.60	B	59	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0459	17	9	
	0.0331	16		
	0.0237	15		
	0.0170	14		9
	0.0090	12		
	0.0065	11		
	0.0046	10		
	0.0030	9		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	82
1.18	100	
0.600	99	
0.425	97	
0.300	82	
0.212	51	
0.150	34	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

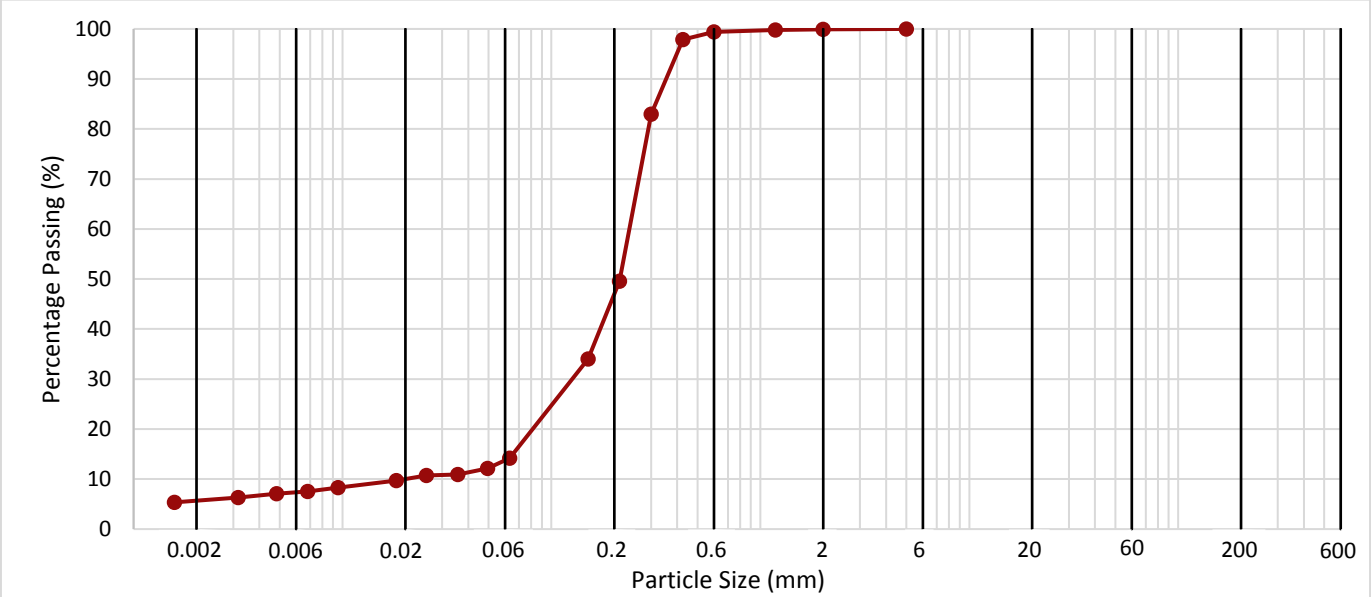
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	31.60	B	67	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0495	12	8	
	0.0356	11		
	0.0252	11		
	0.0181	10		6
	0.0095	8		
	0.0068	8		
	0.0048	7		
	0.0032	6		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	86
1.18	100	
0.600	99	
0.425	98	
0.300	83	
0.212	50	
0.150	34	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

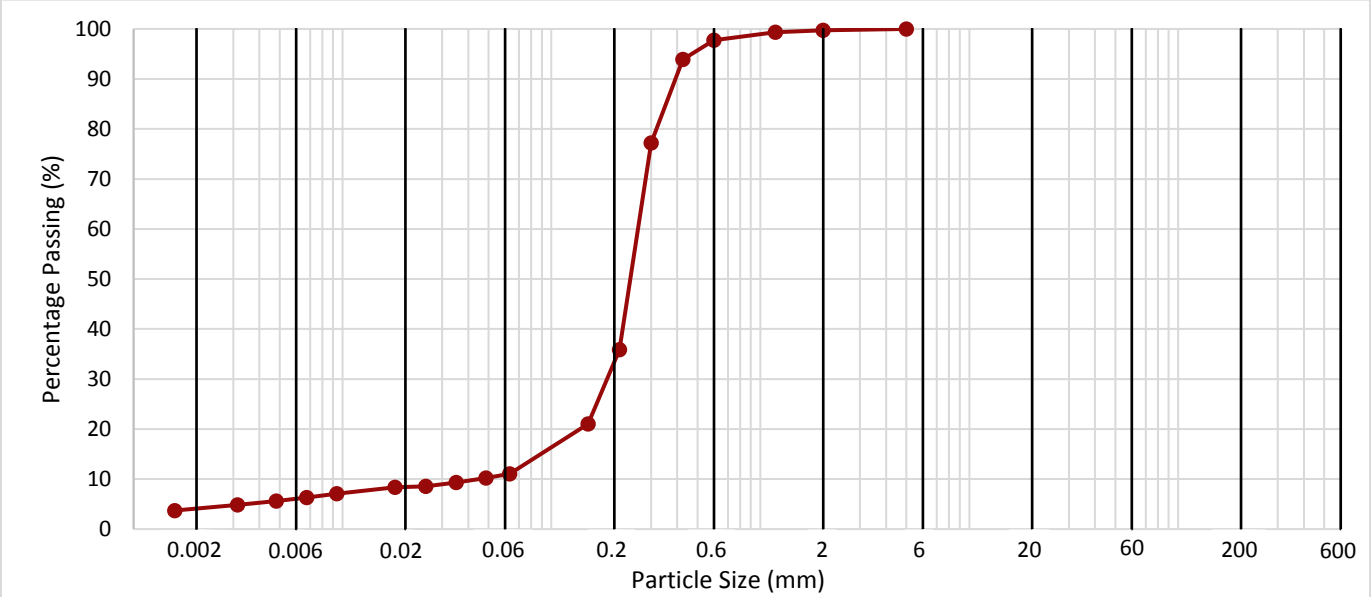
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	35.60	B	75	Olive grey silty slightly clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0486	10	7	
	0.0350	9		
	0.0251	9		
	0.0178	8		4
	0.0094	7		
	0.0067	6		
	0.0048	6		
	0.0031	5		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	99	
0.600	98	
0.425	94	
0.300	77	
0.212	36	
0.150	21	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

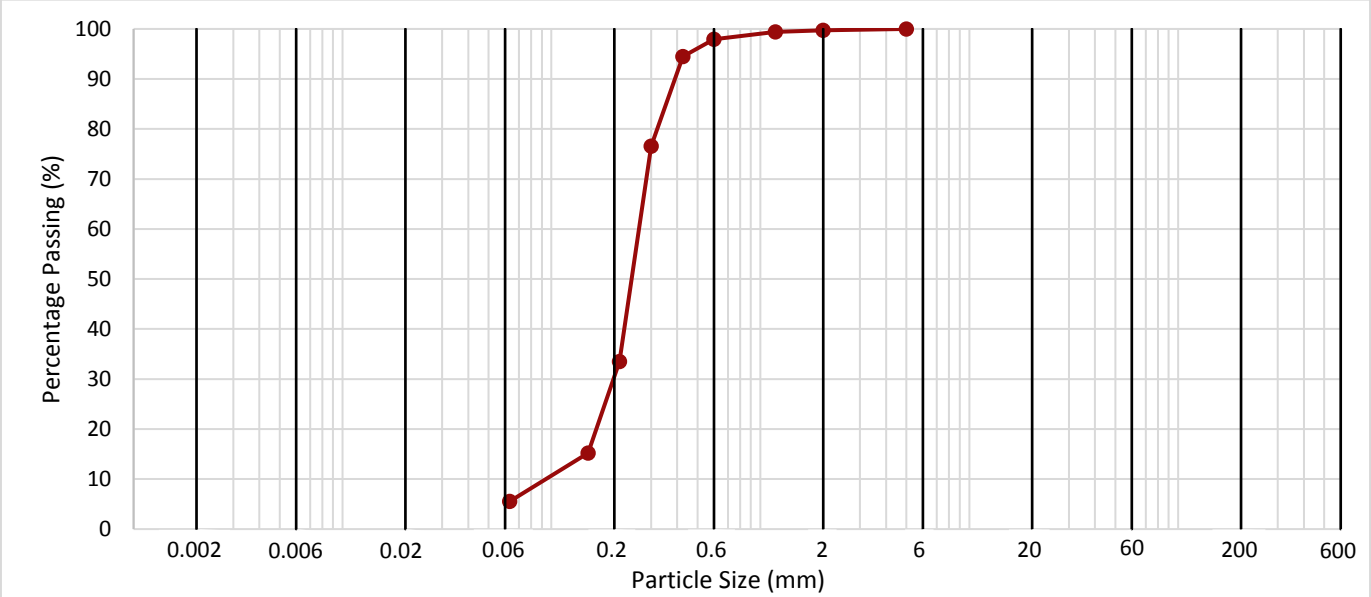
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	39.60	B	83	Dark grey silty SAND with occasional olive brown pockets	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	94
1.18	99	
0.600	98	
0.425	94	
0.300	77	
0.212	34	
0.150	15	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

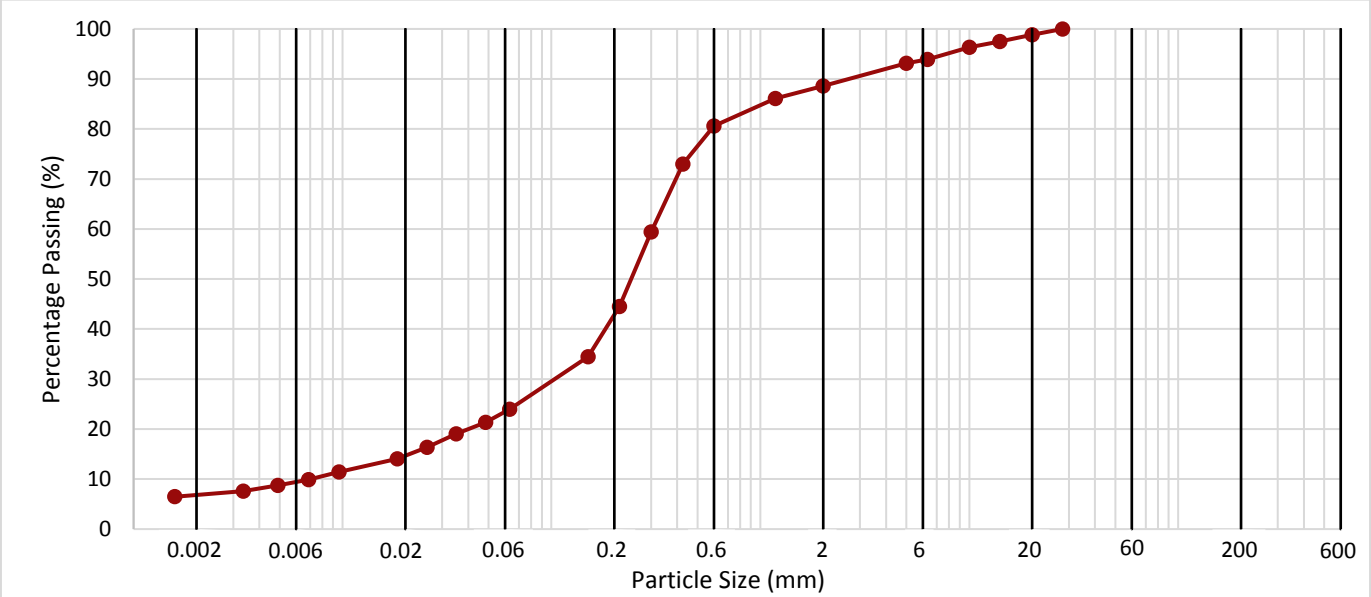
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	0.40	B	2	Black gravelly silty clayey SAND with occasional crushed cinder, and rare brick fragments. Gravel is brown, black and white angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0485	21	17	
	0.0350	19		
	0.0254	16		
	0.0183	14		
	0.0096	11		
	0.0069	10		
	0.0049	9		7
	0.0033	8		
	0.0016	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	89	65
1.18	86	
0.600	81	
0.425	73	
0.300	59	
0.212	44	
0.150	34	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		11
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	98	
10	96	
6.3	94	
5	93	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

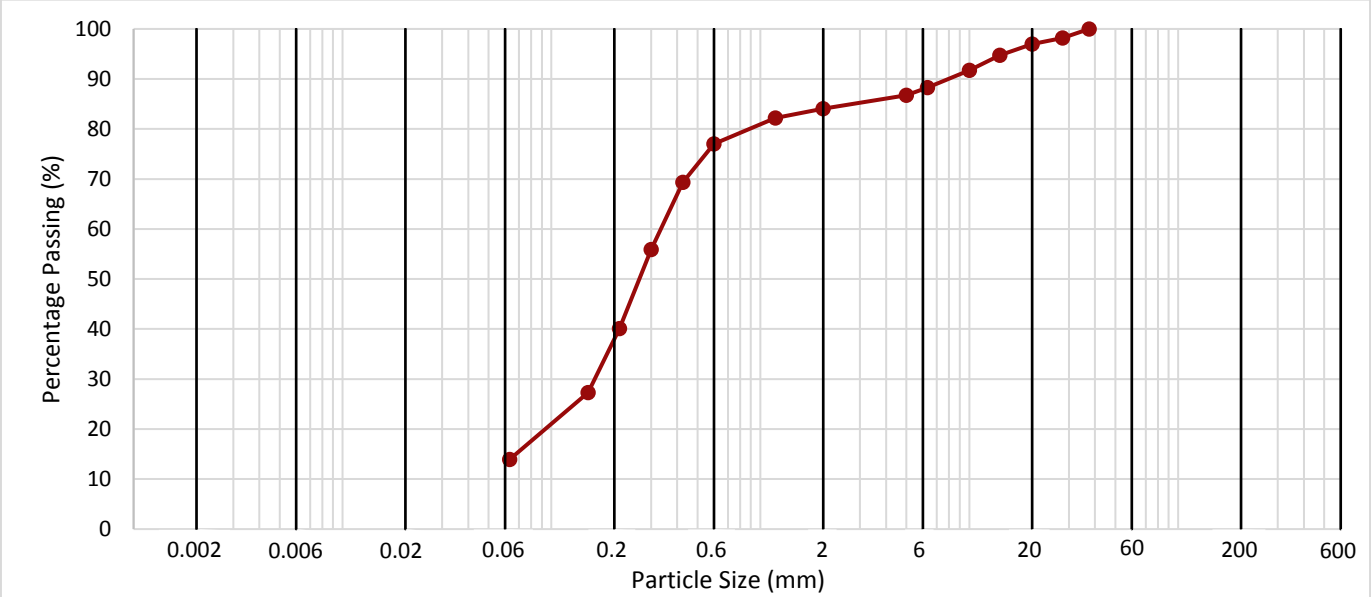
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	1.00	B	4	Brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	84	70
1.18	82	
0.600	77	
0.425	69	
0.300	56	
0.212	40	
0.150	27	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		16
125		
90		
63		
50		
37.5	100	
28	98	
20	97	
14	95	
10	92	
6.3	88	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

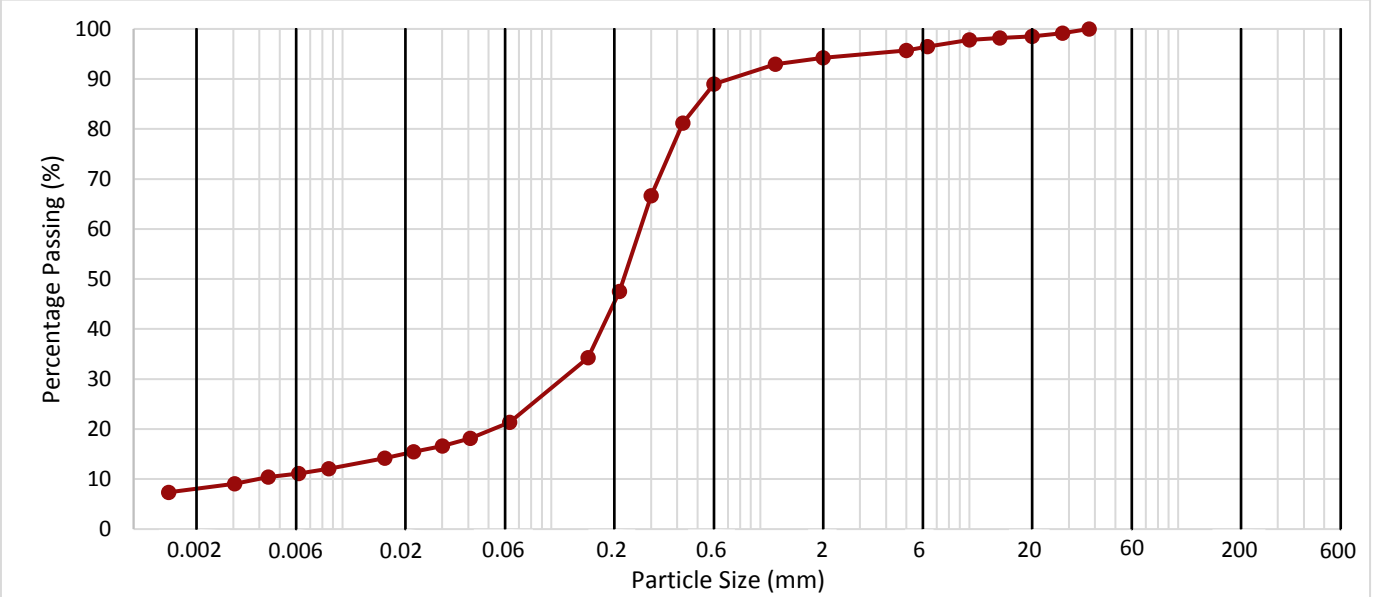
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	1.20	B	6	Brown slightly gravelly silty SAND with frequent lumps of soft yellowish brown clay. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0410	18	13	
	0.0301	17		
	0.0219	15		
	0.0159	14		8
	0.0086	12		
	0.0062	11		
	0.0044	10		
	0.0030	9		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	94	73
1.18	93	
0.600	89	
0.425	81	
0.300	67	
0.212	48	
0.150	34	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		6
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	98	
10	98	
6.3	96	
5	96	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

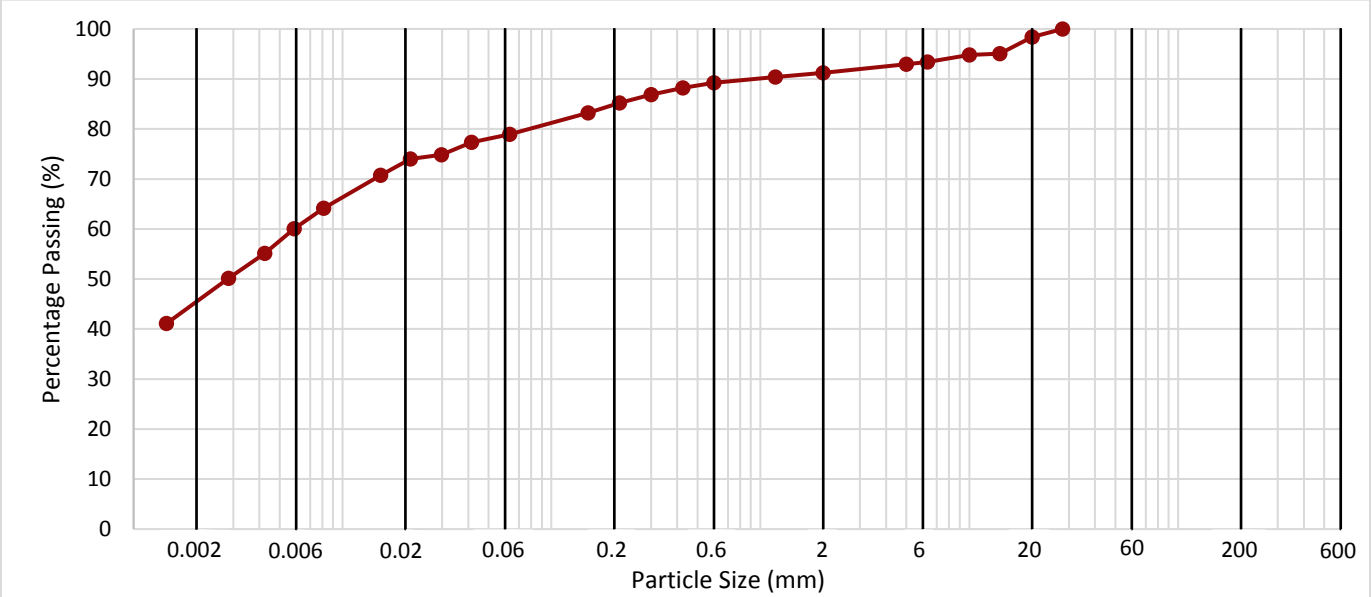
0998

Contract	Lake Lothing, Lowestoft
Serial No.	S31644-7

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	3.00	B	12	Stiff mottled brown and dark greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is white angular to subangular chalk and occasional brown, black and white angular flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0415	77	34	
0.0297	75		
0.0211	74		
0.0152	71		45
0.0081	64		
0.0059	60		
0.0042	55		
0.0029	50		
0.0014	41		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	91	12
1.18	90	
0.600	89	
0.425	88	
0.300	87	
0.212	85	
0.150	83	
0.063	79	

Fines By Dry Mass (%)	
<0.063mm	79

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		9
125		
90		
63		
50		
37.5		
28	100	
20	98	
14	95	
10	95	
6.3	93	
5	93	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

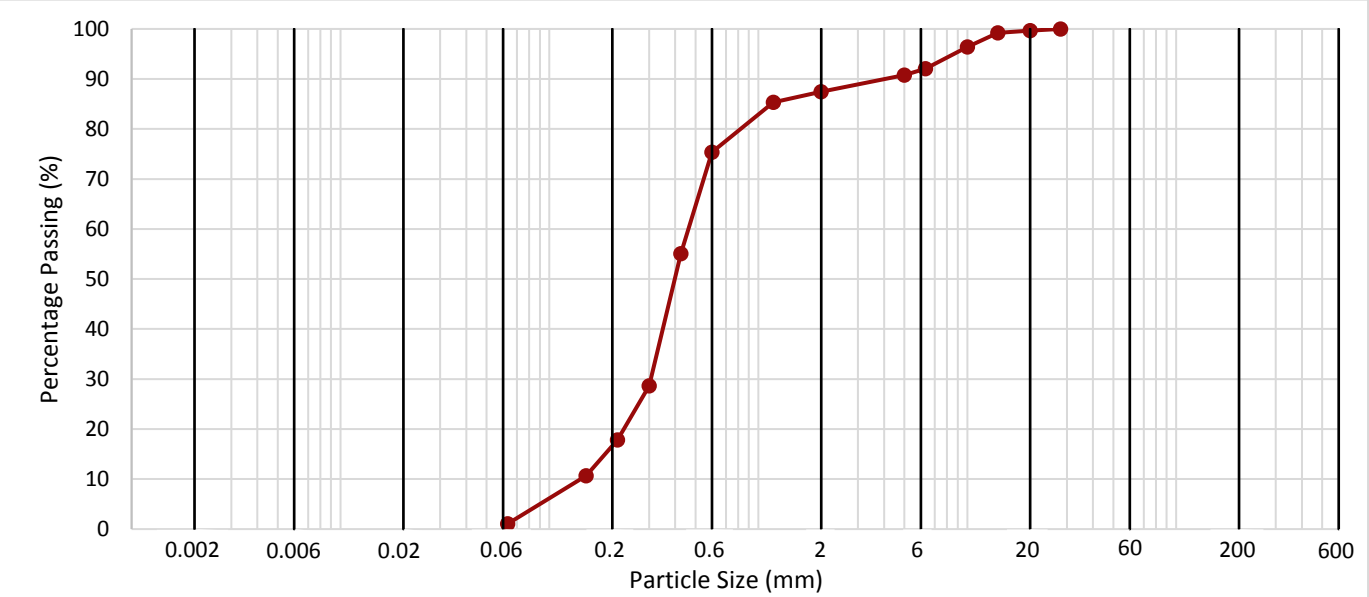
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	5.00	B	19	Light brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	87	86
1.18	85	
0.600	75	
0.425	55	
0.300	29	
0.212	18	
0.150	11	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		13
125		
90		
63		
50		
37.5		
28	100	
20	100	
14	99	
10	96	
6.3	92	
5	91	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

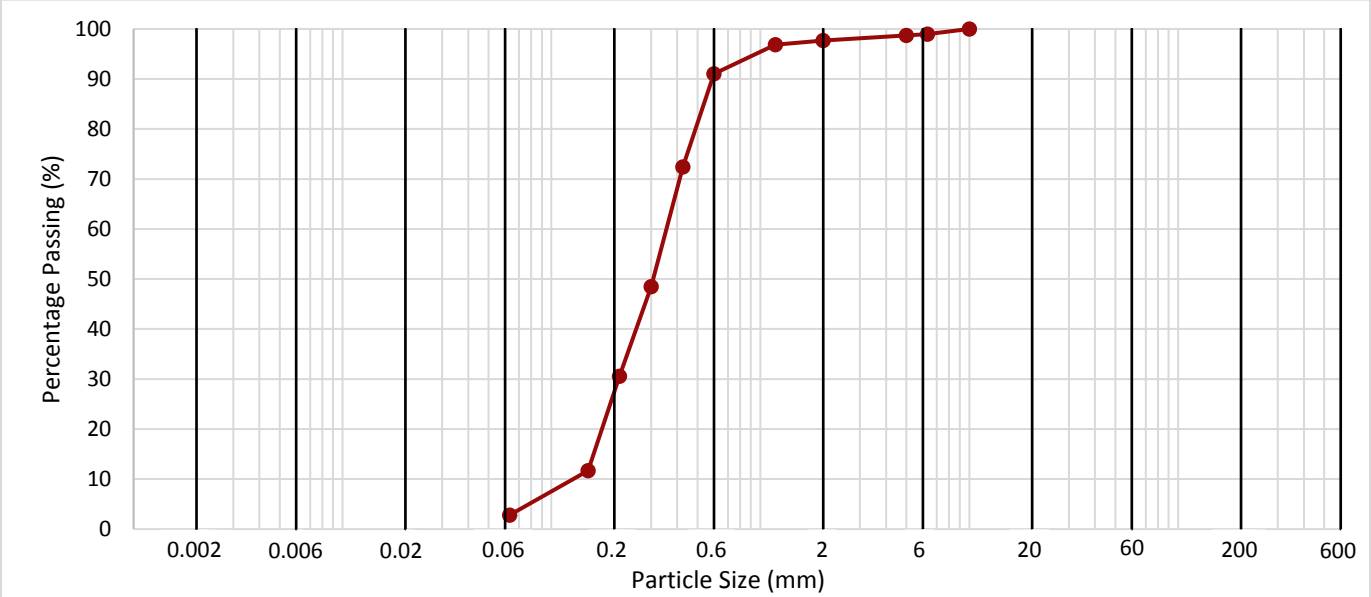
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	9.00	B	25	Yellowish brown slightly gravelly slightly silty SAND. Gravel is brown, black and white angular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	95
1.18	97	
0.600	91	
0.425	72	
0.300	48	
0.212	31	
0.150	12	
0.063	3	

Fines By Dry Mass (%)	
<0.063mm	3

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

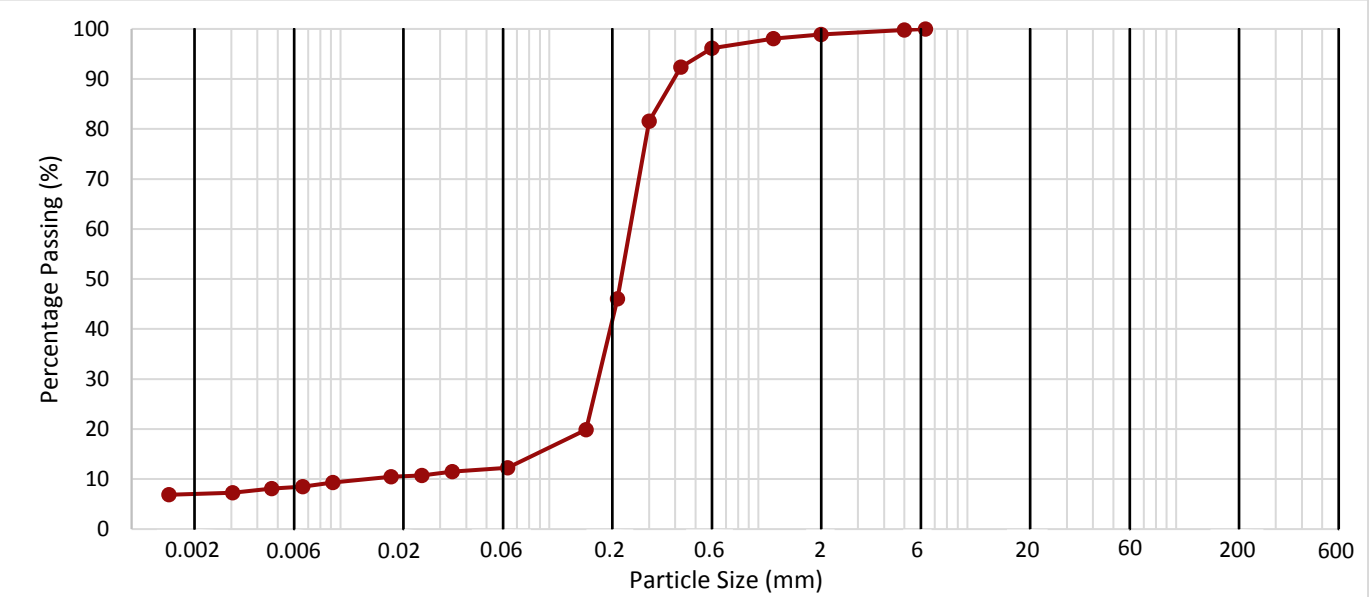
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	15.00	B	32	Light olive brown slightly gravelly silty clayey SAND. Gravel is fine to medium flint and quartzite.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0342	12	5	
	0.0245	11		
	0.0174	10		
	0.0092	9		7
	0.0066	8		
	0.0047	8		
	0.0031	7		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	87
1.18	98	
0.600	96	
0.425	92	
0.300	82	
0.212	46	
0.150	20	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

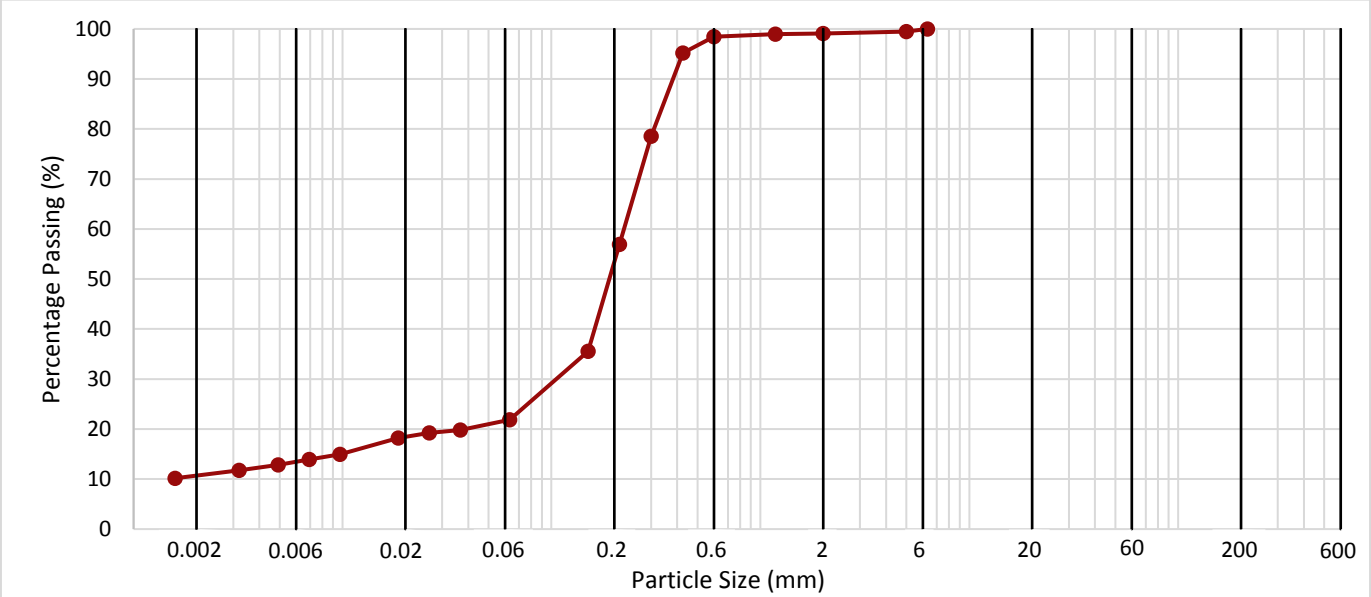
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	19.00	B	40	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0367	20	11	
0.0260	19		
0.0185	18		
0.0097	15		11
0.0069	14		
0.0049	13		
0.0032	12		
0.0016	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	77
1.18	99	
0.600	98	
0.425	95	
0.300	79	
0.212	57	
0.150	36	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

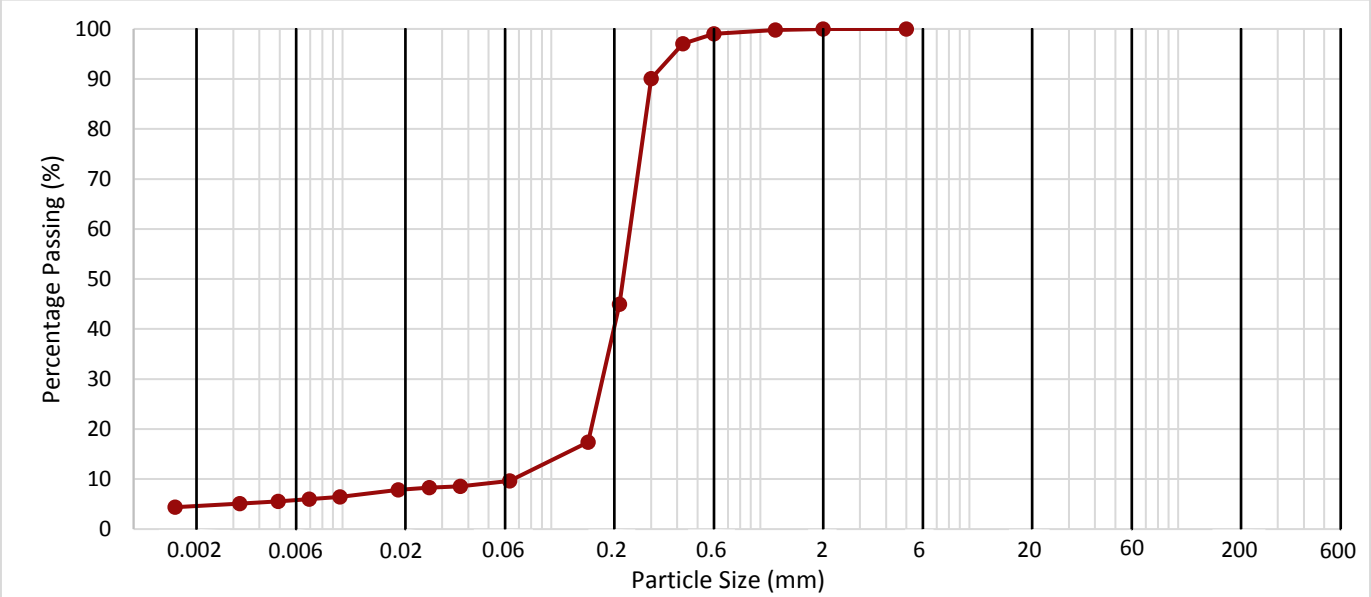
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	21.00	B	44	Olive grey silty clayey SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0366	9	5	
	0.0260	8		
	0.0185	8		
	0.0097	6		5
	0.0069	6		
	0.0049	6		
	0.0032	5		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	90
1.18	100	
0.600	99	
0.425	97	
0.300	90	
0.212	45	
0.150	17	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

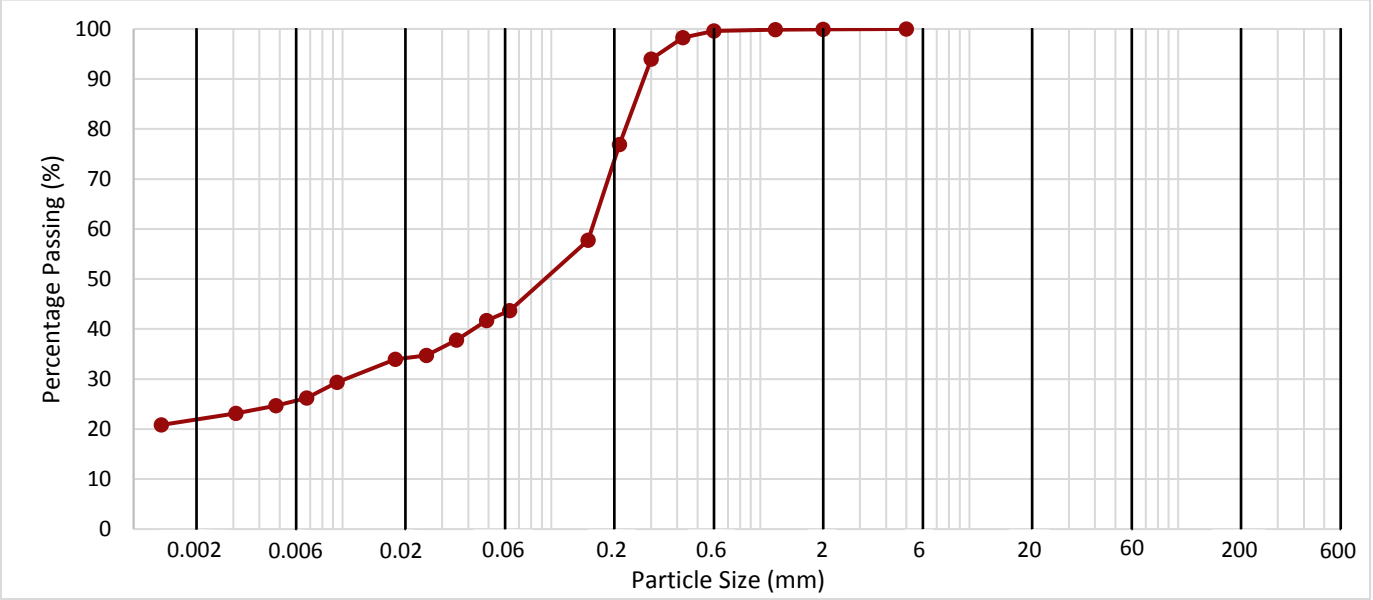
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	23.00	B	49	Very soft dark grey sandy silty CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0489	42	22	
0.0352	38		
0.0252	35		
0.0179	34		22
0.0094	29		
0.0067	26		
0.0048	25		
0.0031	23		
0.0014	21		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	56
1.18	100	
0.600	100	
0.425	98	
0.300	94	
0.212	77	
0.150	58	
0.063	44	

Fines By Dry Mass (%)	
<0.063mm	44

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

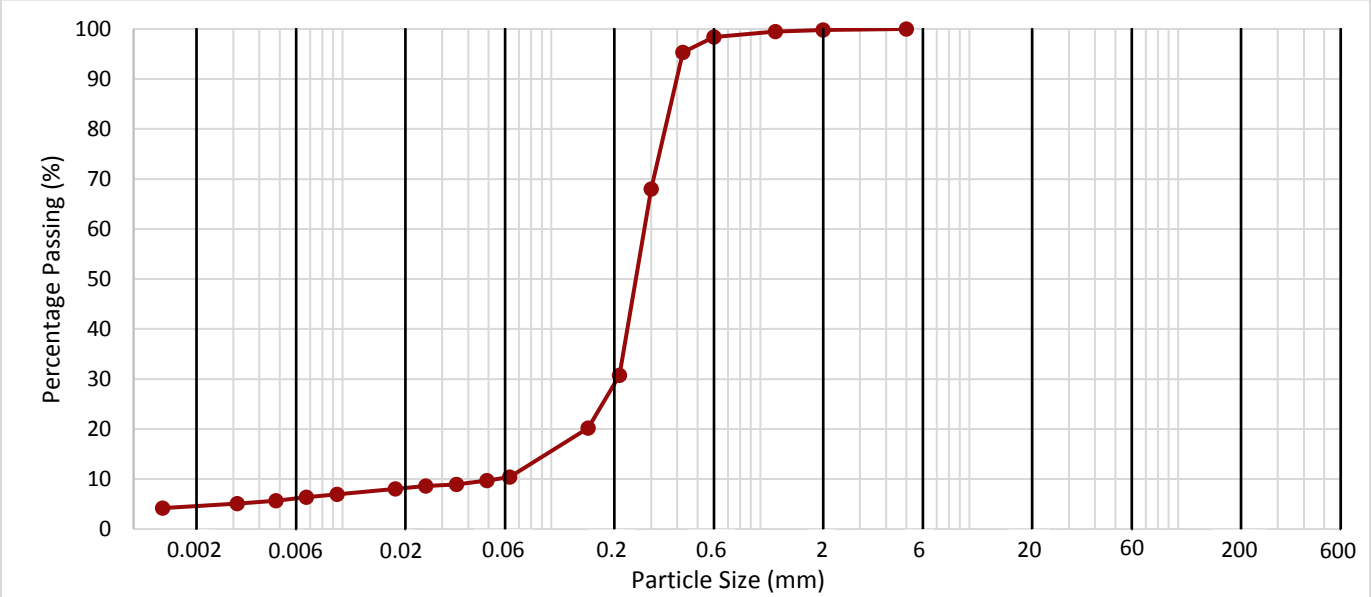
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	25.00	B	53	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0491	10	5	
	0.0352	9		
	0.0250	9		
	0.0179	8		5
	0.0094	7		
	0.0067	6		
	0.0048	6		
	0.0031	5		
	0.0014	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	90
1.18	99	
0.600	98	
0.425	95	
0.300	68	
0.212	31	
0.150	20	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

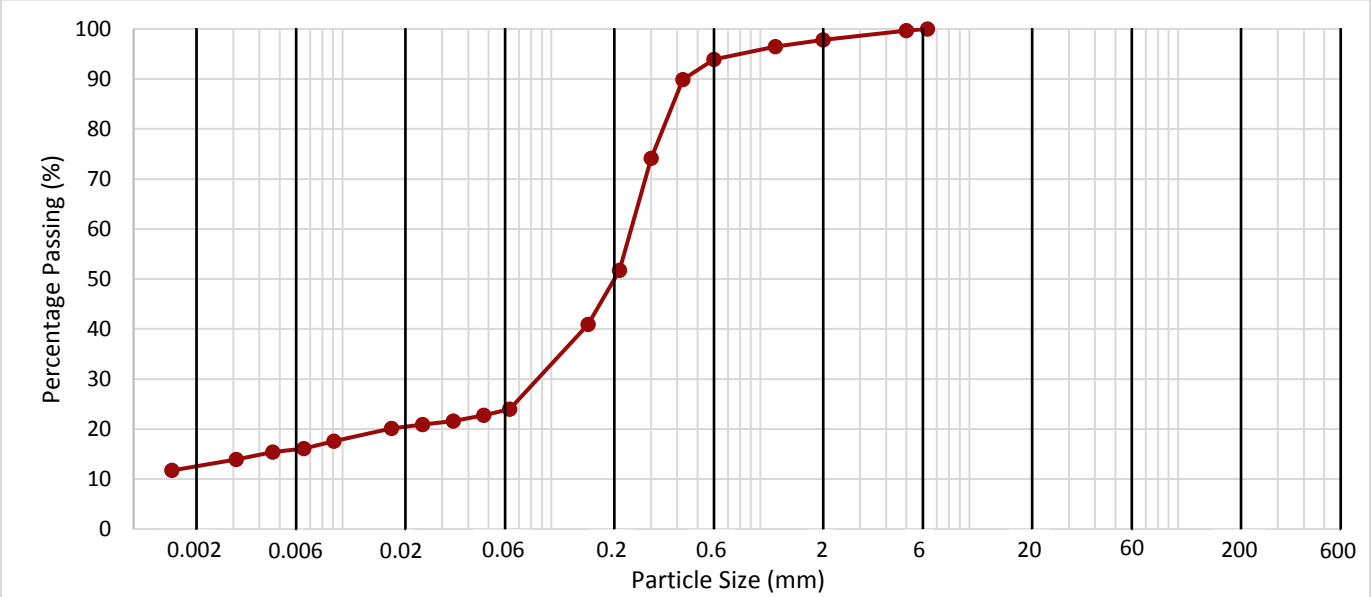
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	28.00	B	59	Dark grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0474	23	12	
0.0339	22		
0.0241	21		
0.0172	20		12
0.0091	18		
0.0065	16		
0.0046	15		
0.0031	14		
0.0015	12		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	74
1.18	96	
0.600	94	
0.425	90	
0.300	74	
0.212	52	
0.150	41	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

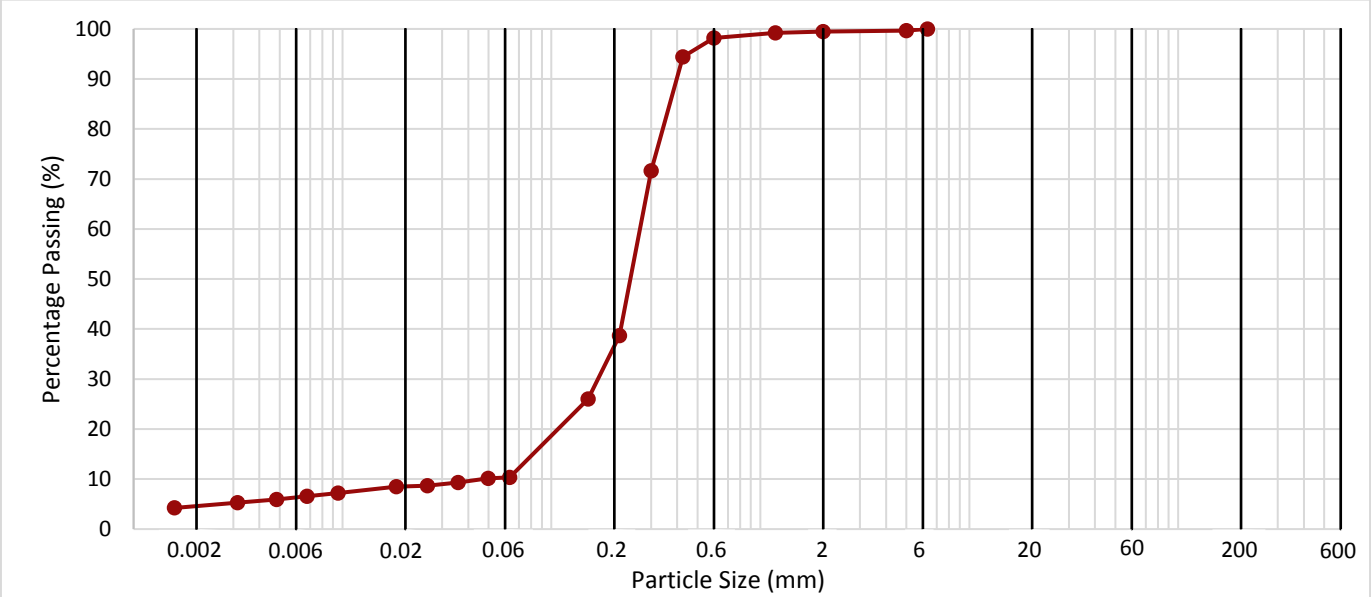
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	32.00	B	67	Olive grey silty clayey slightly organic SAND with rare shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0498	10	5	
	0.0357	9		
	0.0255	9		
	0.0181	8		5
	0.0095	7		
	0.0068	7		
	0.0048	6		
	0.0031	5		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	89
1.18	99	
0.600	98	
0.425	94	
0.300	72	
0.212	39	
0.150	26	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

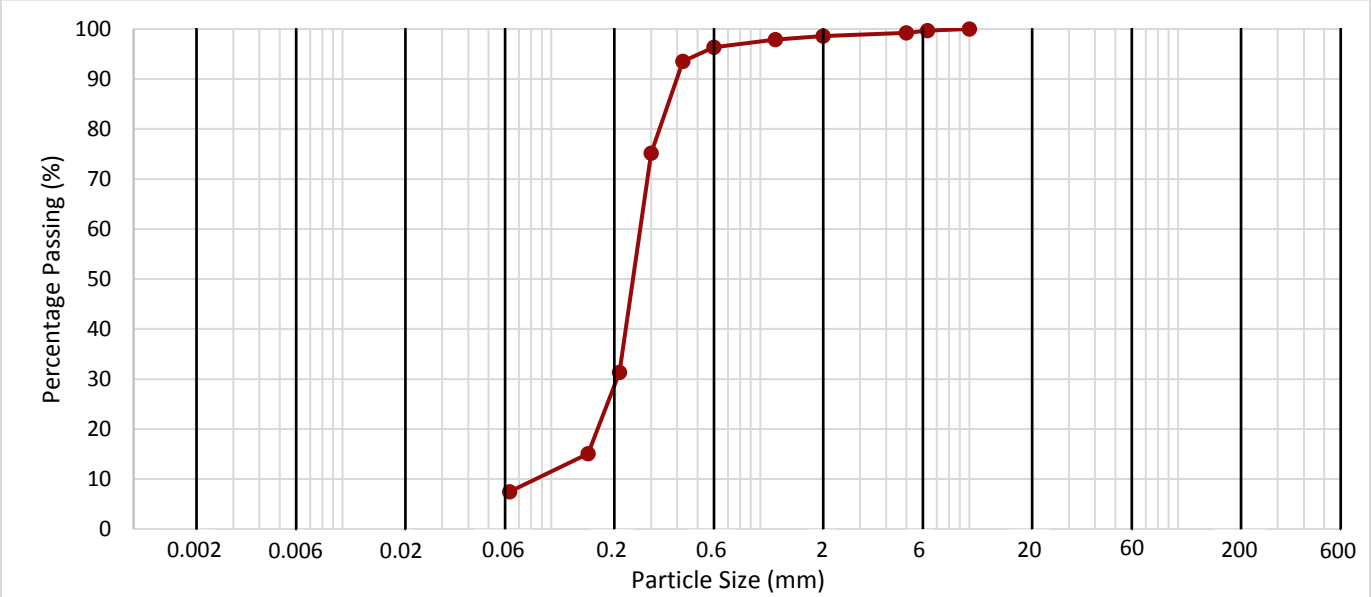
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	35.00	B	73	Olive grey slightly silty slightly clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	92
1.18	98	
0.600	96	
0.425	94	
0.300	75	
0.212	31	
0.150	15	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

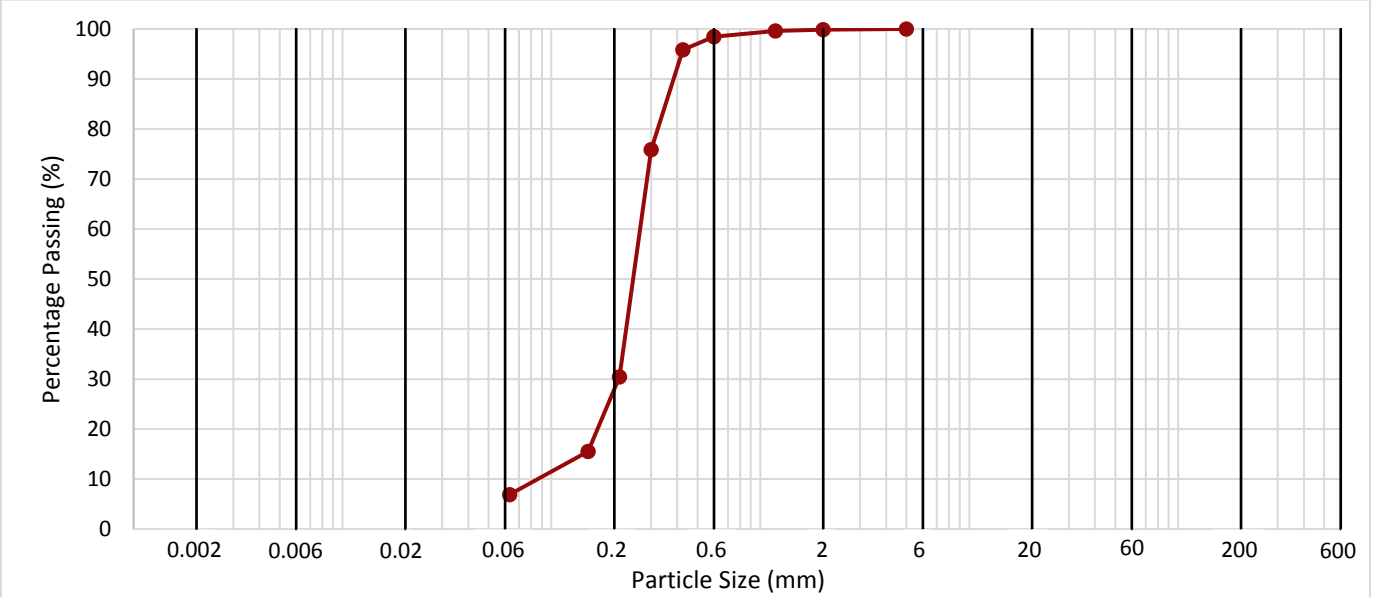
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	38.00	B	79	Olive grey silty slightly clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	93
1.18	100	
0.600	98	
0.425	96	
0.300	76	
0.212	30	
0.150	16	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC15	23.00	UT	50	32.9	1.95	1.47	399	125	63			Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, fine sand laminations, and slightly organic pockets.
BHC15	23.00	UT	50	31.2	1.94	1.48	747	90	45			Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, occasional fine sand pockets, slightly organic pockets, and rare fine sand laminations.
BHC15	24.00	UT	52	39.5	1.96	1.41	501	92	46			Firm (Medium strength) dark grey slightly sandy turning to sandy silty slightly organic CLAY. Sand is fine to medium.
BHC15	24.00	UT	52	28.8	1.98	1.54	750	84	42			Firm (Medium strength) dark grey silty slightly organic CLAY with frequent fine sand laminations and pockets.
BHC17	19.00	UT	39	17.2	2.21	1.89	348	181	91			Stiff (High strength) grey slightly sandy silty CLAY. Sand is fine to medium.
BHC17	22.00	UT	46	30.2	1.95	1.50	397	176	88			Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.
BHC17	22.00	UT	46	29.0	1.94	1.50	795	199	100			Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC17	24.00	UT	50	35.7	1.91	1.41	503	179	90			Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.
BHC17	24.00	UT	50	31.6	1.90	1.44	749	202	101			Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

UKAS TESTING

0998

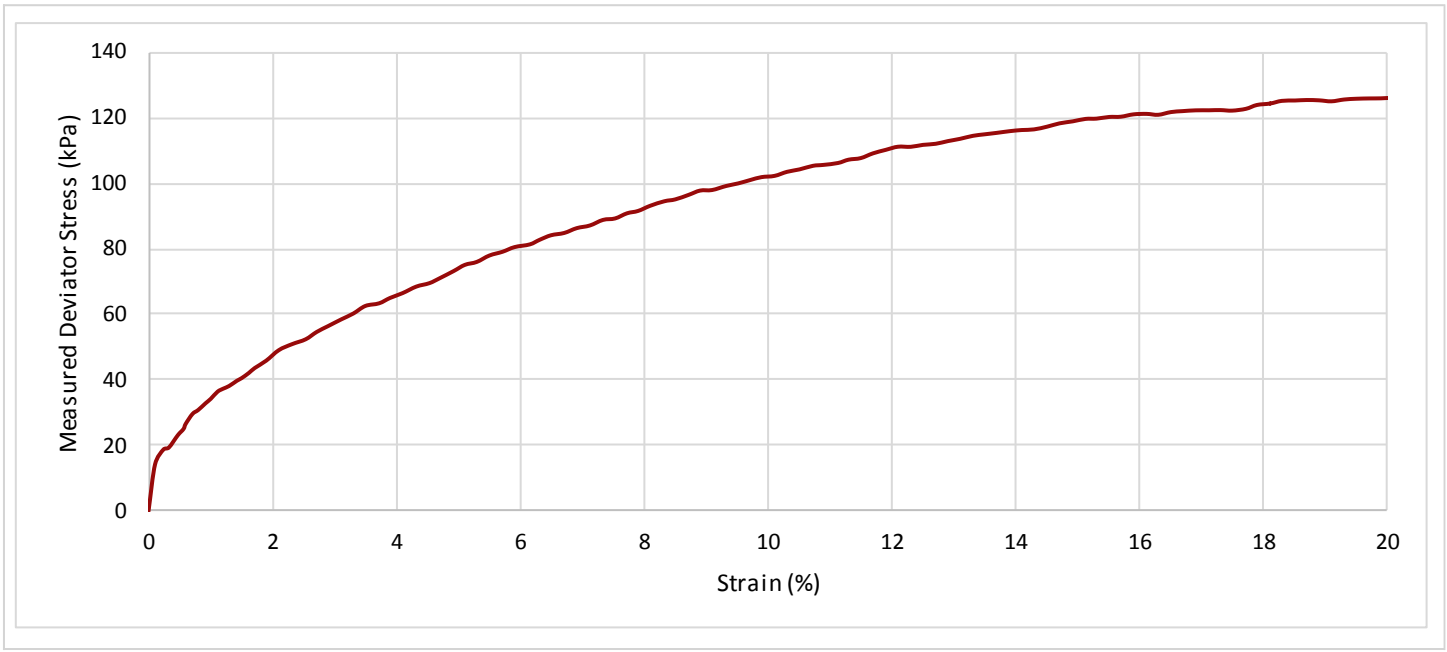
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC15	23.00	UT	50	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, fine sand laminations, and slightly organic pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.07	153.9	102.0	2451	32.9	1.95	1.47

TEST INFORMATION	Rate of Strain	0.9	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	399	20.1	1.1	\	125	63		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

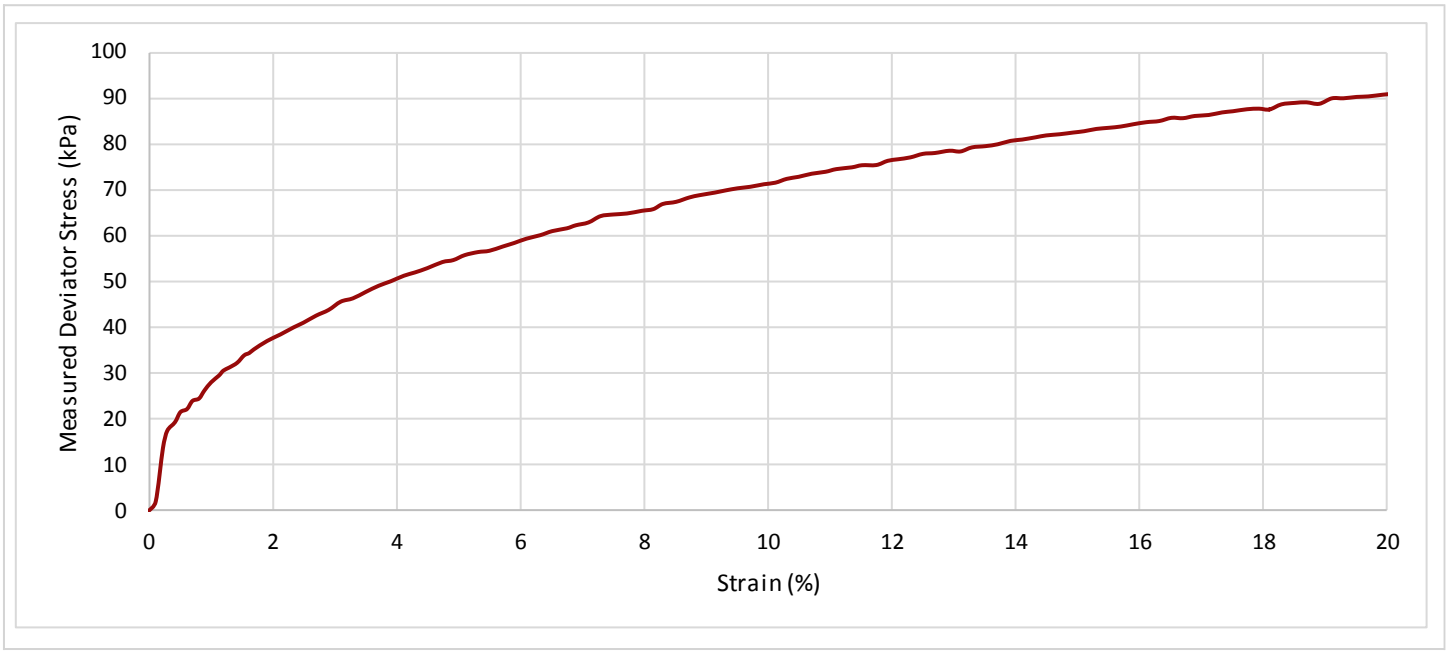
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC15	23.00	UT	50	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling, occasional fine sand pockets, slightly organic pockets, and rare fine sand laminations.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.25	139.9	102.4	2240	31.2	1.94	1.48

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	747	20.1	1.1	\	90	45		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

UKAS TESTING

0998

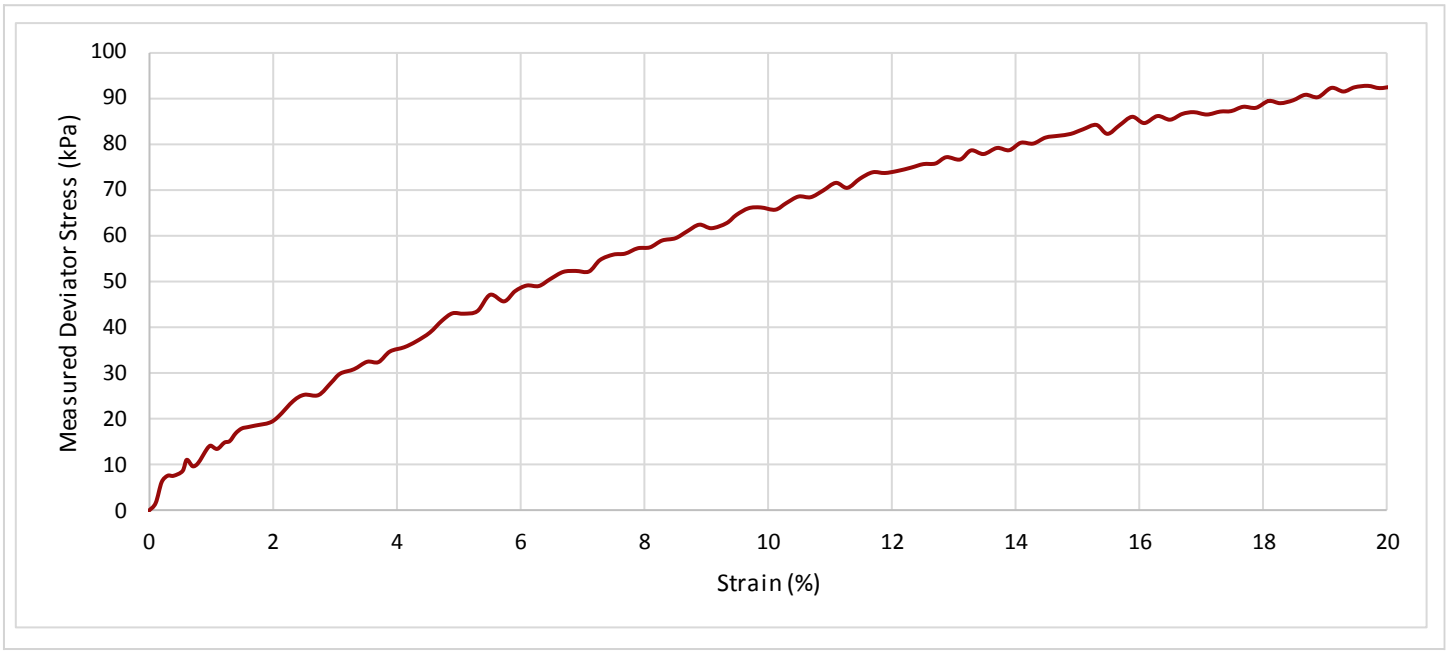
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC15	24.00	UT	52	Firm (Medium strength) dark grey slightly sandy turning to sandy silty slightly organic CLAY. Sand is fine to medium.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.03	140.8	103.6	2322	39.5	1.96	1.41

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	501	19.7	1.1	\	92	46		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

UKAS TESTING 0998

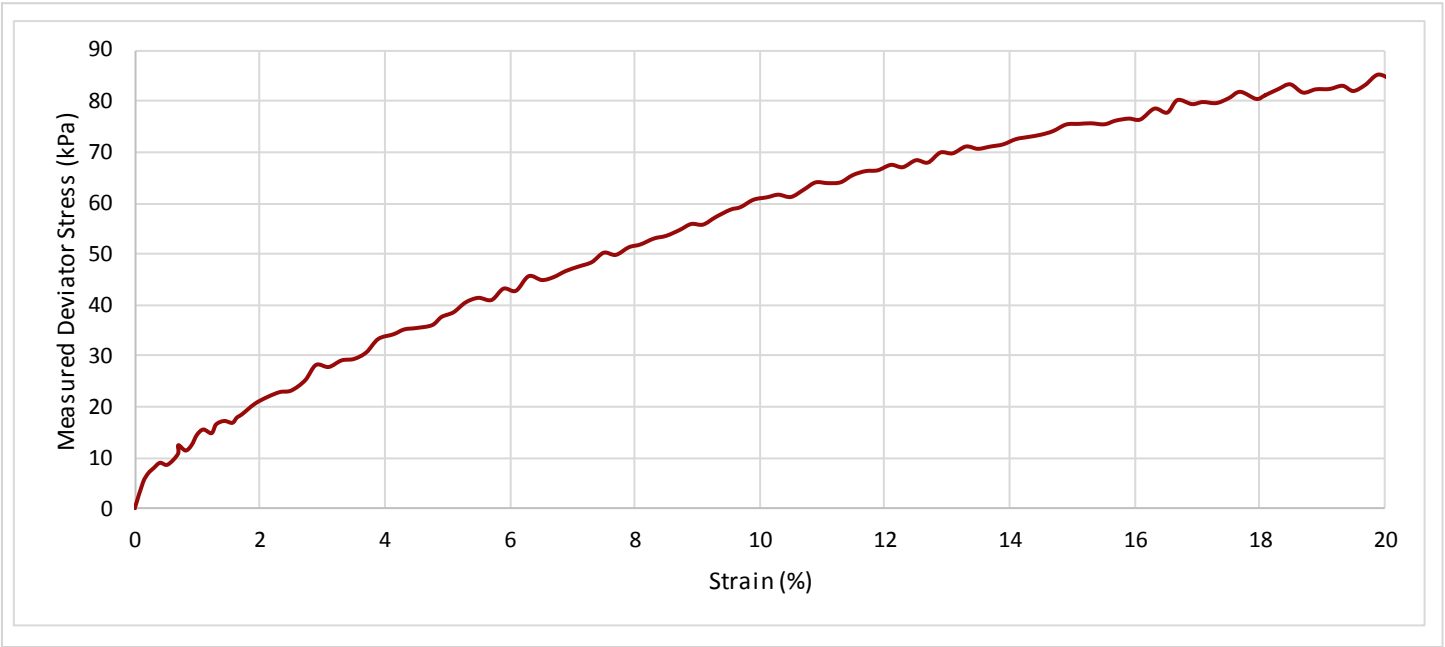
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC15	24.00	UT	52	Firm (Medium strength) dark grey silty slightly organic CLAY with frequent fine sand laminations and pockets.	Water content for bottom sandy portion of specimen = 22.4%.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.17	199.8	103.8	3342	28.8	1.98	1.54

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	750	19.9	1.1	\	84	42		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

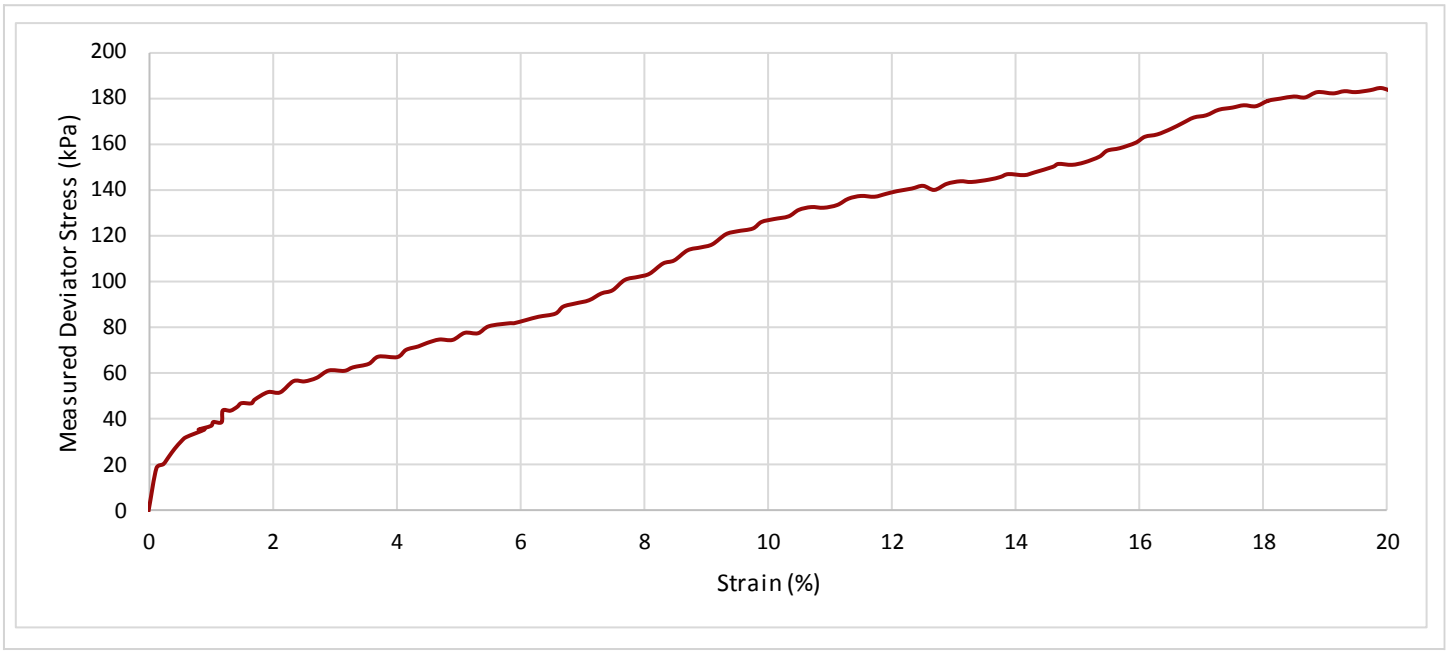
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC17	19.00	UT	39	Stiff (High strength) grey slightly sandy silty CLAY. Sand is fine to medium.	Short recovery of sample - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 19.10	76.1	36.1	173	17.2	2.21	1.89

TEST INFORMATION	Rate of Strain	1.2	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	348	19.9	3.2	\	181	91		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

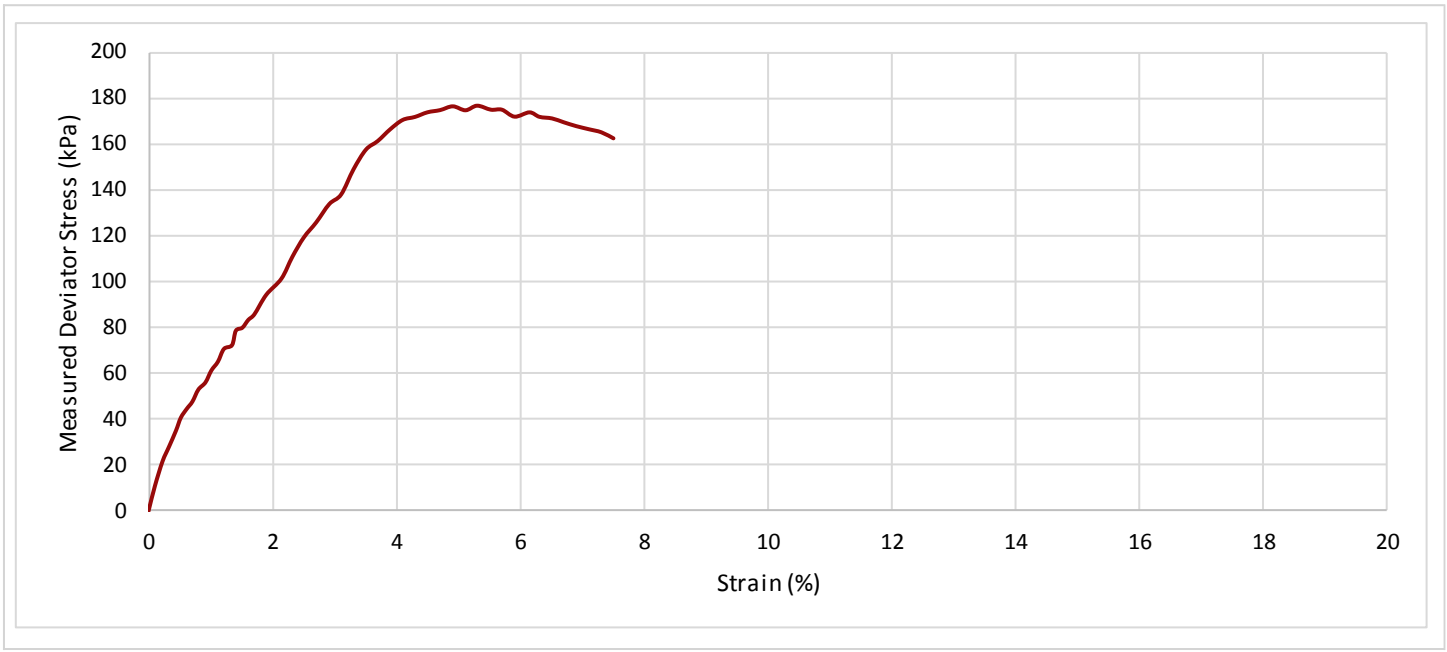
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC17	22.00	UT	46	Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.06	150.5	103.0	2447	30.2	1.95	1.50

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	397	5.3	0.4	\	176	88		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

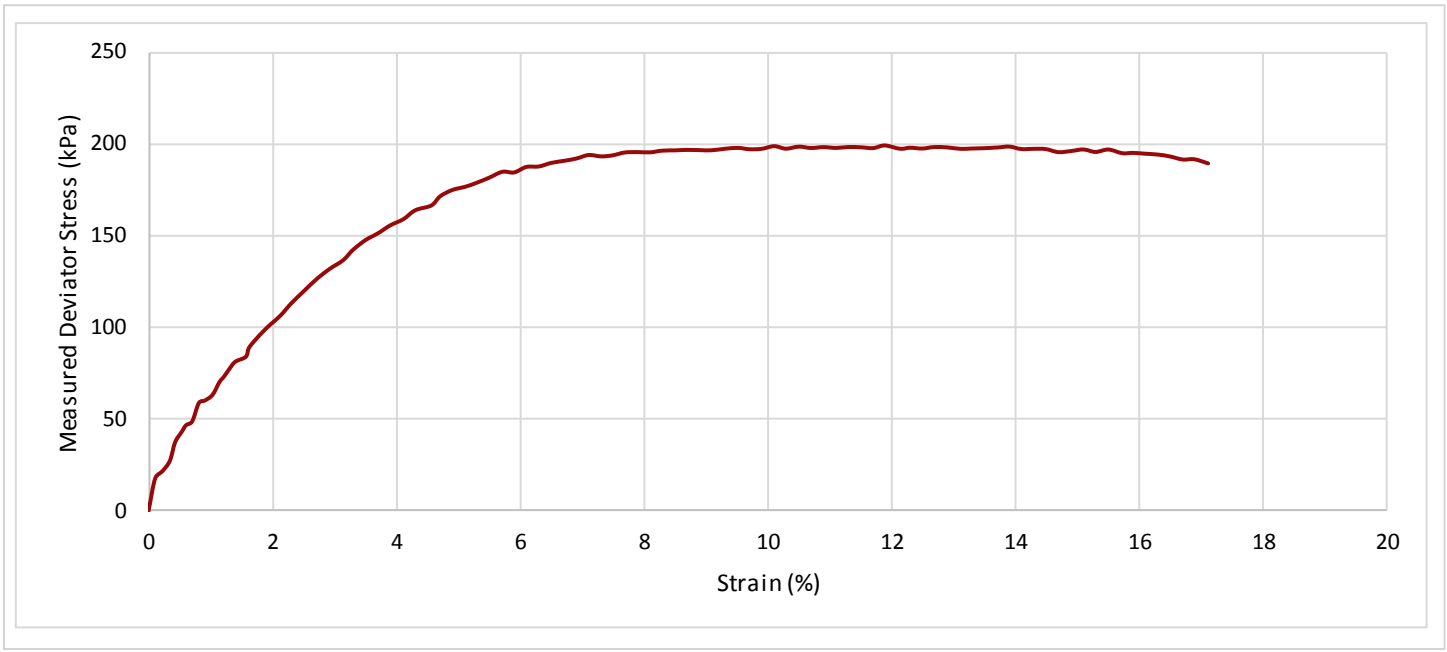
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC17	22.00	UT	46	Stiff (High strength) slightly fissured dark grey silty CLAY with occasional silt/sand pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.21	170.5	102.1	2709	29.0	1.94	1.50

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	795	11.9	0.7	\	199	100		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

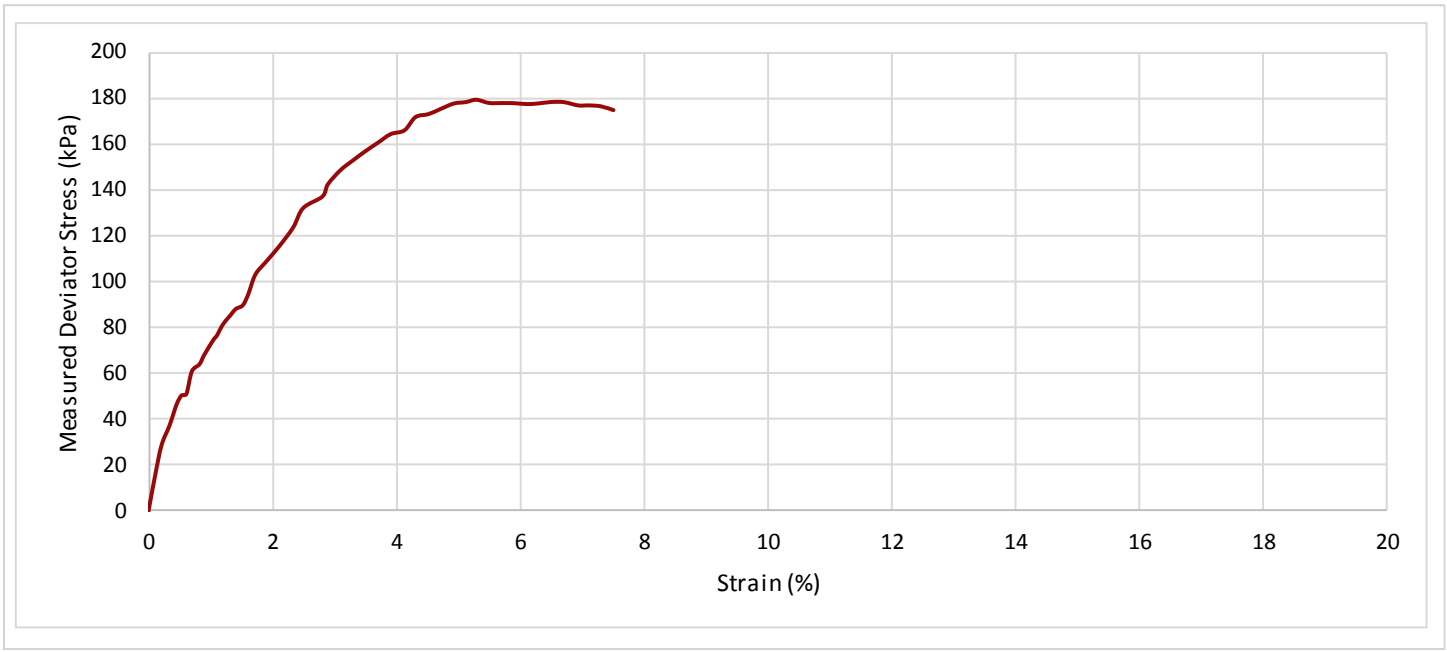
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC17	24.00	UT	50	Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.05	148.3	103.1	2362	35.7	1.91	1.41

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	503	5.3	0.4	\	179	90		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

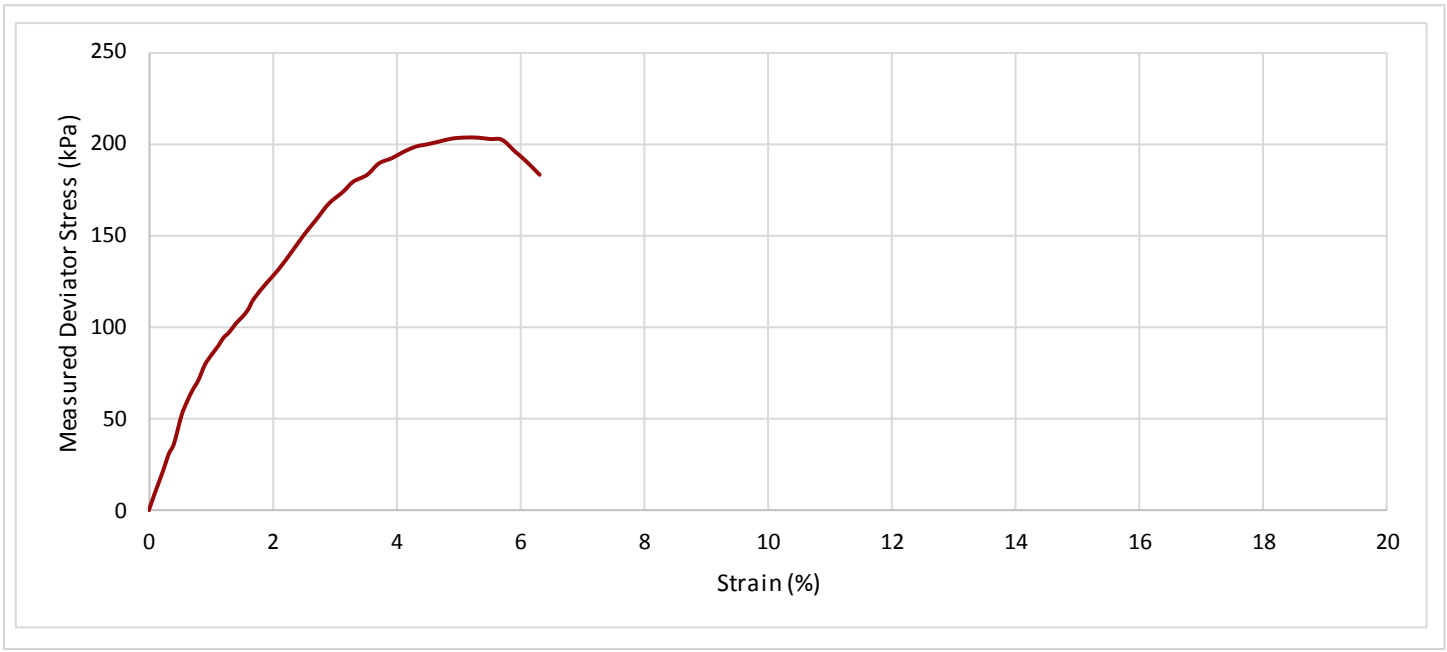
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC17	24.00	UT	50	Stiff (High strength) fissured dark grey CLAY with occasional fine sand laminations, and slightly organic pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.22	183.2	102.7	2886	31.6	1.90	1.44

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.6	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	749	5.1	0.8	\	202	101		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

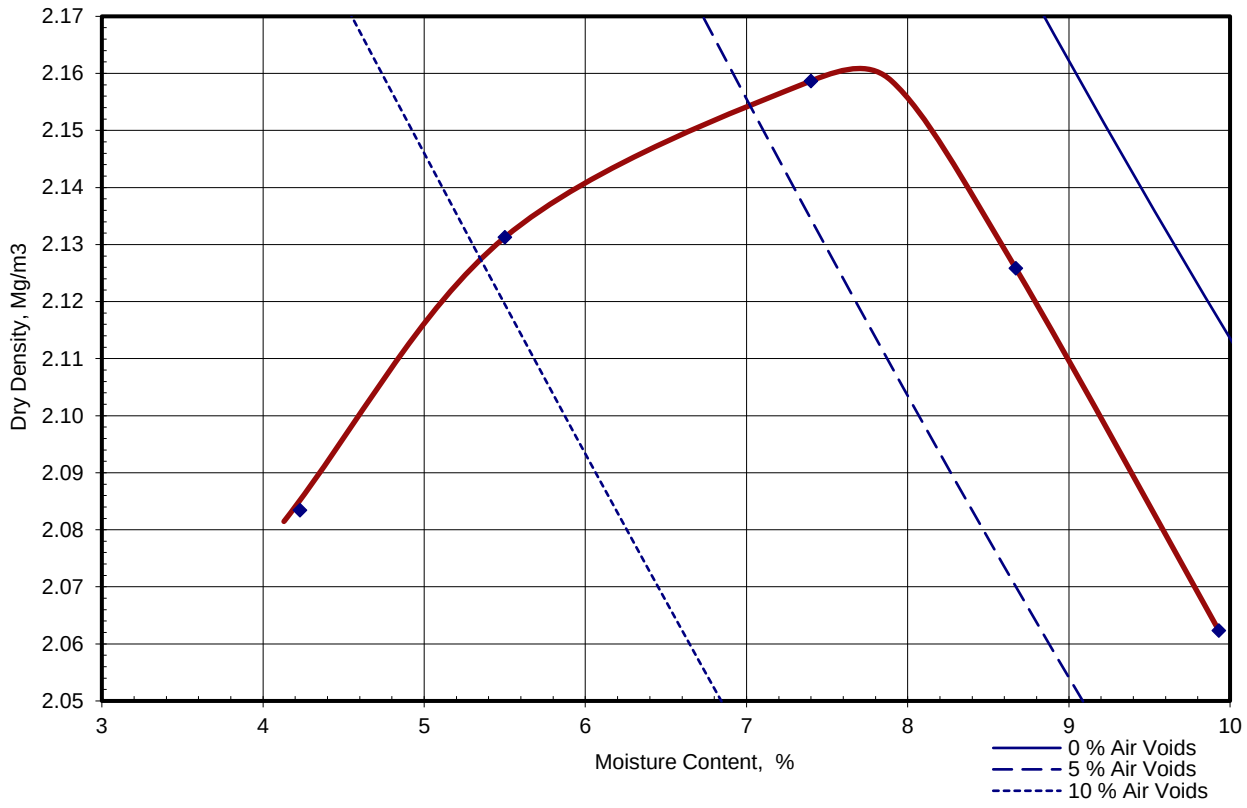
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC15	0.80	B	4	5.5	Brown, black and white angular to rounded flint GRAVEL and black silty SAND with rare firm very dark brown clayey lumps.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	5.9 %	Single or Separate Samples	Single
Grading Zone	3	Particle Density (Assumed)	2.68
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**2.16 Mg/m³**	**Optimum Water Content**	**7.9 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

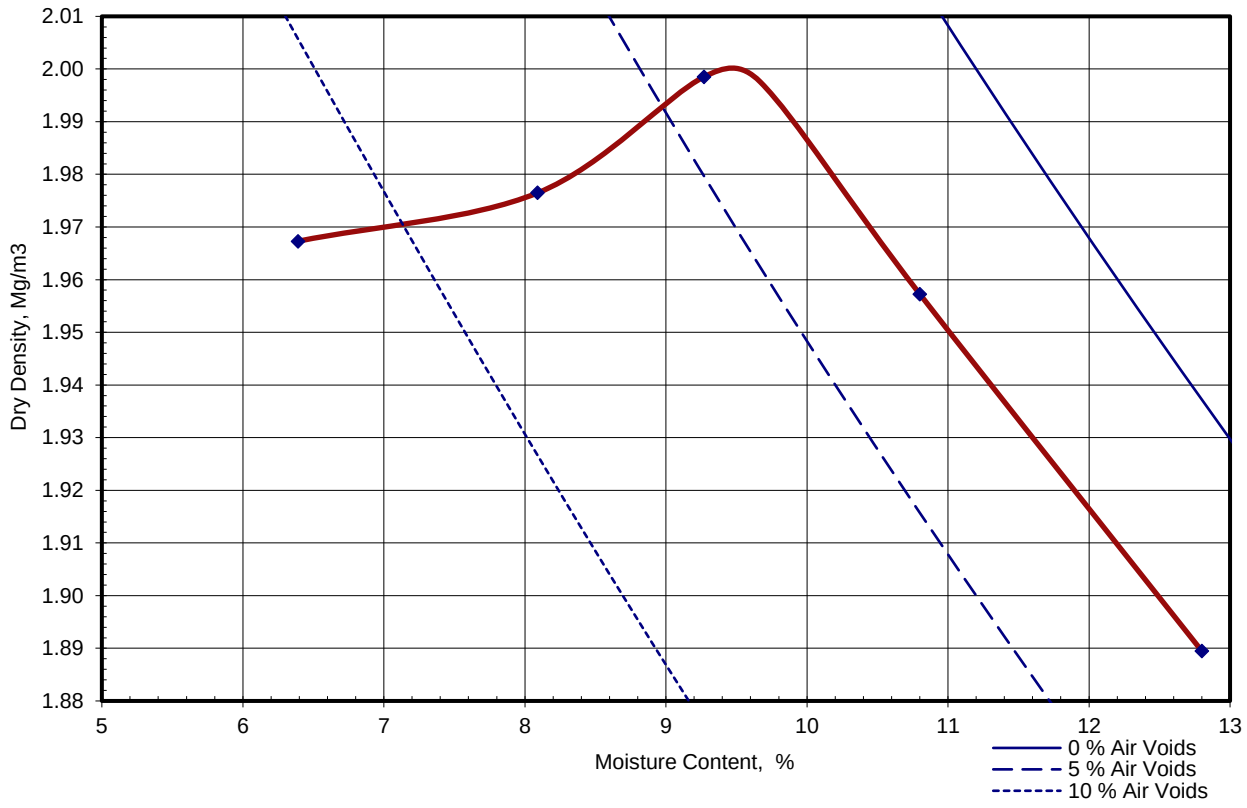
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC17	1.00	B	4	8.1	Brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	3.0 %	Single or Separate Samples	
Grading Zone	2	Particle Density (Assumed)	2.58
Mould Type	Proctor	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**2.00 Mg/m³**	**Optimum Water Content**	**9.7 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

UKAS TESTING 0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC15	0.80	B	4	Brown, black and white angular to rounded flint GRAVEL and black silty SAND with rare firm very dark brown clayey lumps.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		5.9	%
Intitial Specimen Details:	Bulk Density	2.10	Mg/m³
	Dry Density	1.96	Mg/m³

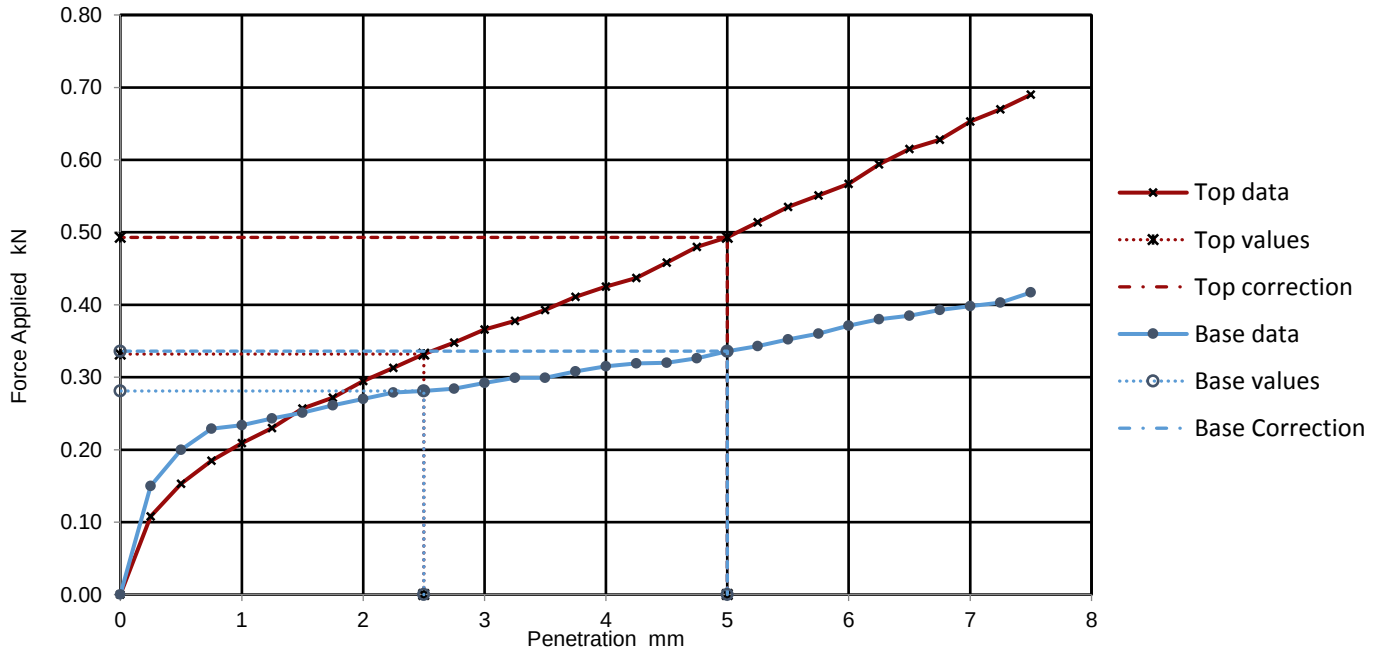
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	5	mins
Amount of Swell Recorded		mm
Initial Water Content	7.3	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	2.5	2.5	2.5	2.3	9.1
BASE	No	2.1	1.7	2.1		9.8

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC17	1.00	B	4	Brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		3.0	%
Intitial Specimen Details:	Bulk Density	1.98	Mg/m³
	Dry Density	1.81	Mg/m³

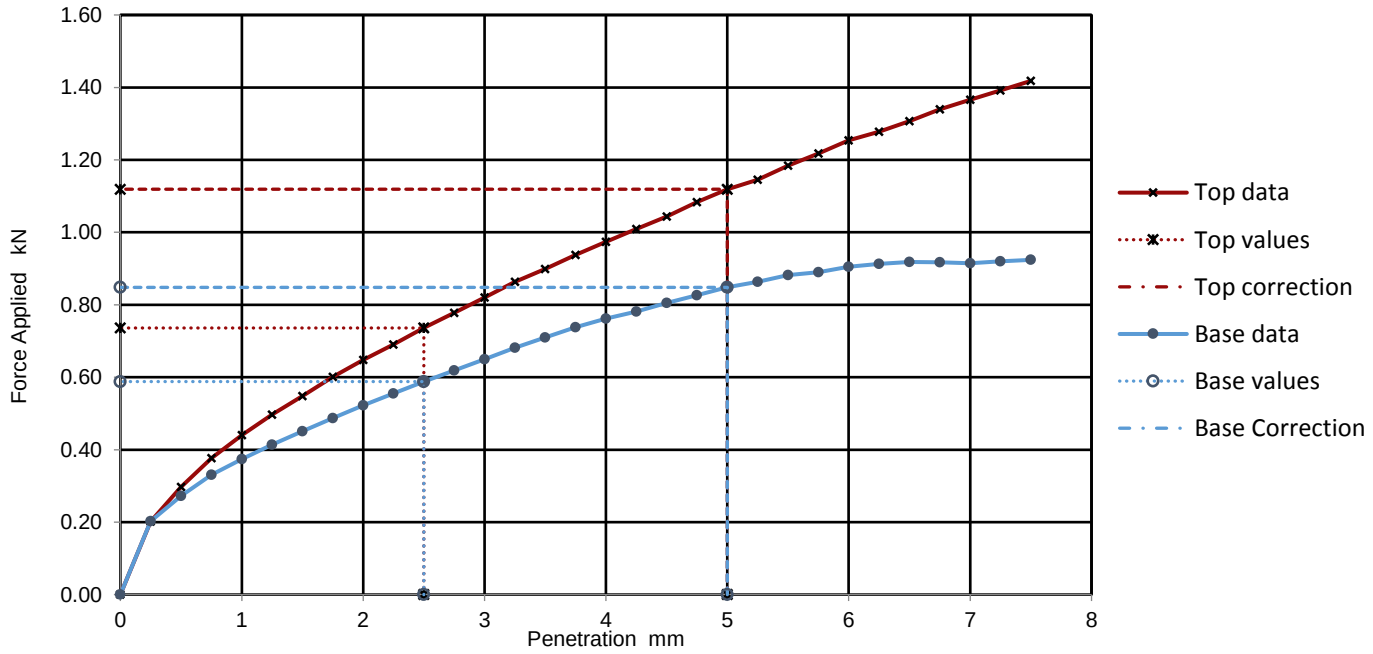
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	2	mins
Amount of Swell Recorded		mm
Initial Water Content	9.6	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	5.6	5.6	5.6		13.4
BASE	No	4.5	4.2	4.5		13.5

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

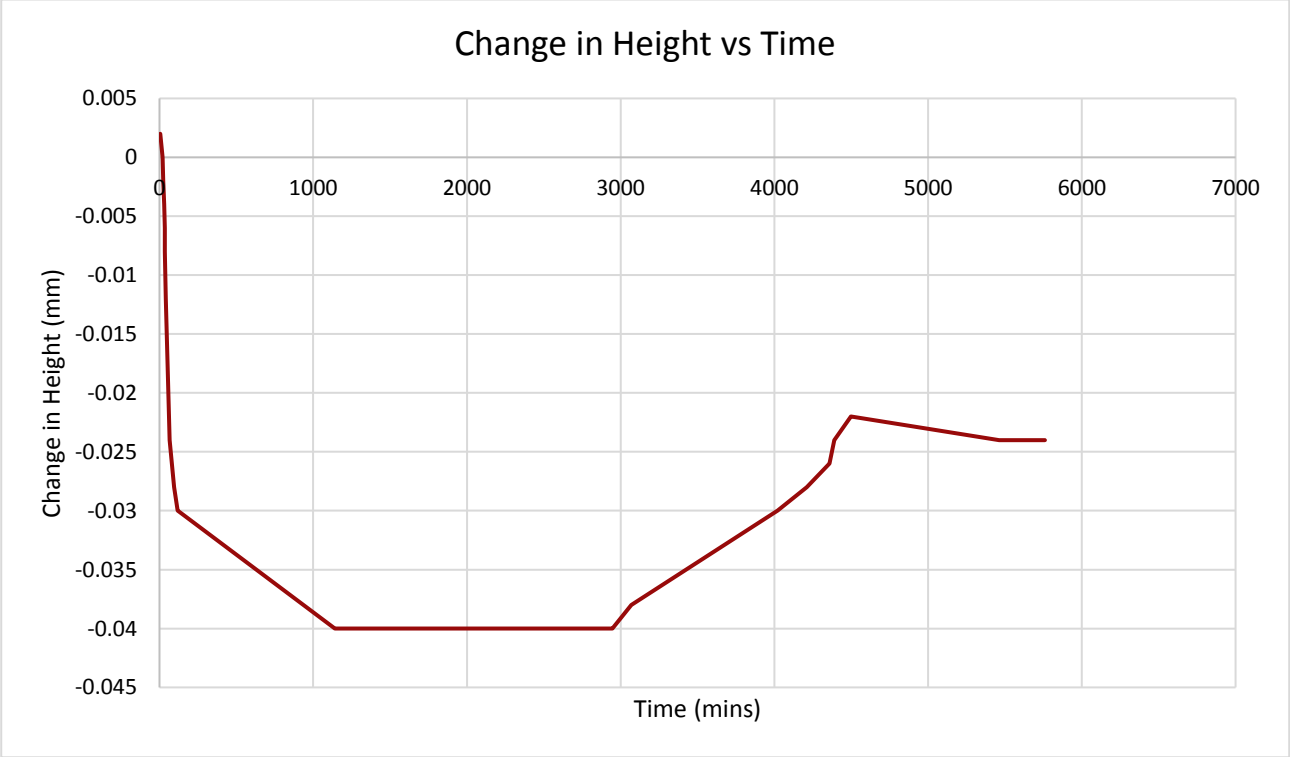
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC15	0.8	B	4	Brown, black and white angular to rounded flint GRAVEL and black silty SAND with rare firm very dark brown clayey lumps.	

After Soaking

Water Contents	Top	(%)	9.1	Bulk Density	1.93	Dry Density	
	Bottom	(%)	9.8				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**-0.024**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 15/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-7**

DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

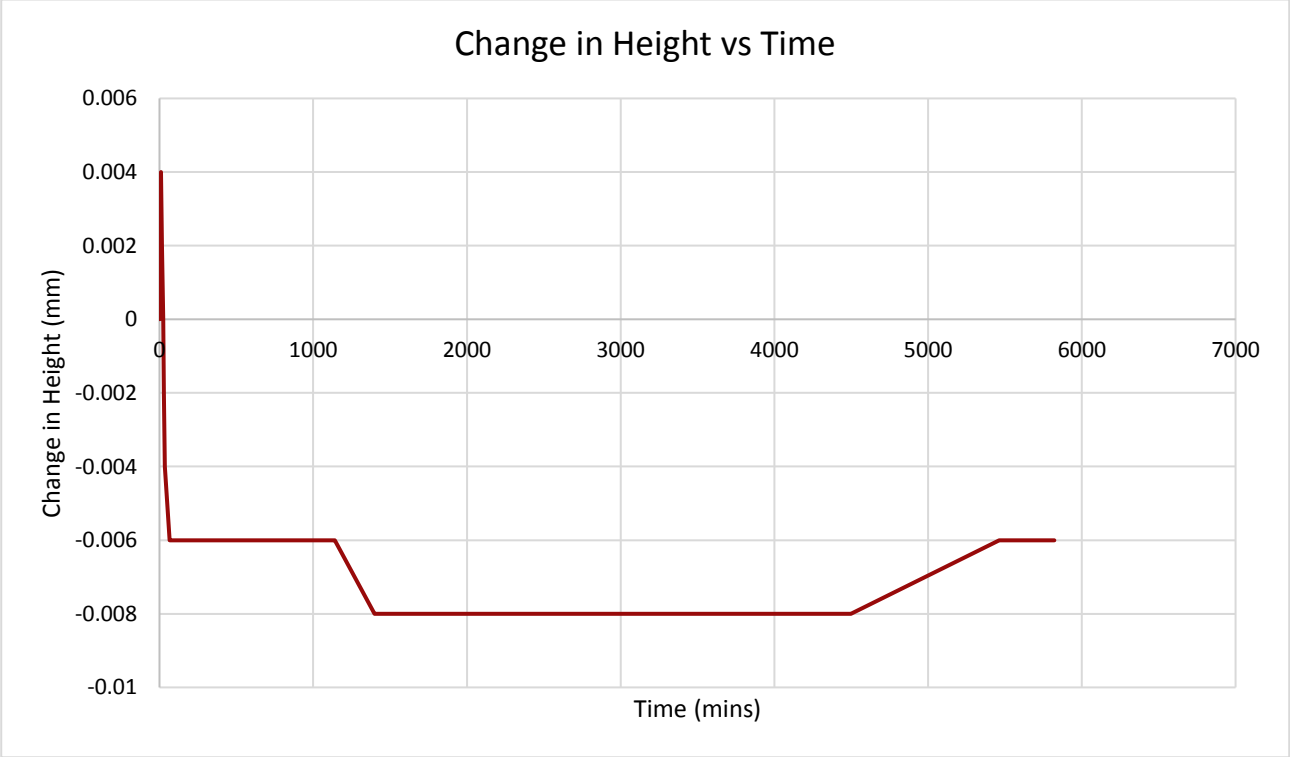
Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC17	1	B	4	Brown gravelly silty SAND. Gravel is black, brown and white angular to subangular flint.	

After Soaking

Water Contents	Top	(%)	13.4	Bulk Density	1.93	Dry Density	
	Bottom	(%)	13.5				

Surcharge Weights	(kg)	18

Total Change in Height	**(mm)**	**-0.006**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-09632-1		
Initial Date of Issue:	16-Apr-2018		
Client	Soil Property Testing		
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG		
Contact(s):	Jon Garner		
Project	S31644-7 Lake Lothing		
Quotation No.:	Q17-10468	**Date Received:**	10-Apr-2018
Order No.:	S31644-7	**Date Instructed:**	10-Apr-2018
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	16-Apr-2018
Date Approved:	16-Apr-2018		
Approved By:	[redacted]		
Details:	Glynn Harvey, Laboratory Manager		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-7 Lake Lothing

Client: Soil Property Testing				**Chemtest Job No.:**	18-09632	18-09632	18-09632	18-09632	18-09632	18-09632
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	603989	603990	603991	603992	603993	603994
Order No.: S31644-7				Client Sample Ref.:	BHC15	BHC15	BHC15	BHC17	BHC17	BHC17
				Client Sample ID.:	B2	B6	B41	B2	D9	DS51
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.70	18.60	0.40	2.60	24.60
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Moisture	N	2030	%	0.020	11	1.2	17	9.6	14	25
pH (2.5:1)	N	2010		N/A		[A] 7.4	[A] 5.6		[A] 8.4	[A] 6.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	0.083		< 0.010	1.7
Total Sulphur	U	2175	%	0.010		[A] < 0.010	[A] 0.20		[A] < 0.010	[A] 2.1
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] < 0.010	[A] 0.031		[A] < 0.010	[A] 1.1
Organic Matter BS1377	N	2930	%	0.10	[A] 1.3			[A] 2.3	[A] 0.30	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
603989	BHC15	B2		A	Plastic Bag
603990	BHC15	B6		A	Plastic Bag
603991	BHC15	B41		A	Plastic Bag
603992	BHC17	B2		A	Plastic Bag
603993	BHC17	D9		A	Plastic Tub 500g
603994	BHC17	DS51		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** Technical Director
- ☐ **S.P. Townend FGS** Quality Manager
- ☐ **W. Johnstone** Materials Lab Manager
- ☐ **D. Sabnis** Operations Manager

[redacted]

Date Received: 17/04/2018

Samples Tested Between: 17/04/2018 **and** 23/05/2018

Remarks:

For the attention of Mr J Glenwright
Your Reference No: 2543,GI

Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-8**	**Target Date**	22/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Hydro + Pre-seive	CBR inc. Static Compression	Soaked CBR Swelling Measu	Compaction 2.5kg	Organic Content (Dichromat	Brownfield Site - Pyrite prese	Triaxial Test Single Stage	Liquid/Plastic Limits	Wet Sieve Preparation								Sample Remarks
BHC18	B	1	0.90	1	1		1	1	1	1												
BHC18	B	3	1.70	1	1						1											
BHC18	B	9	4.70	1	1																	
BHC18	B	15	7.70	1	1																	
BHC18	B	21	10.70	1	1																	
BHC18	B	26	14.00	1	1																	
BHC18	B	31	16.00	1	1																	
BHC18	B	33	17.80			1					1											
BHC18	UT	34	18.00									2										
BHC18	DS	35	18.60	1									1									
BHC18	B	40	20.70	1		1																
BHC18	B	44	22.80	1		1																
BHC18	UT	45	23.00									2										
BHC18	B	47	23.70			1																
BHC18	UT	48	24.00									2	1									
BHC18	DS	49	24.60	1									1									
BHC18	UT	50	25.00			1																
BHC18	B	51	25.70								1											
BHC18	B	55	27.70	1		1																
BHC18	B	61	30.70			1																
BHC18	B	67	33.70			1																
BHC18	B	73	36.70			1																
BHC18	B	79	39.70			1																
BHC19	B	2	0.50	1	1					1												
BHC19	B	3	0.90				1	1	1													
BHC19	B	7	3.00	1	1																	
BHC19	B	12	8.00	1	1						1											
BHC19	DS	18	13.00	1									1	1								
BHC19	B	19	13.00		1																	
BHC19	B	22	16.00	1	1																	
BHC19	B	28	19.00	1		1																
BHC19	B	34	22.00			1					1											
BHC19	B	37	23.00	1		1							1	1								
BHC19	UT	35	23.00									2										
BHC19	DS	36	23.60	1									1									

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-8**	**Target Date**	22/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Hydro + Pre-seive	CBR inc. Static Compression	Soaked CBR Swelling Measu	Compaction 2.5kg	Organic Content (Dichromat	Brownfield Site - Pyrite prese	Triaxial Test Single Stage	Liquid/Plastic Limits	Wet Sieve Preparation								Sample Remarks
BHC19	B	39	24.00	1								1	1									
BHC19	B	44	27.00	1		1																
BHC19	DS	49	30.00			1																
BHC19	B	56	33.00			1																
BHC19	B	66	38.00		1						1											
Totals				**22**	**13**	**16**	**2**	**2**	**2**	**2**	**6**	**8**	**7**	**3**								**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC18	0.90	B	1	**8.4**	Brown and dark brown very gravelly silty SAND. Gravel is brown, black and white angular to subrounded flint.	
BHC18	1.70	B	3	**5.2**	Brown, white and black very sandy slightly silty angular to subrounded flint. Sand is light brown.	
BHC18	4.70	B	9	**17.6**	Yellowish brown gravelly slightly silty SAND. Gravel is black, white and brown angular to subrounded flint.	
BHC18	7.70	B	15	**17.4**	Orangish brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	
BHC18	10.70	B	21	**10.1**	Yellowish brown slightly silty SAND and black, white and brown angular to subrounded flint GRAVEL with occasional white and grey subangular to subrounded quartzite.	
BHC18	14.00	B	26	**12.8**	Orangish brown very gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	
BHC18	16.00	B	31	**7.2**	Black, white and brown very sandy slightly silty angular to subrounded flint GRAVEL with rare white and grey subrounded quartzite. Sand is orangish brown.	
BHC18	18.60	DS	35	**19.3**	Soft light olive brown sandy silty slightly organic CLAY with occasional dark bluish grey mottling.	
BHC18	20.70	B	40	**21.3**	Olive grey silty clayey slightly organic SAND.	
BHC18	22.80	B	44	**34.9**	Very soft dark olive grey sandy silty slightly organic CLAY.	
BHC18	24.00	UT	48	**39.0**	Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.	
BHC18	24.00	UT	48	**37.7**	Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.	
BHC18	24.60	DS	49	**36.0**	Stiff fissured dark olive grey CLAY.	
BHC18	27.70	B	55	**20.0**	Olive grey silty clayey slightly organic SAND.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC19	0.50	B	2	**10.6**	Brown and black very gravelly silty SAND. Gravel is brown, white and black angular to subangular flint gravel with rare asphalt and brick fragments.	
BHC19	3.00	B	7	**20.0**	Olive brown and orangish brown very gravelly slightly silty SAND. Gravel is black, white and brown angular to rounded flint.	
BHC19	8.00	B	12	**22.7**	Brownish yellow slightly gravelly slightly silty slightly clayey SAND. Gravel is angular to subangular flint and quartzite.	
BHC19	13.00	DS	18	**13.4**	Very soft brownish yellow silty gravelly sandy CLAY/very clayey fine to coarse SAND. Gravel is brown, black and white fine to coarse angular to rounded flint and quartzite.	
BHC19	16.00	B	22	**13.7**	Yellowish brown very gravelly silty SAND. Gravel is black, brown and white subangular to subrounded flint.	
BHC19	19.00	B	28	**28.2**	Dark olive grey silty clayey slightly organic SAND.	
BHC19	23.00	B	37	**26.2**	Dark olive grey silty clayey slightly organic SAND.	
BHC19	23.60	DS	36	**36.5**	Firm fissured dark olive grey CLAY with rare fine sand partings.	
BHC19	24.00	B	39	**27.4**	Very soft dark olive grey sandy silty organic CLAY/very clayey SAND with rare shell debris.	
BHC19	27.00	B	44	**39.8**	Dark olive grey silty clayey slightly organic SAND.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

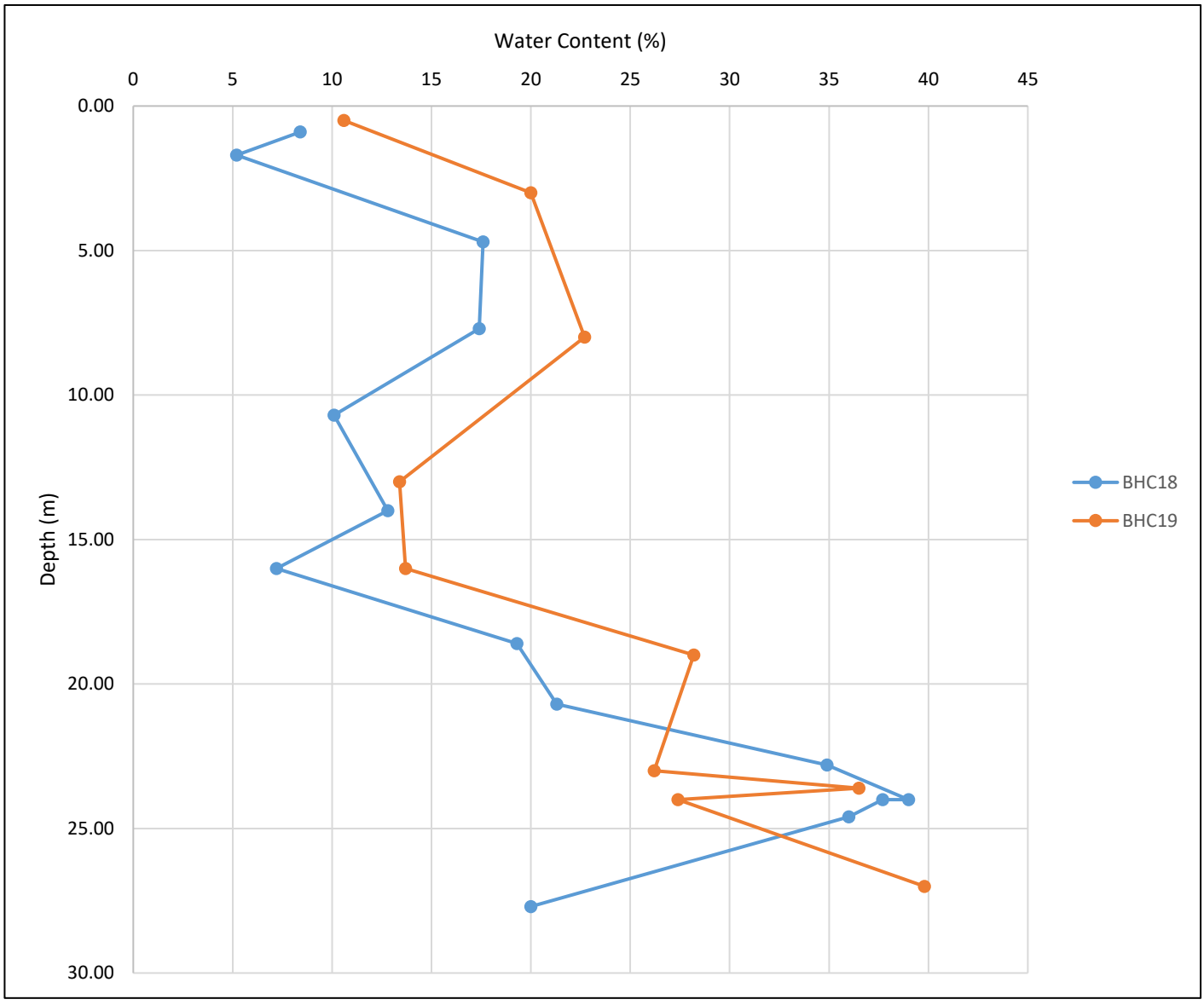
ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

WATER CONTENT VS DEPTH BELOW GROUND LEVEL



Method of Preparation:	BSEN ISO 17892-1: 2014
Method of Test:	BSEN ISO 17892-1: 2014
Type of Sample Key:	U - Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC18	18.60	DS	35	**19.3**	26	14	12	0.44	From Natural	0 (A)		73	Soft light olive brown sandy silty slightly organic CLAY with occasional dark bluish grey mottling.	CLO
BHC18	24.00	UT	48	**39.0**	64	24	40	0.38	From Natural	0 (A)		73	Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.	CH
BHC18	24.60	DS	49	**36.0**	79	33	46	0.07	From Natural	0 (A)		24	Stiff fissured dark olive grey CLAY.	CV
BHC19	13.00	DS	18	**13.4**	21	12	9	0.16	Wet Sieved	52 (M)	27.9*	99	Very soft brownish yellow silty gravelly sandy CLAY/very clayey fine to coarse SAND. Gravel is brown, black and white fine to coarse angular to rounded flint and quartzite.	CL
BHC19	23.00	B	37	**26.2**	22	18	4	2.05	Wet Sieved	7 (M)	N/R*	26	Dark olive grey silty clayey slightly organic SAND.	MLO
BHC19	23.60	DS	36	**36.5**	65	25	40	0.29	From Natural	0 (A)		24	Firm fissured dark olive grey CLAY with rare fine sand partings.	CH
BHC19	24.00	B	39	**27.4**	22	15	7	1.77	Wet Sieved	8 (M)	N/R*	24	Very soft dark olive grey sandy silty organic CLAY/very clayey SAND with rare shell debris.	CLO

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

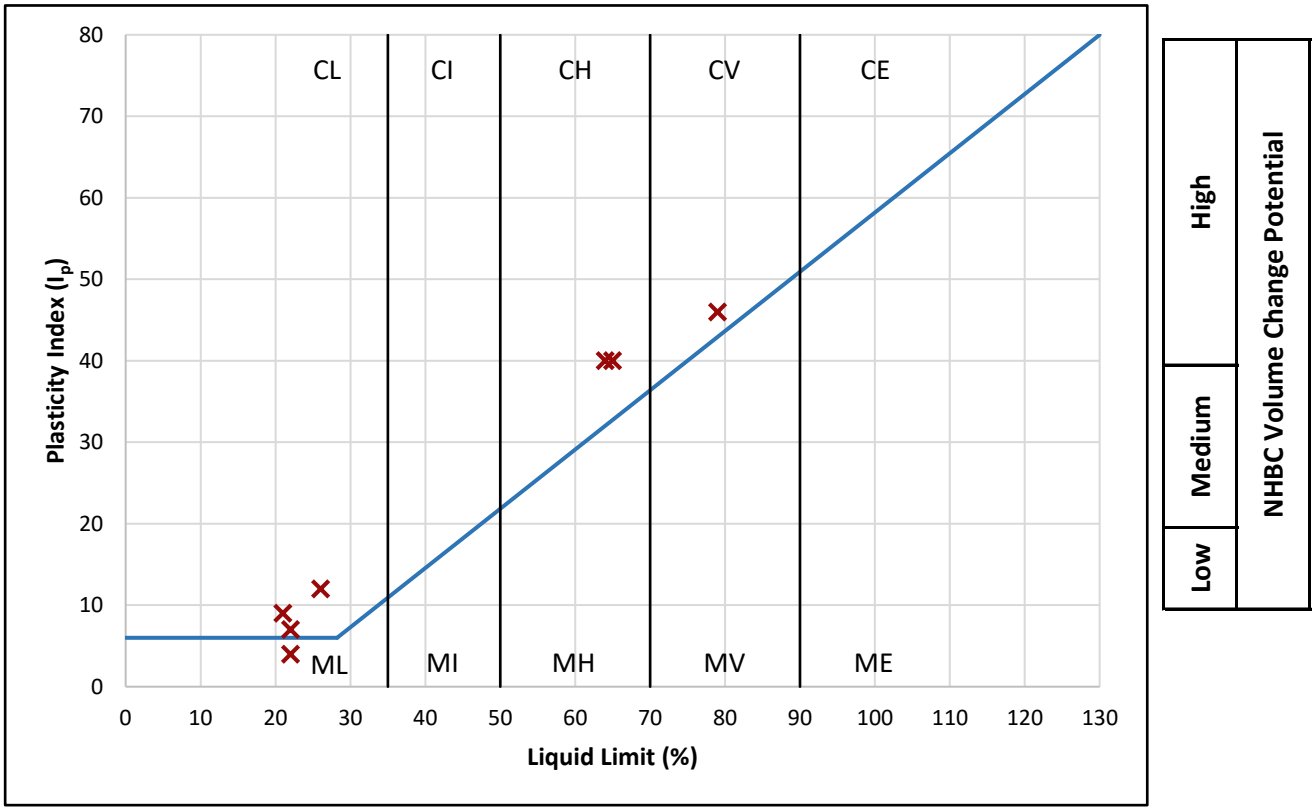
DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

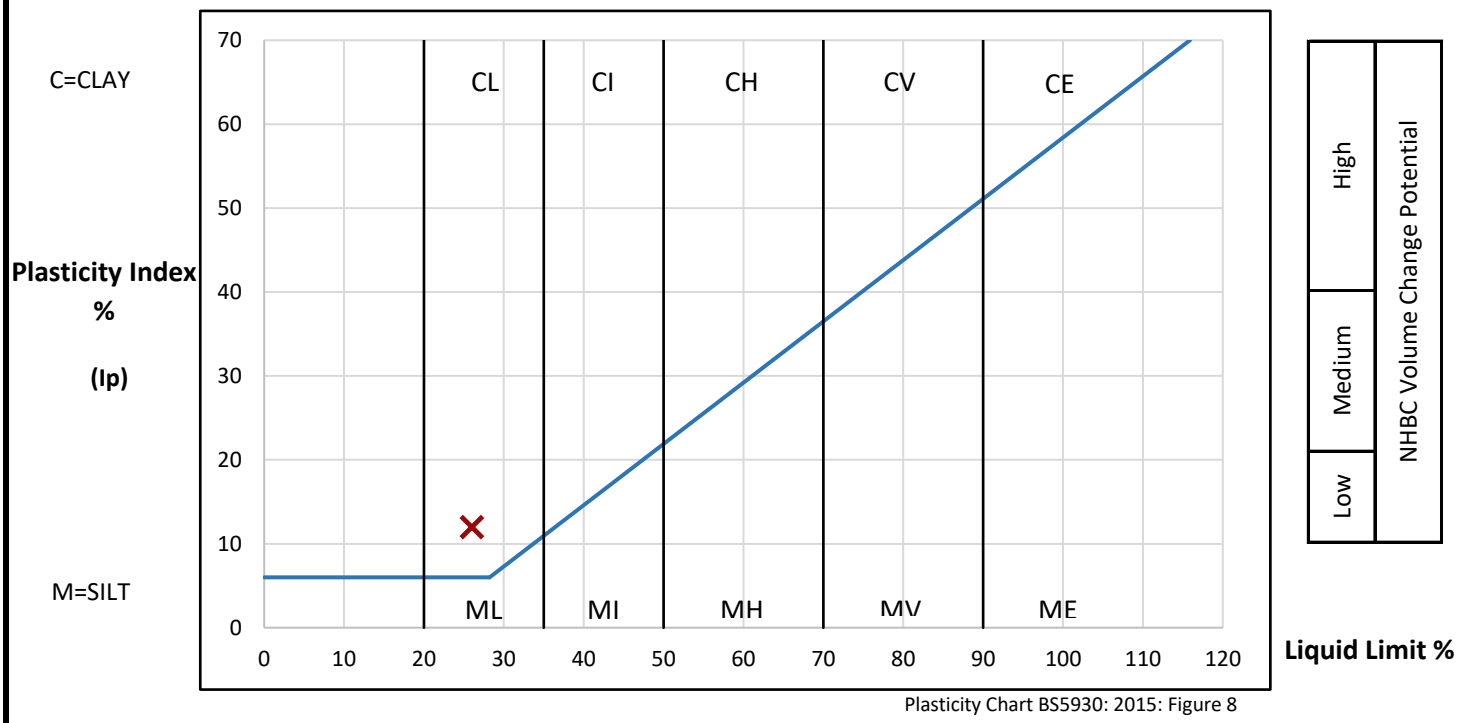
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC18	18.60	DS	35	19.3	Soft light olive brown sandy silty slightly organic CLAY with occasional dark bluish grey mottling.	

PREPARATION				Liquid Limit	26 %
Method of preparation		From natural		Plastic Limit	14 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	12 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.44
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	73 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

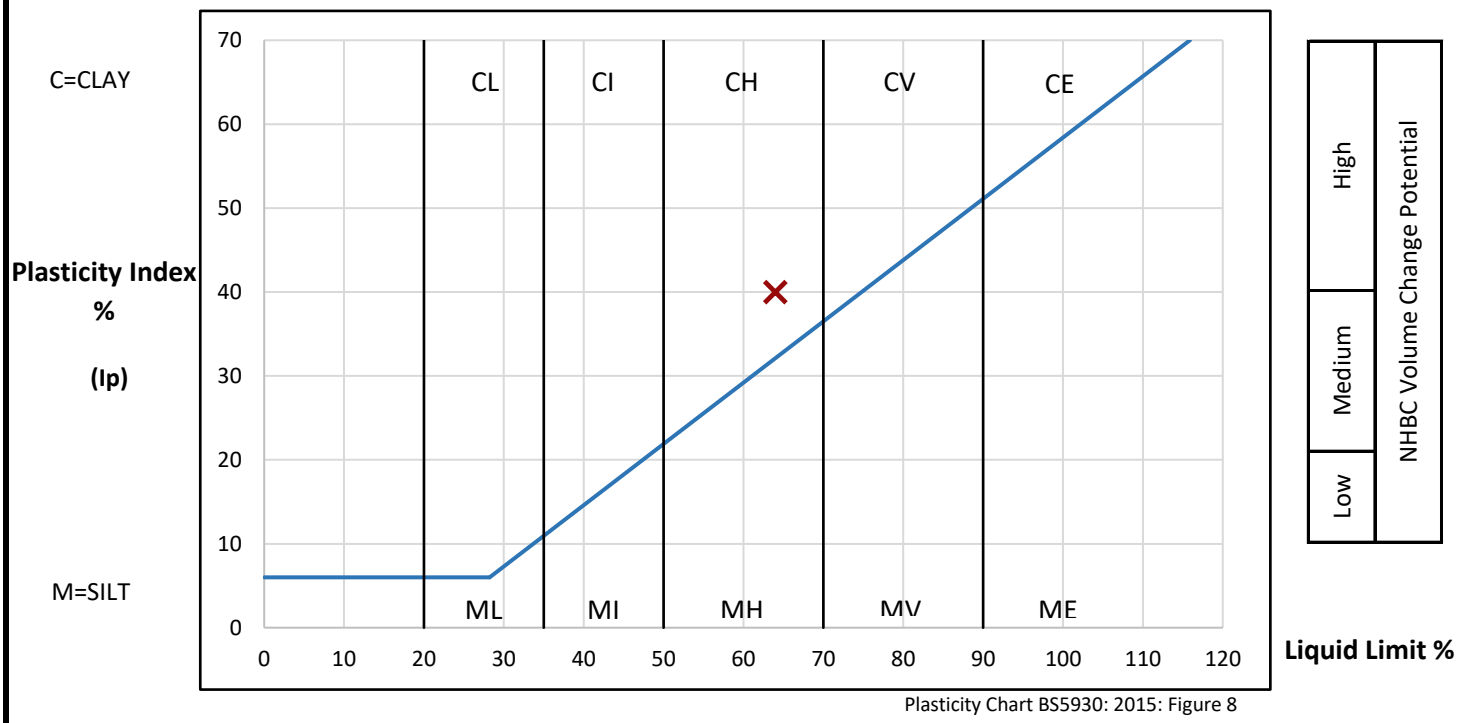
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC18	24.00	UT	48	39.0	Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.	

PREPARATION				Liquid Limit	64 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	40 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.38
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	73 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

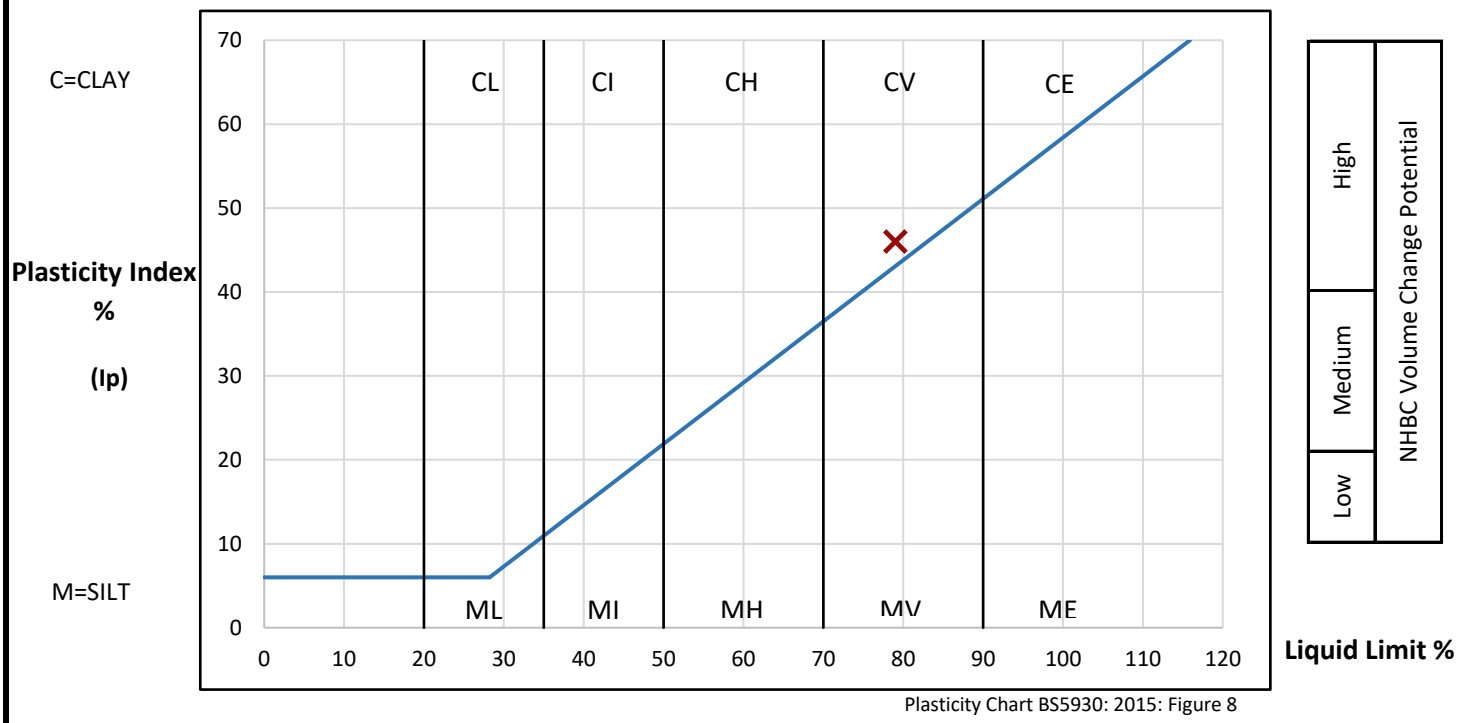
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC18	24.60	DS	49	36.0	Stiff fissured dark olive grey CLAY.	

PREPARATION			Liquid Limit	79 %
Method of preparation		From natural	Plastic Limit	33 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	46 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.07
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

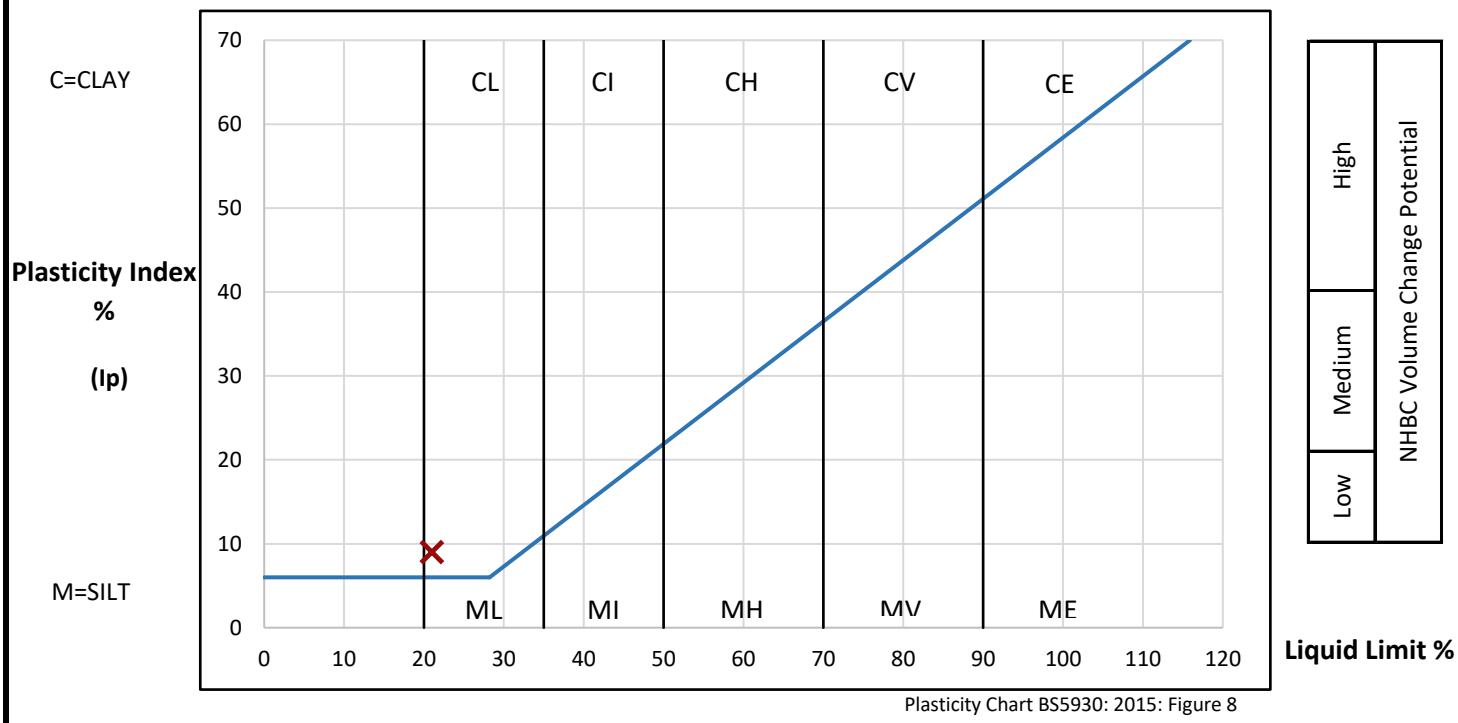
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC19	13.00	DS	18	13.4	Very soft brownish yellow silty gravelly sandy CLAY/very clayey fine to coarse SAND. Gravel is brown, black and white fine to coarse angular to rounded flint and quartzite.	

PREPARATION					
Method of preparation	Wet sieved over 0.425mm sieve			Liquid Limit	21 %
Sample retained 0.425mm sieve	(Measured)	52 %		Plastic Limit	12 %
Corrected water content for material passing 0.425mm		27.9 %		Plasticity Index	9 %
Sample retained 2mm sieve	(Measured)	37 %		Liquidity Index	0.16
Curing time	99 hrs		Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

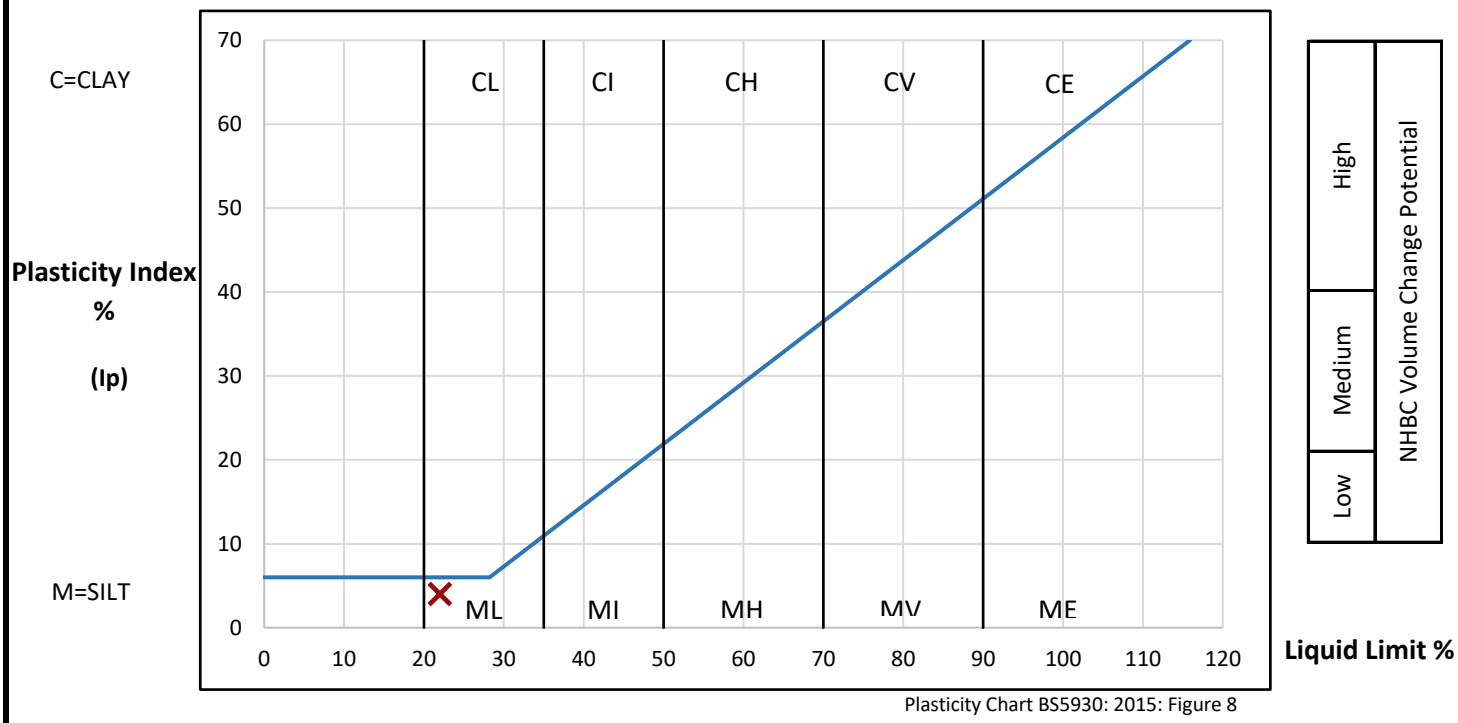
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC19	23.00	B	37	26.2	Dark olive grey silty clayey slightly organic SAND.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	7 %		Plasticity Index	4 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	2.05
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	4 %
Curing time	26 hrs	Clay Content	8 %	Derived Activity	0.50



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

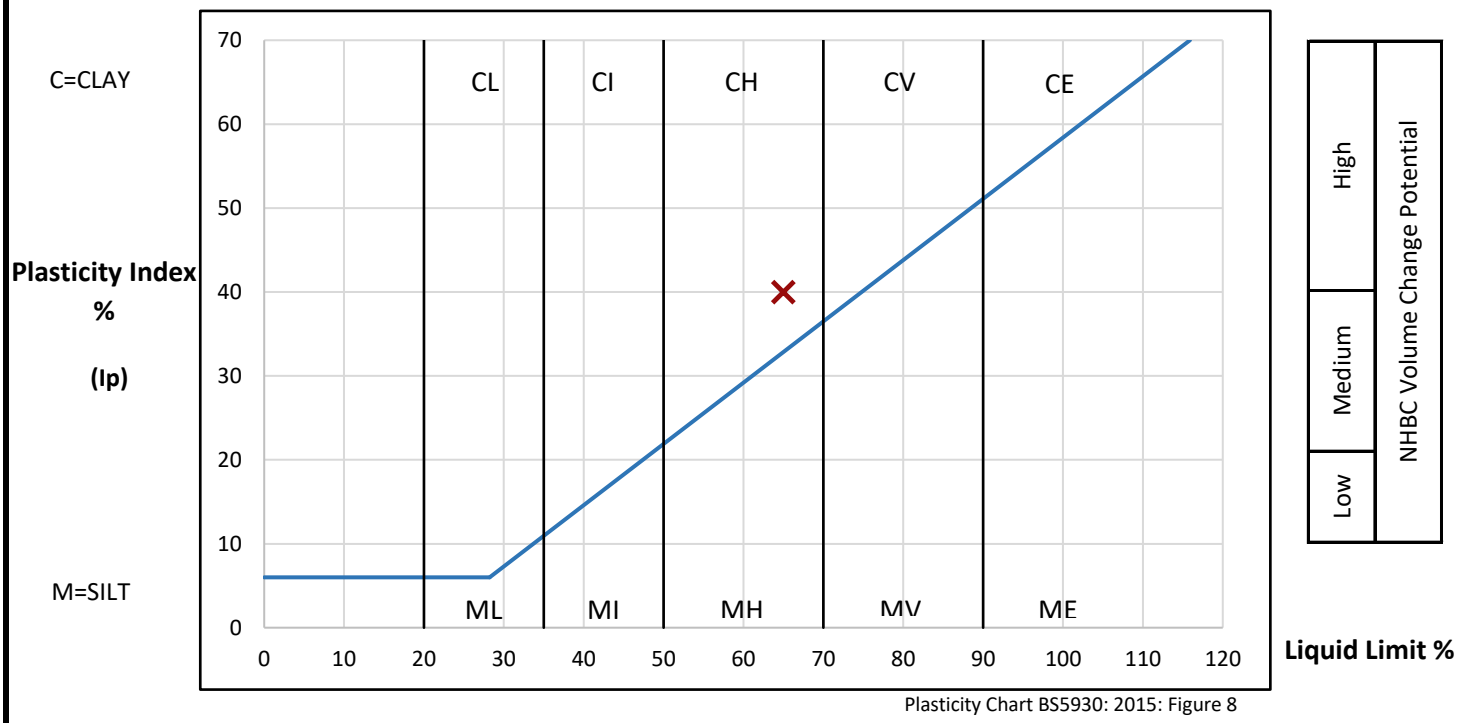
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC19	23.60	DS	36	36.5	Firm fissured dark olive grey CLAY with rare fine sand partings.	

PREPARATION				Liquid Limit	65 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	40 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.29
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

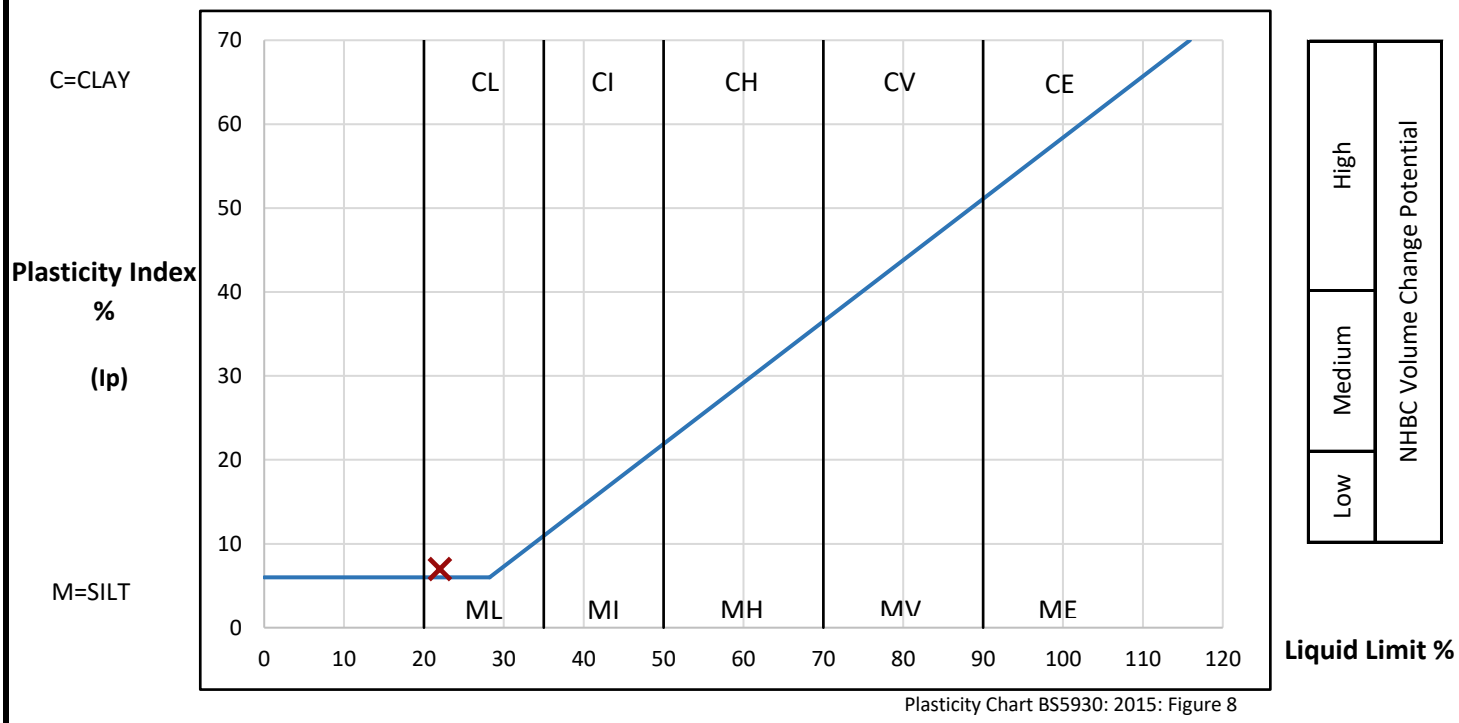
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC19	24.00	B	39	27.4	Very soft dark olive grey sandy silty organic CLAY/very clayey SAND with rare shell debris.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	8 %		Plasticity Index	7 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.77
Sample retained 2mm sieve	(Measured)	<1 %		NHBC Modified (I'p)	6 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

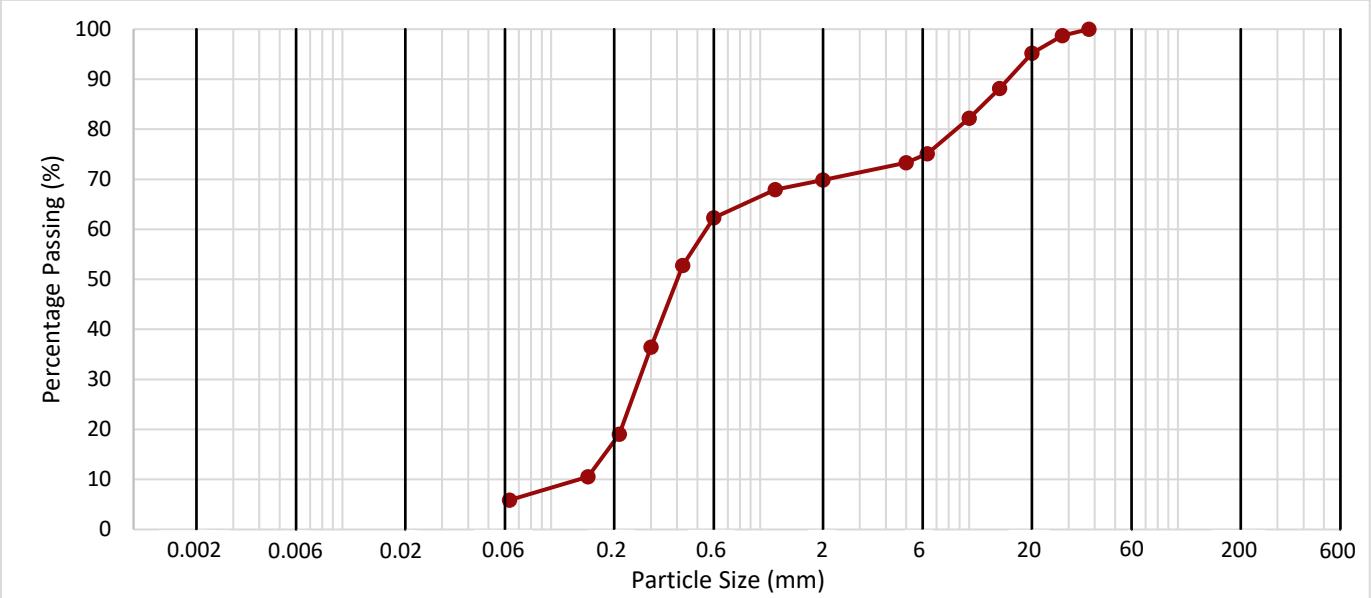
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	0.90	B	1	Brown and dark brown very gravelly silty SAND. Gravel is brown, black and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	70	64
1.18	68	
0.600	62	
0.425	53	
0.300	36	
0.212	19	
0.150	11	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		30
125		
90		
63		
50		
37.5	100	
28	99	
20	95	
14	88	
10	82	
6.3	75	
5	73	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

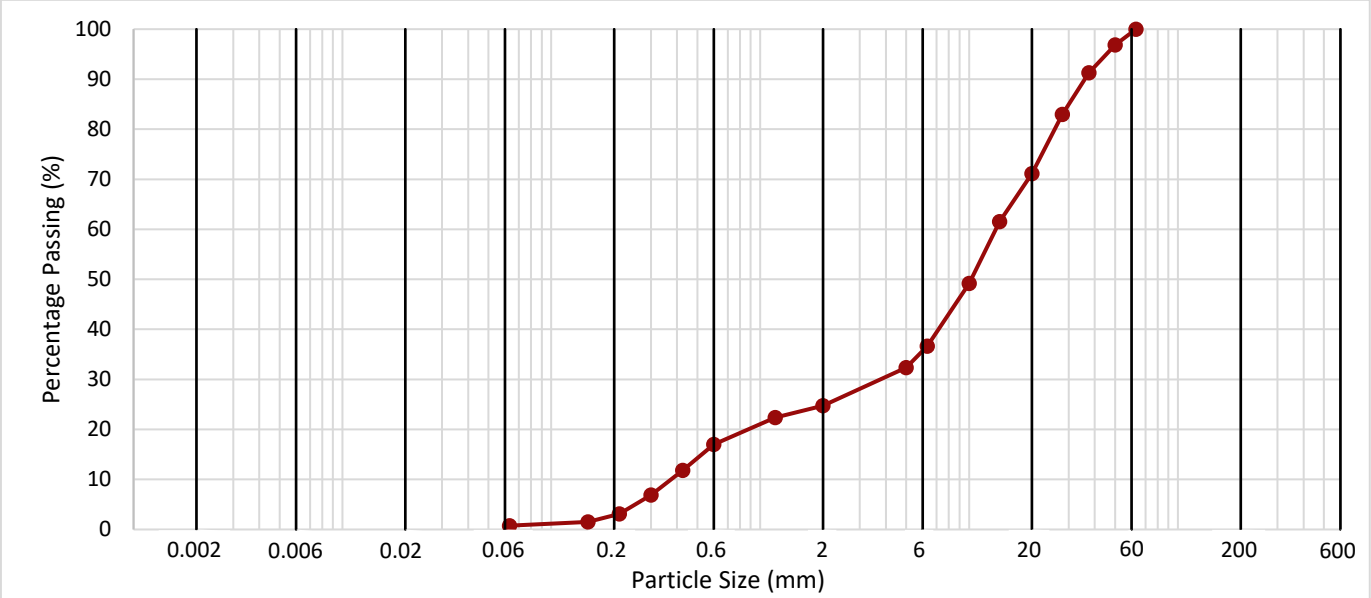
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	1.70	B	3	Brown, white and black very sandy slightly silty angular to subrounded flint. Sand is light brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	25	24
1.18	22	
0.600	17	
0.425	12	
0.300	7	
0.212	3	
0.150	1	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		75
125		
90		
63	100	
50	97	
37.5	91	
28	83	
20	71	
14	62	
10	49	
6.3	37	
5	32	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

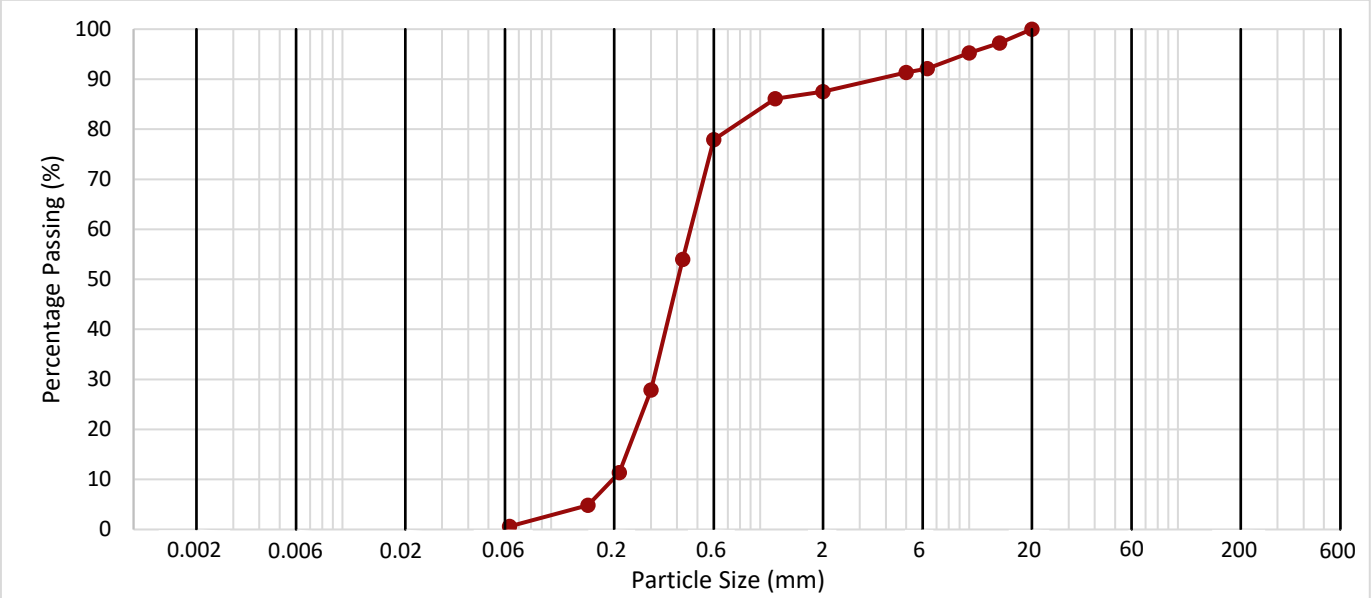
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	4.70	B	9	Yellowish brown gravelly slightly silty SAND. Gravel is black, white and brown angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	88	87
1.18	86	
0.600	78	
0.425	54	
0.300	28	
0.212	11	
0.150	5	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		12
125		
90		
63		
50		
37.5		
28		
20	100	
14	97	
10	95	
6.3	92	
5	91	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

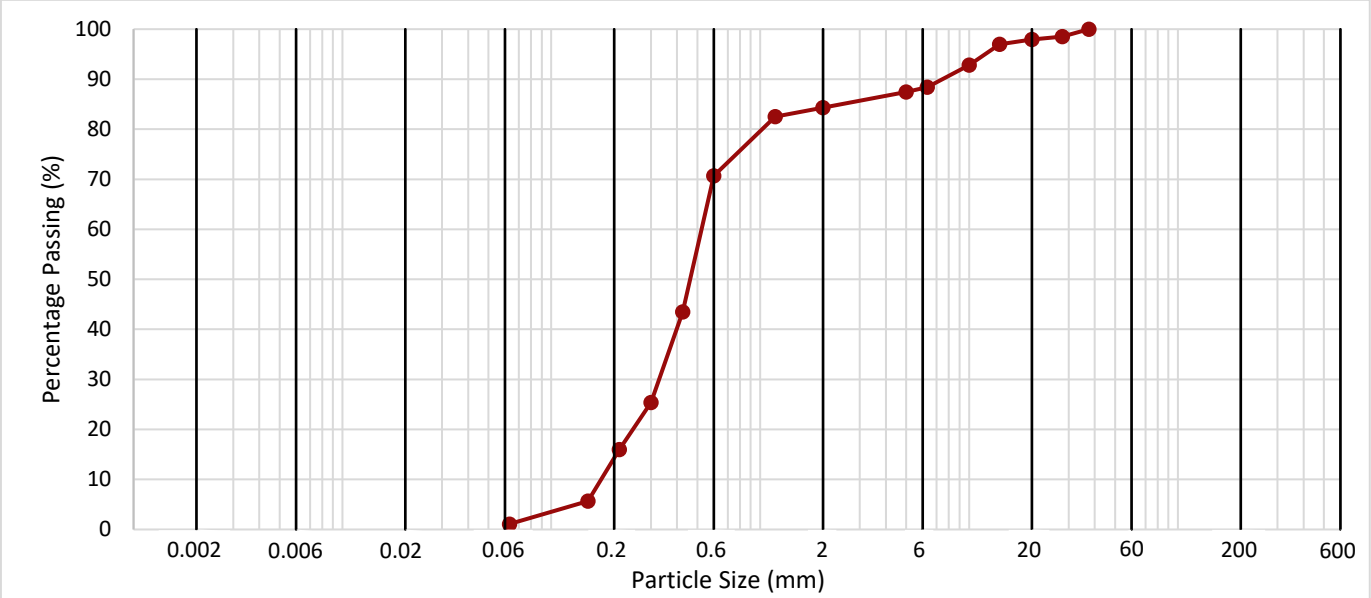
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	7.70	B	15	Orangish brown gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	84	83
1.18	83	
0.600	71	
0.425	43	
0.300	25	
0.212	16	
0.150	6	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		16
125		
90		
63		
50		
37.5	100	
28	98	
20	98	
14	97	
10	93	
6.3	88	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

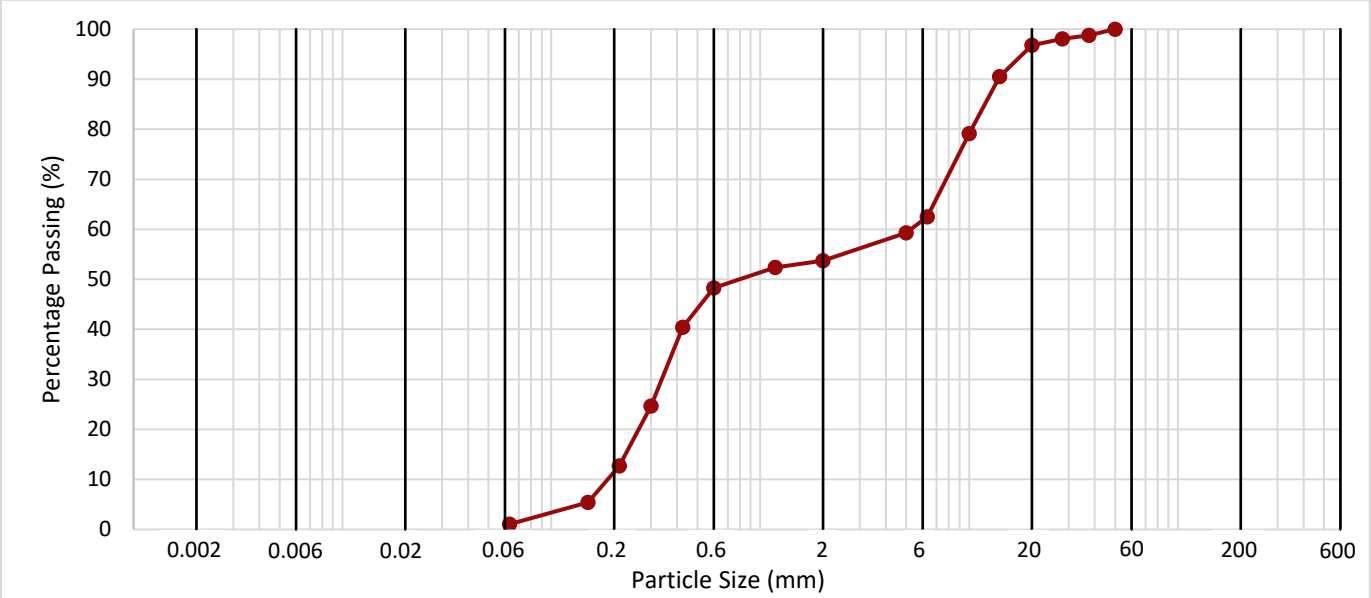
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	10.70	B	21	Yellowish brown slightly silty SAND and black, white and brown angular to subrounded flint GRAVEL with occasional white and grey subangular to subrounded quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	54	53
1.18	52	
0.600	48	
0.425	40	
0.300	25	
0.212	13	
0.150	5	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		46
125		
90		
63		
50	100	
37.5	99	
28	98	
20	97	
14	91	
10	79	
6.3	62	
5	59	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

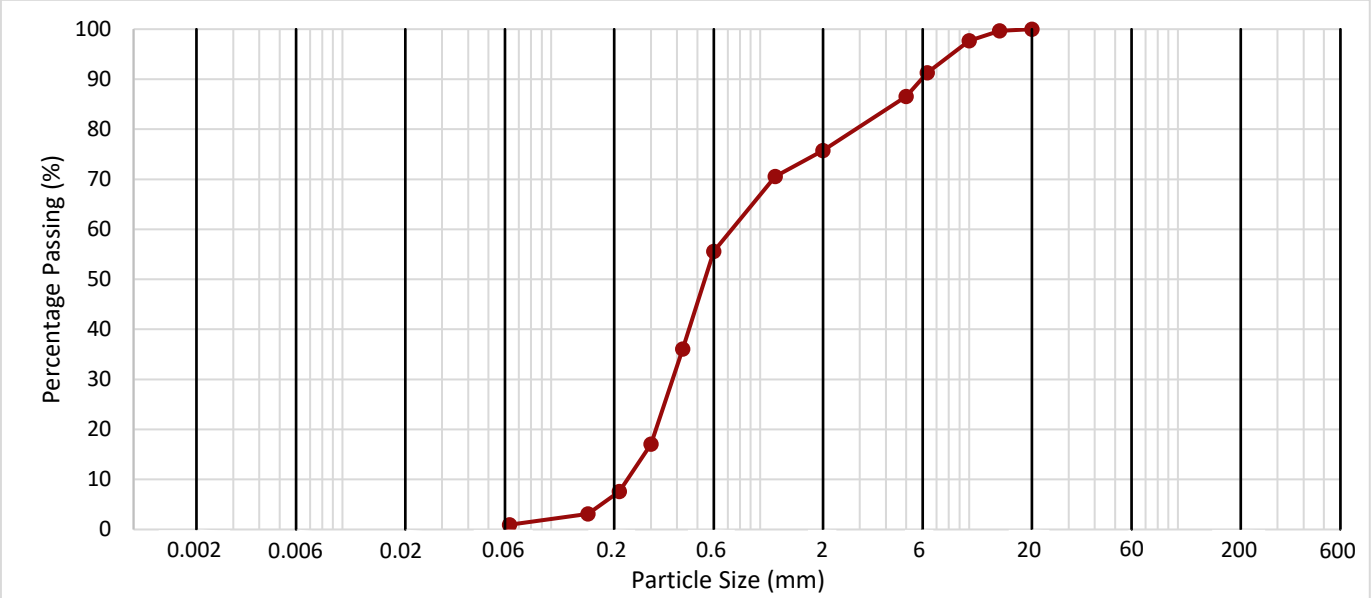
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	14.00	B	26	Orangish brown very gravelly slightly silty SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	76	75
1.18	71	
0.600	56	
0.425	36	
0.300	17	
0.212	8	
0.150	3	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		24
125		
90		
63		
50		
37.5		
28		
20	100	
14	100	
10	98	
6.3	91	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

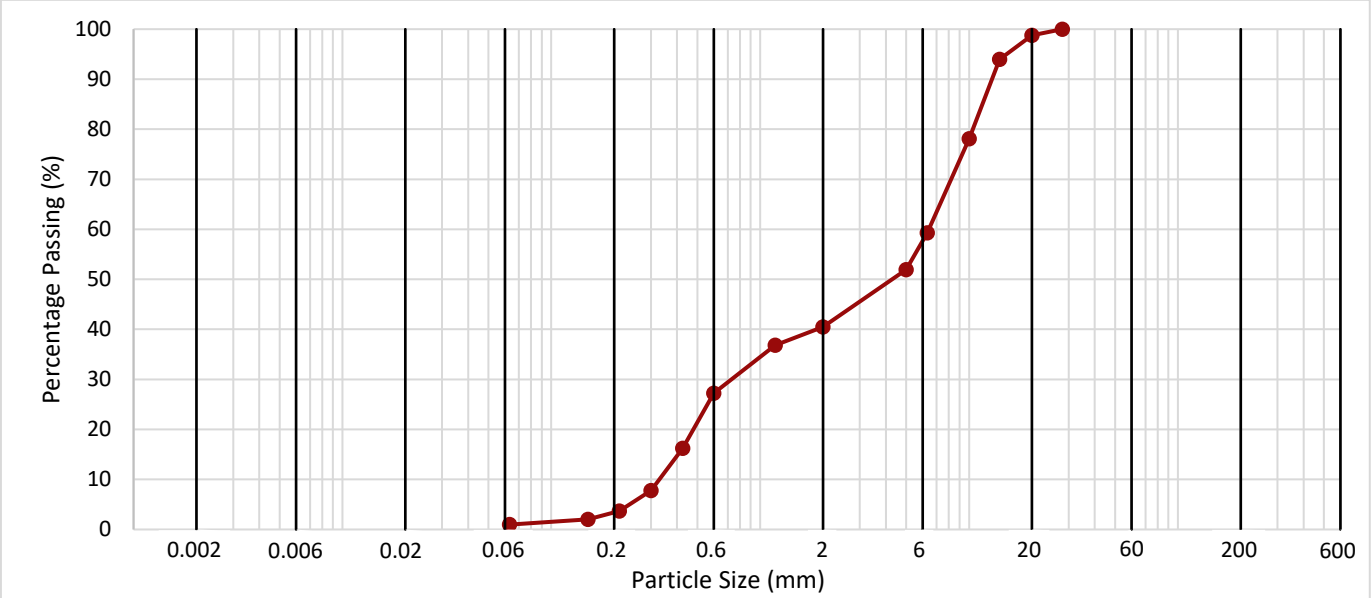
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	16.00	B	31	Black, white and brown very sandy slightly silty angular to subrounded flint GRAVEL with rare white and grey subrounded quartzite. Sand is orangish brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	40	39
1.18	37	
0.600	27	
0.425	16	
0.300	8	
0.212	4	
0.150	2	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		60
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	94	
10	78	
6.3	59	
5	52	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

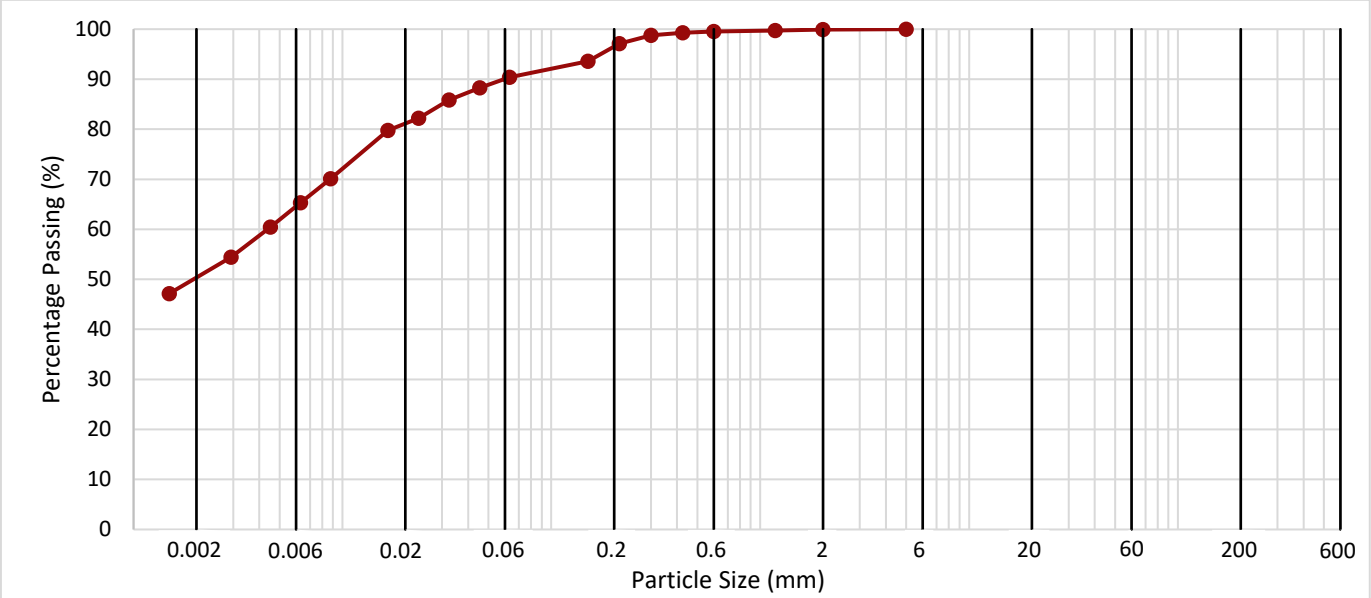
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	17.80	B	33	Firm dark bluish grey slightly sandy silty slightly organic CLAY locally oxidised to olive with rare fine sand/silt partings.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0454	88	40
0.0324	86	
0.0232	82	
0.0165	80	Clay by Dry Mass (%)
0.0088	70	
0.0063	65	
0.0045	60	50
0.0029	54	
0.0015	47	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	10
1.18	100	
0.600	100	
0.425	99	
0.300	99	
0.212	97	
0.150	94	
0.063	90	

Fines By Dry Mass (%)	
<0.063mm	90

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

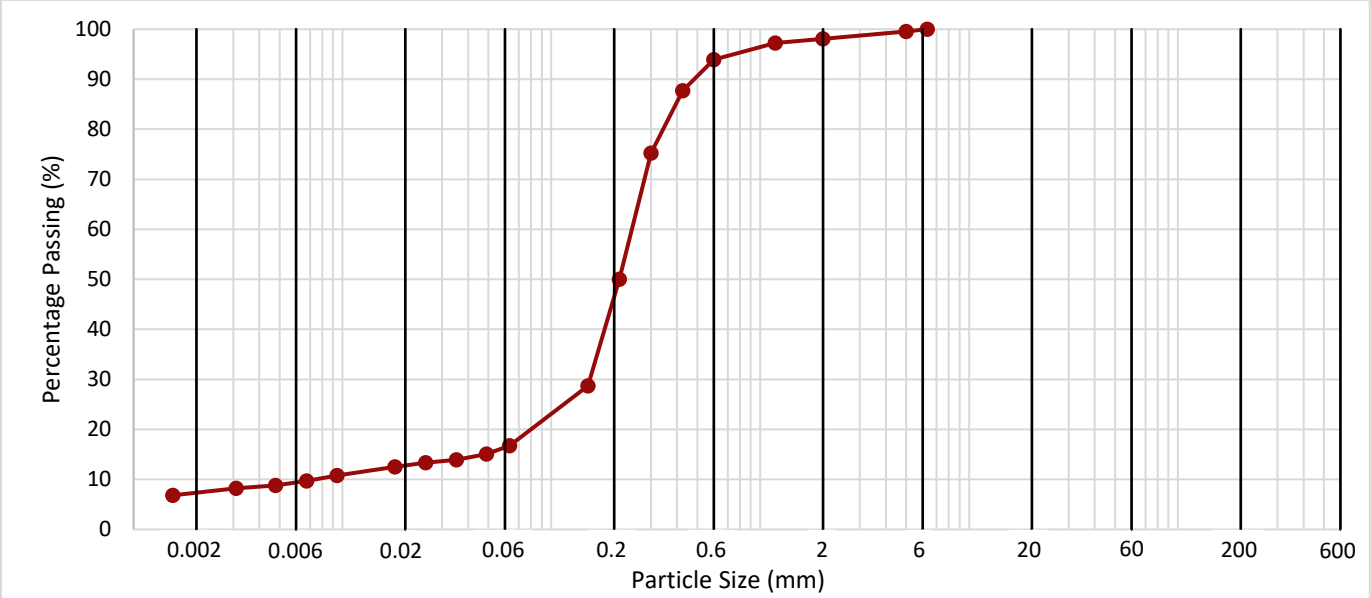
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	20.70	B	40	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0490	15	10	
	0.0351	14		
	0.0250	13		
	0.0179	13		7
	0.0094	11		
	0.0067	10		
	0.0048	9		
	0.0031	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	81
1.18	97	
0.600	94	
0.425	88	
0.300	75	
0.212	50	
0.150	29	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

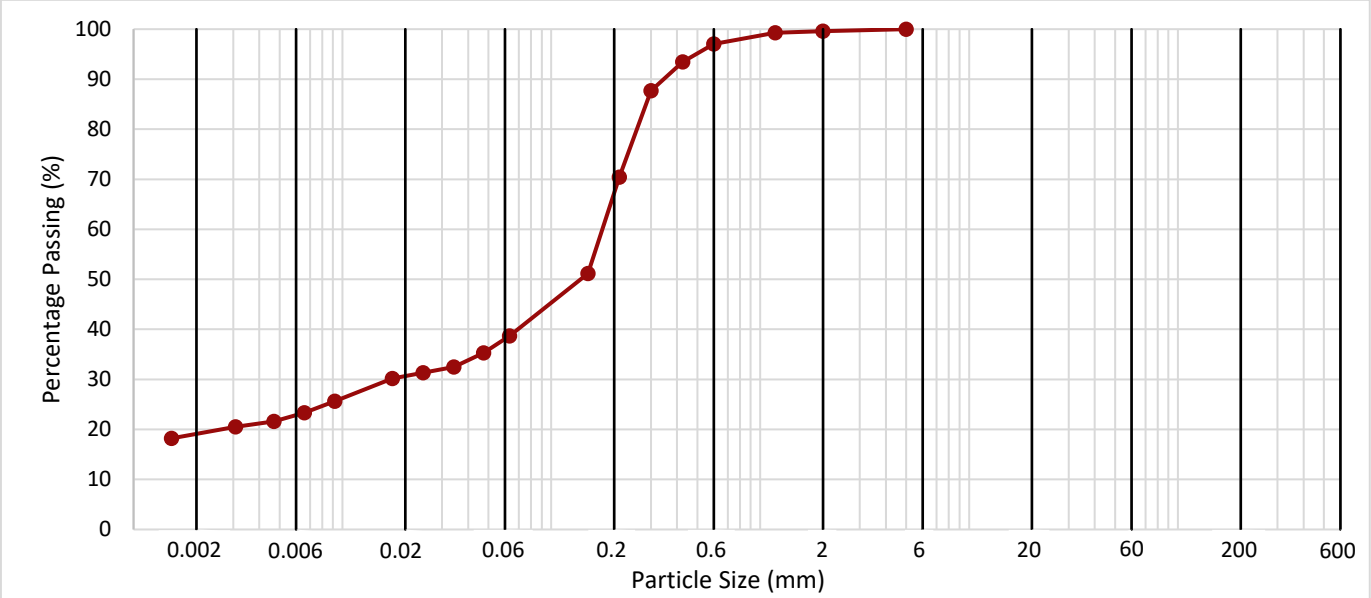
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	22.80	B	44	Very soft dark olive grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0474	35	20	
0.0342	32		
0.0243	31		
0.0173	30		
0.0092	26		
0.0066	23		
0.0047	22		19
0.0031	20		
0.0015	18		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	61
1.18	99	
0.600	97	
0.425	93	
0.300	88	
0.212	70	
0.150	51	
0.063	39	

Fines By Dry Mass (%)	
<0.063mm	39

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

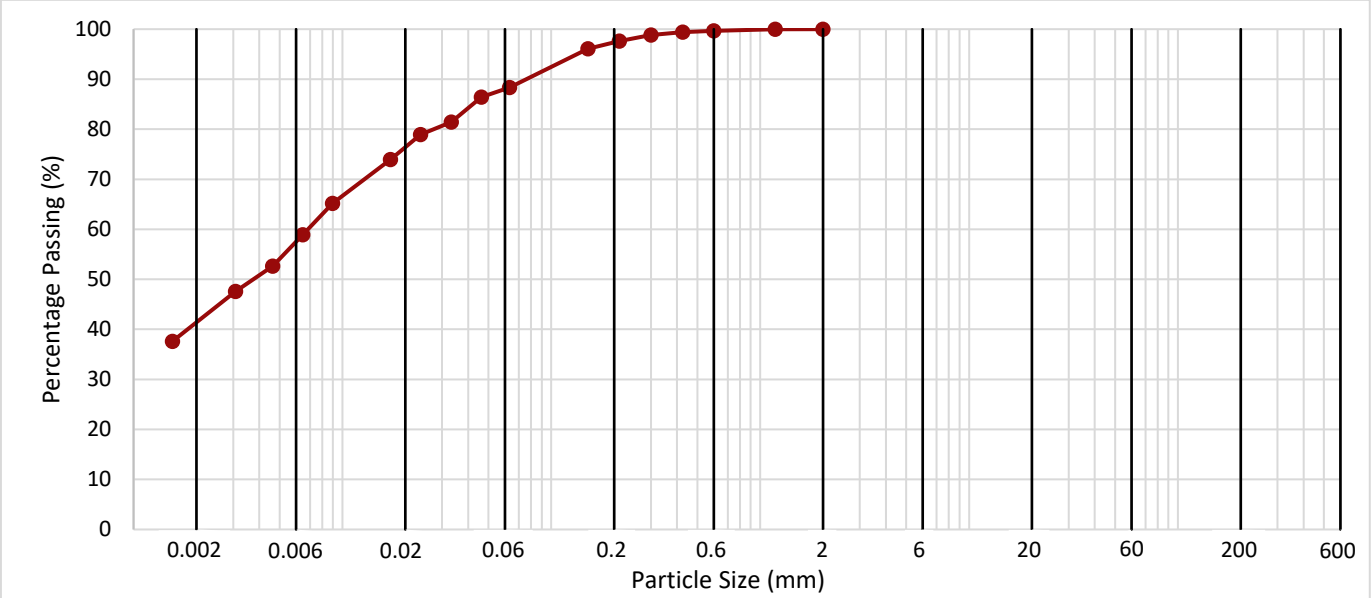
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	23.70	B	47	Firm dark grey slightly sandy silty slightly organic CLAY locally oxidised to olive with occasional fine sand/silt partings.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0462	86	47	
	0.0332	81		
	0.0236	79		
	0.0170	74		41
	0.0090	65		
	0.0065	59		
	0.0046	53		
	0.0031	48		
	0.0015	38		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	12
1.18	100	
0.600	100	
0.425	99	
0.300	99	
0.212	98	
0.150	96	
0.063	88	

Fines By Dry Mass (%)	
<0.063mm	88

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

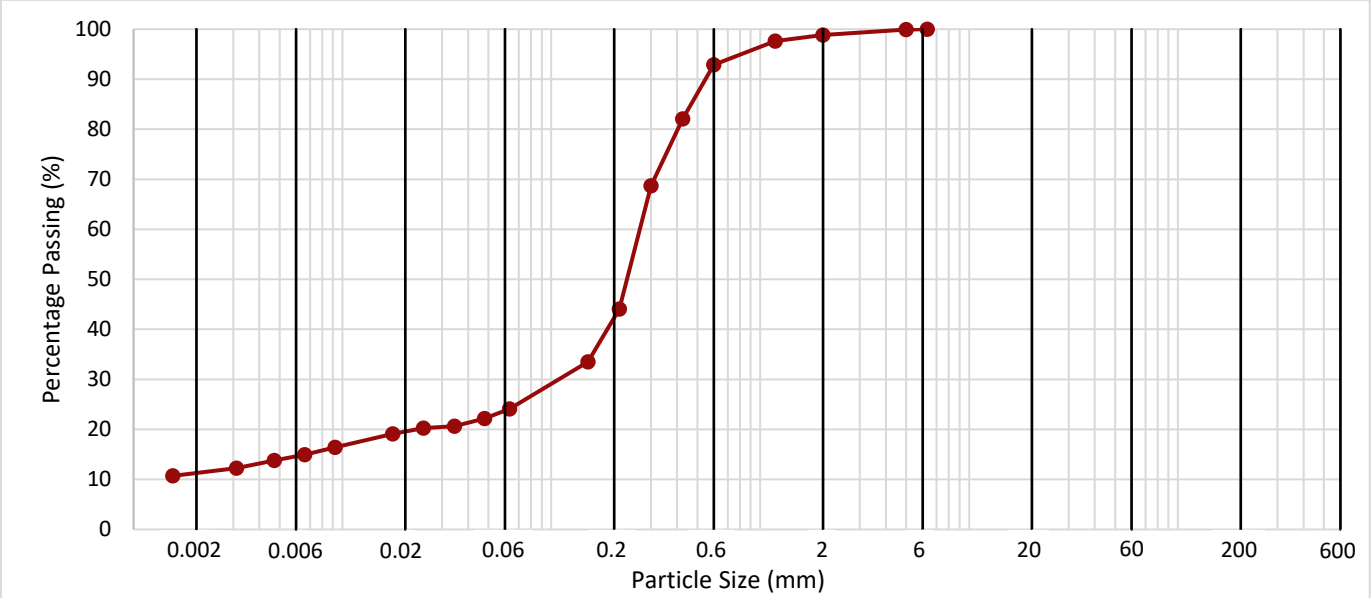
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	25.00	UT	50	Dark grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0479	22	13
	0.0344	21	
	0.0244	20	
	0.0174	19	Clay by Dry Mass (%)
	0.0092	16	
	0.0066	15	
	0.0047	14	11
	0.0031	12	
	0.0015	11	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	75
1.18	98	
0.600	93	
0.425	82	
0.300	69	
0.212	44	
0.150	33	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

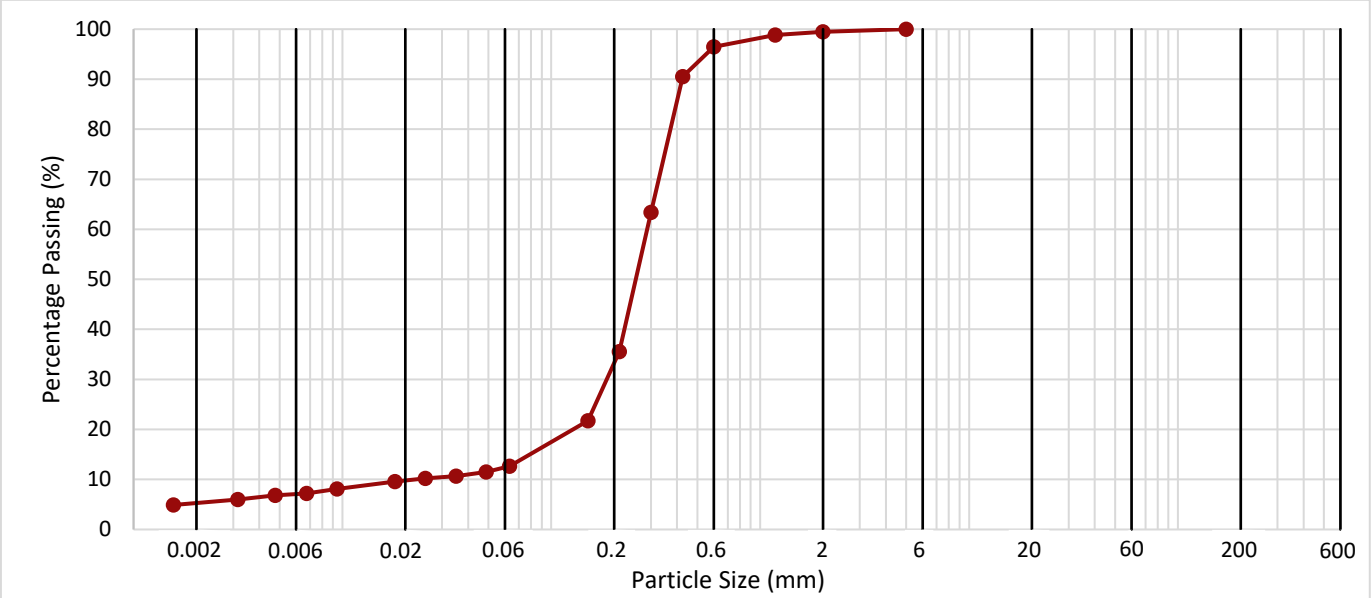
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	27.70	B	55	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0488	11	8	
	0.0350	11		
	0.0249	10		
	0.0178	10		5
	0.0094	8		
	0.0067	7		
	0.0048	7		
	0.0032	6		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	86
1.18	99	
0.600	96	
0.425	91	
0.300	63	
0.212	36	
0.150	22	
0.063	13	

Fines By Dry Mass (%)	
<0.063mm	13

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

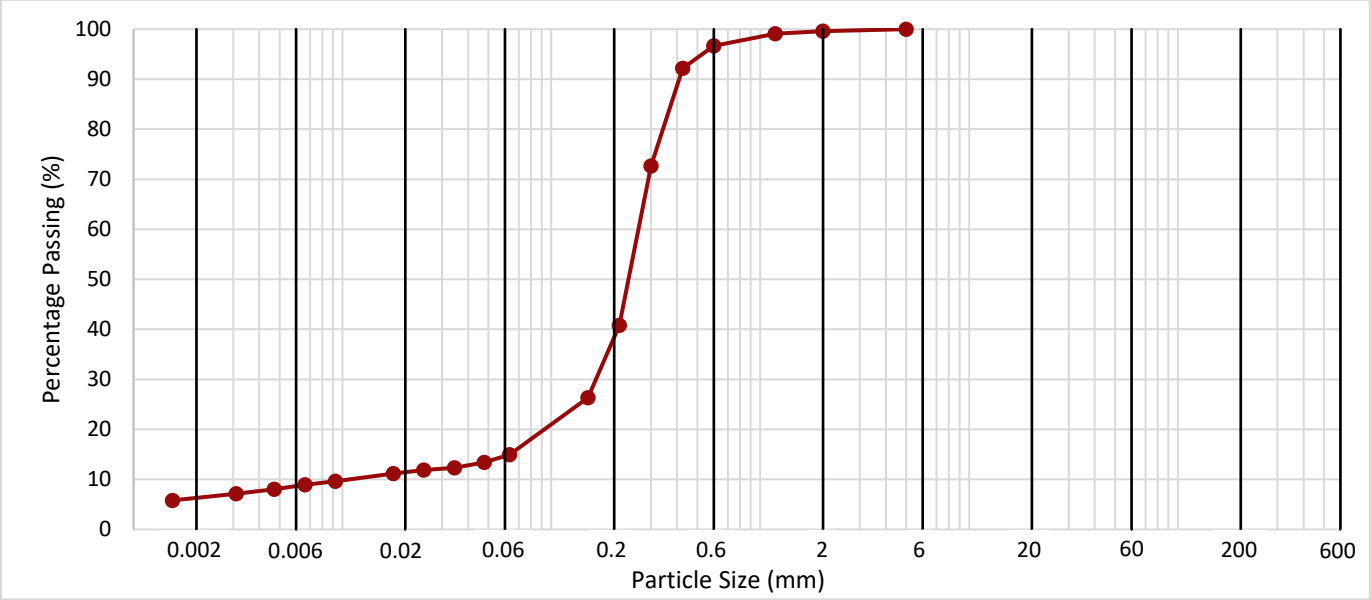
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	30.70	B	61	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0478	13	9	
	0.0344	12		
	0.0245	12		
	0.0175	11		6
	0.0093	10		
	0.0066	9		
	0.0047	8		
	0.0031	7		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	85
1.18	99	
0.600	97	
0.425	92	
0.300	73	
0.212	41	
0.150	26	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

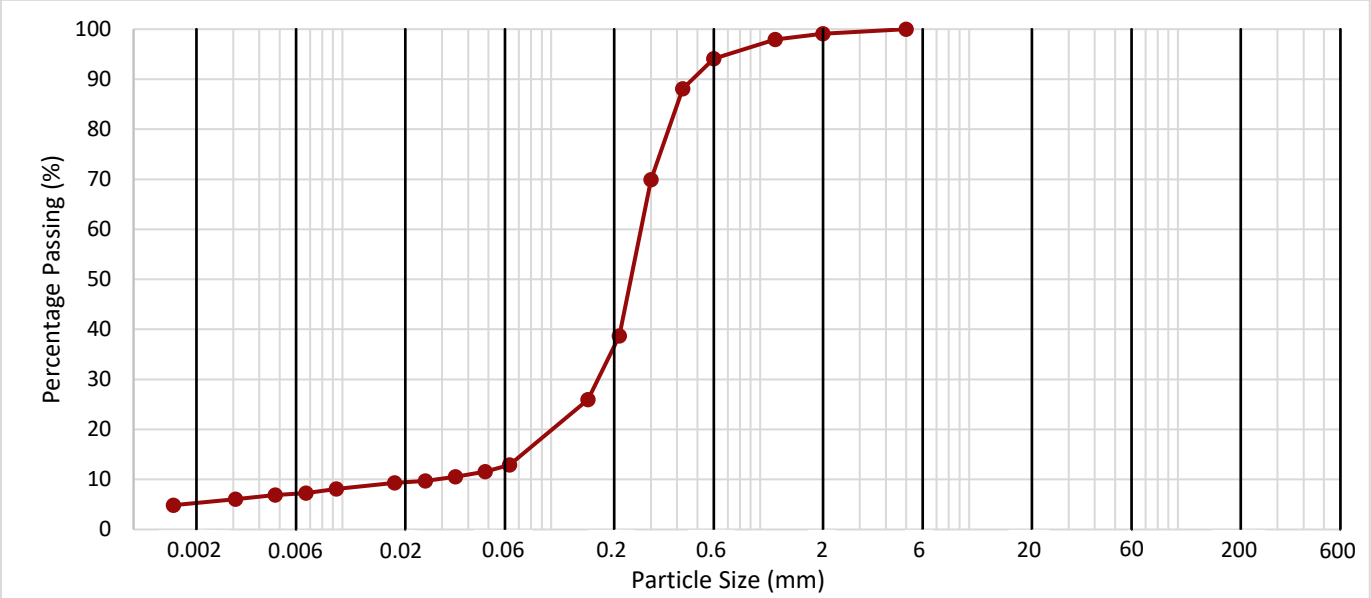
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	33.70	B	67	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0483	12	8
	0.0348	11	
	0.0250	10	
	0.0177	9	Clay by Dry Mass (%)
	0.0094	8	
	0.0067	7	
	0.0048	7	5
	0.0031	6	
	0.0016	5	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	86
1.18	98	
0.600	94	
0.425	88	
0.300	70	
0.212	39	
0.150	26	
0.063	13	

Fines By Dry Mass (%)	
<0.063mm	13

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

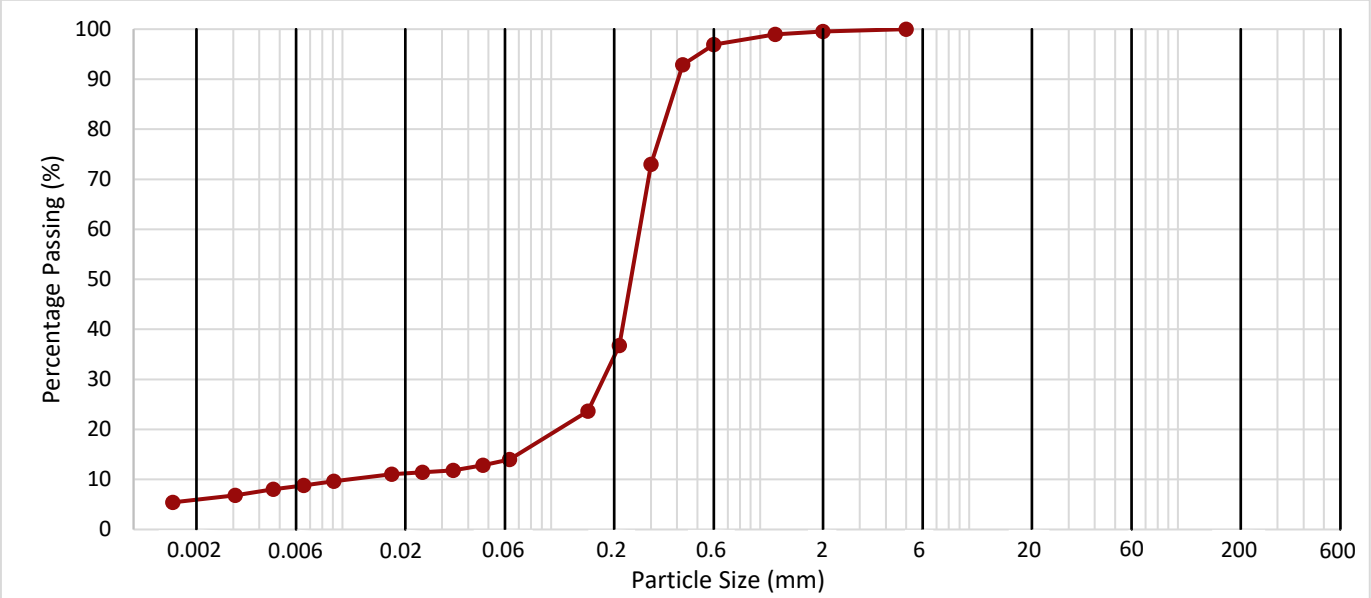
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	36.70	B	73	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0471	13	8	
	0.0339	12		
	0.0242	11		
	0.0172	11		6
	0.0091	10		
	0.0065	9		
	0.0047	8		
	0.0031	7		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	86
1.18	99	
0.600	97	
0.425	93	
0.300	73	
0.212	37	
0.150	24	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

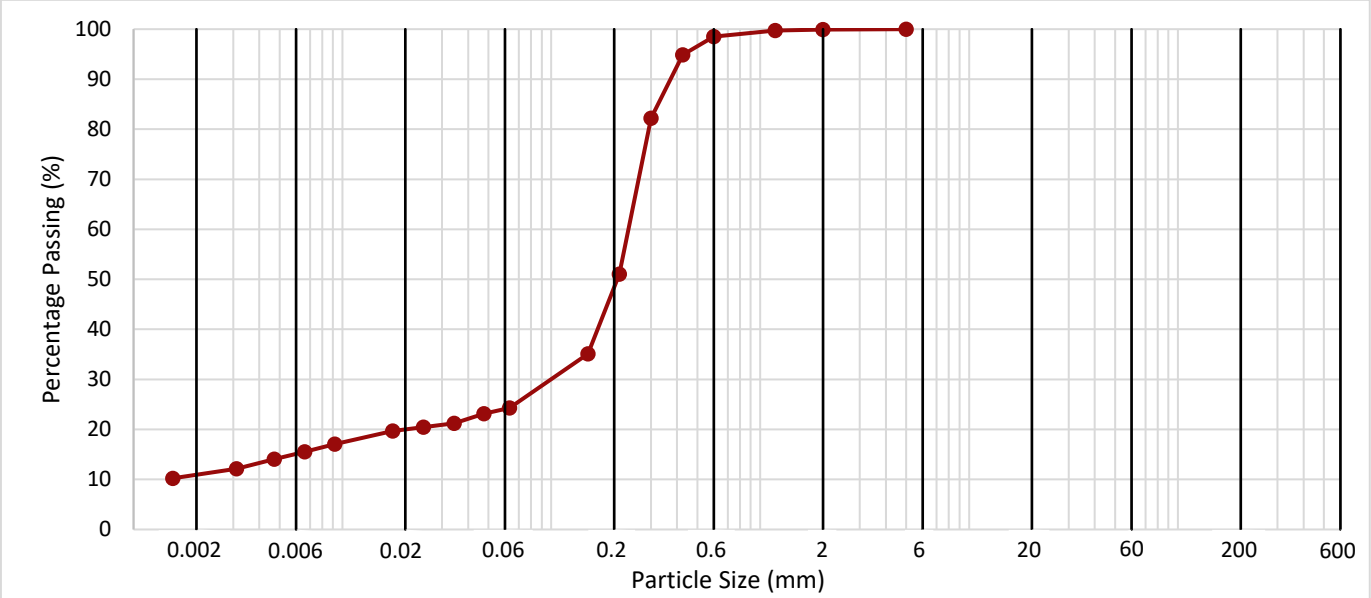
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	39.70	B	79	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0476	23	13	
	0.0343	21		
	0.0244	20		
	0.0174	20		
	0.0092	17		
	0.0066	16		
	0.0047	14		11
	0.0031	12		
	0.0015	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	76
1.18	100	
0.600	99	
0.425	95	
0.300	82	
0.212	51	
0.150	35	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

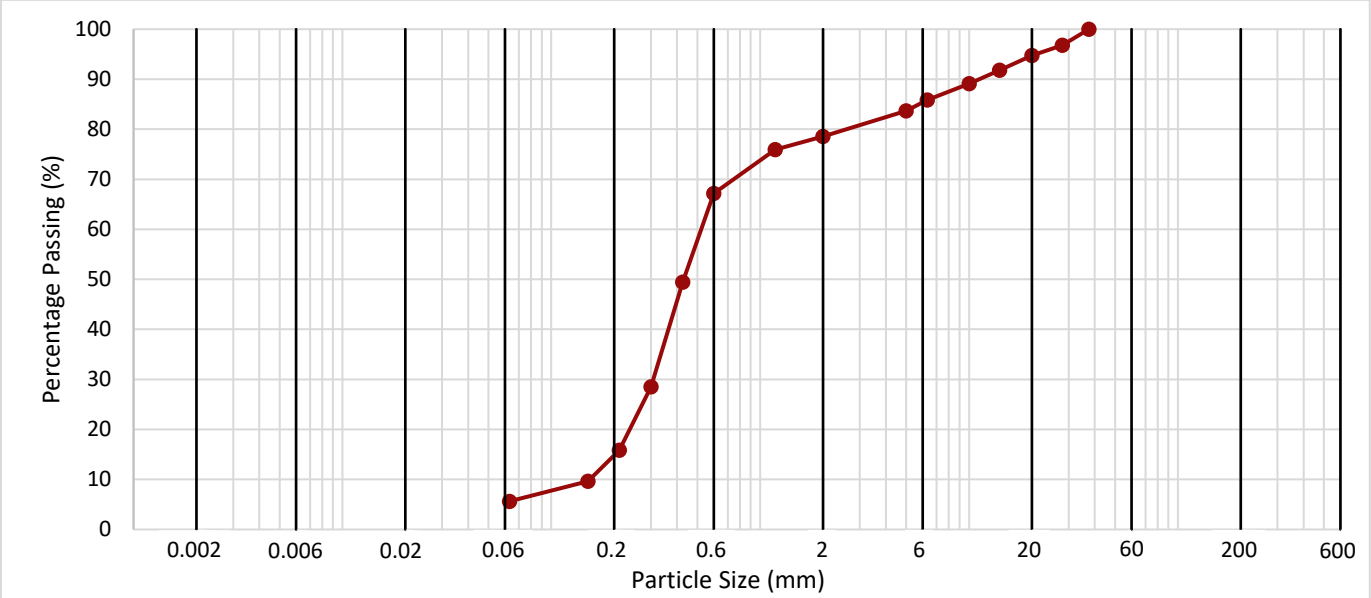
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	0.50	B	2	Brown and black very gravelly silty SAND. Gravel is brown, white and black angular to subangular flint gravel with rare asphalt and brick fragments.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	79	73
1.18	76	
0.600	67	
0.425	49	
0.300	29	
0.212	16	
0.150	10	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	6

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		21
125		
90		
63		
50		
37.5	100	
28	97	
20	95	
14	92	
10	89	
6.3	86	
5	84	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

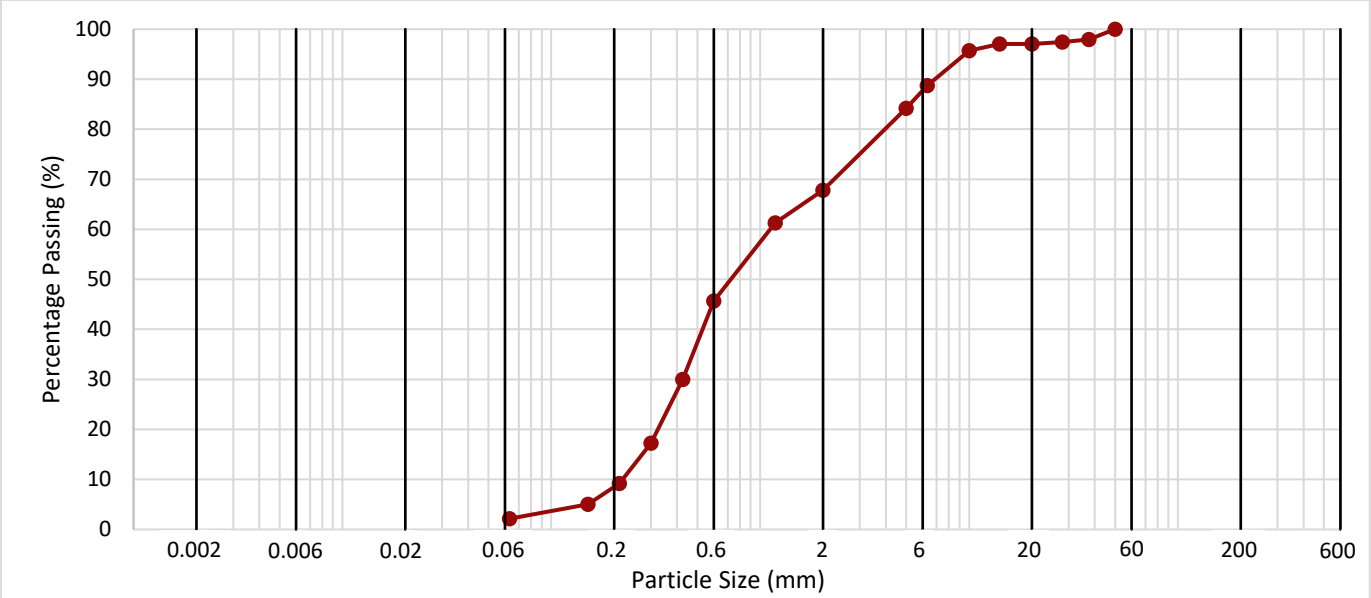
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	3.00	B	7	Olive brown and orangish brown very gravelly slightly silty SAND. Gravel is black, white and brown angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	68	66
1.18	61	
0.600	46	
0.425	30	
0.300	17	
0.212	9	
0.150	5	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		32
125		
90		
63		
50	100	
37.5	98	
28	97	
20	97	
14	97	
10	96	
6.3	89	
5	84	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

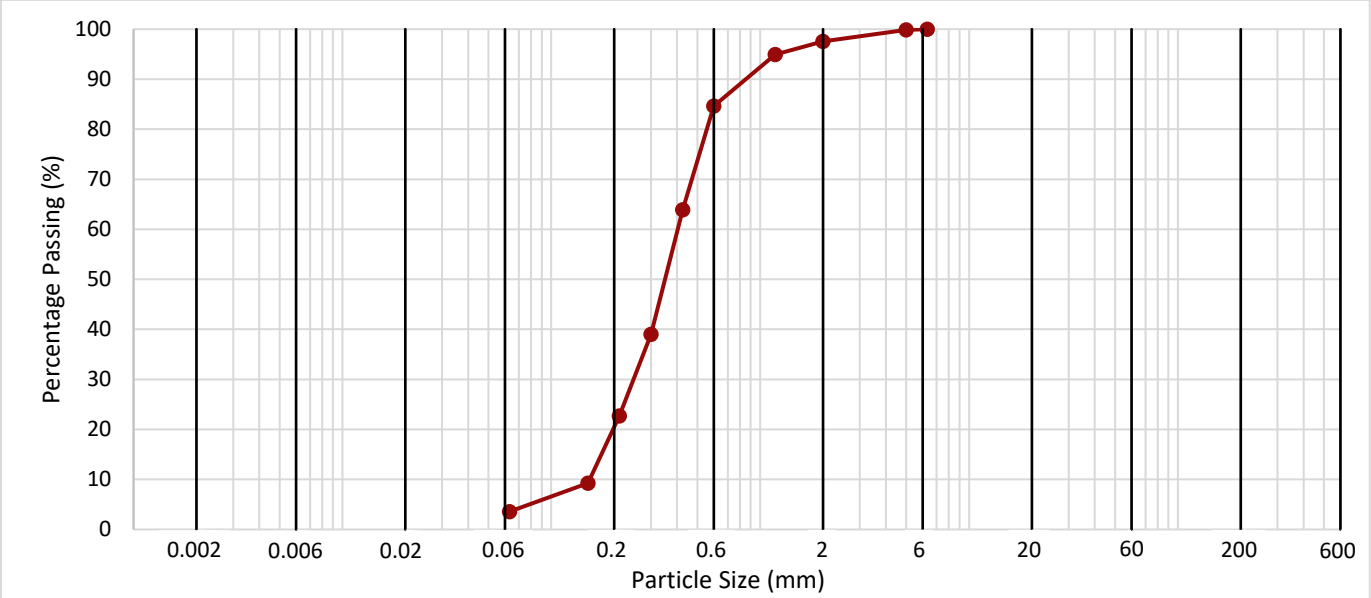
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	8.00	B	12	Brownish yellow slightly gravelly slightly silty slightly clayey SAND. Gravel is angular to subangular flint and quartzite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	94
1.18	95	
0.600	85	
0.425	64	
0.300	39	
0.212	23	
0.150	9	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	4

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

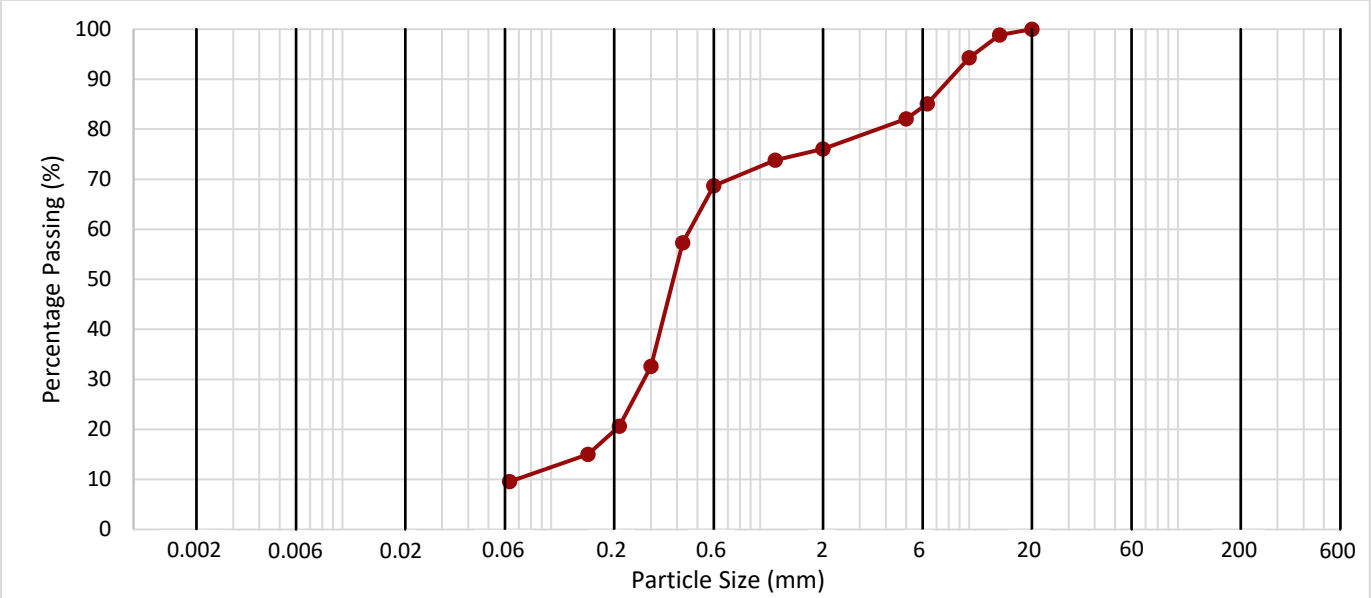
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	13.00	B	19	Brown very gravelly slightly silty slightly clayey SAND with occasional firm grey clay lumps. Gravel is black, white and brown subangular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	76	66
1.18	74	
0.600	69	
0.425	57	
0.300	33	
0.212	21	
0.150	15	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		24
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	94	
6.3	85	
5	82	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

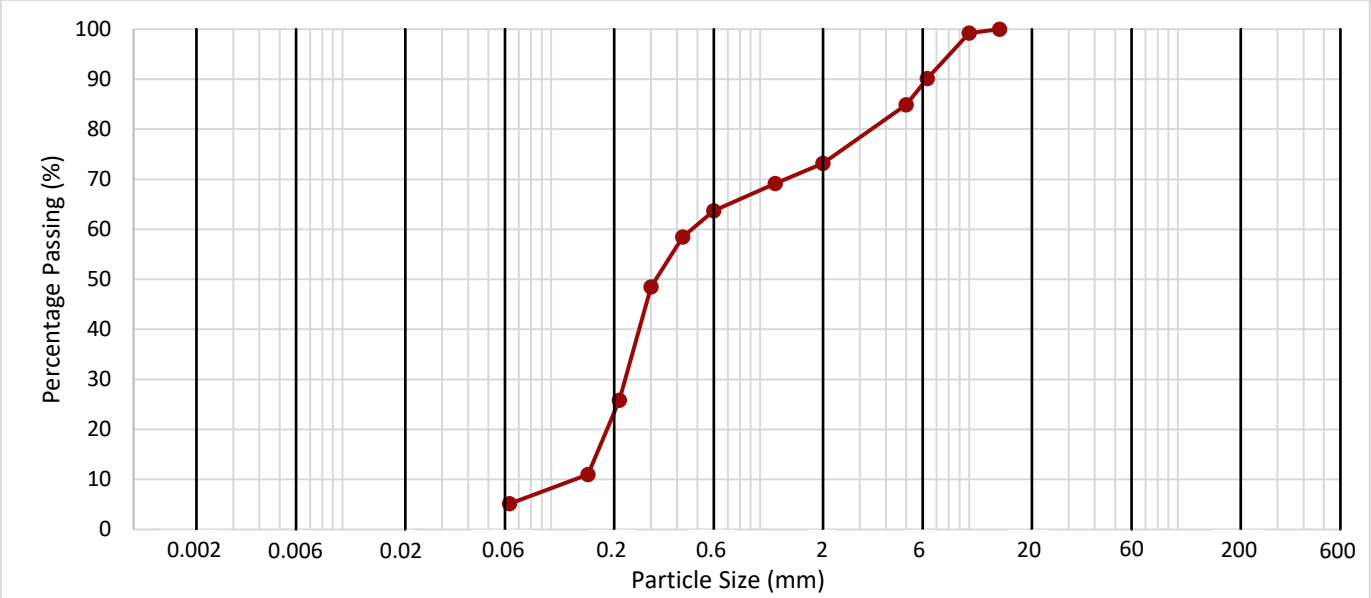
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	16.00	B	22	Yellowish brown very gravelly silty SAND. Gravel is black, brown and white subangular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	73	68
1.18	69	
0.600	64	
0.425	58	
0.300	48	
0.212	26	
0.150	11	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		27
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	99	
6.3	90	
5	85	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

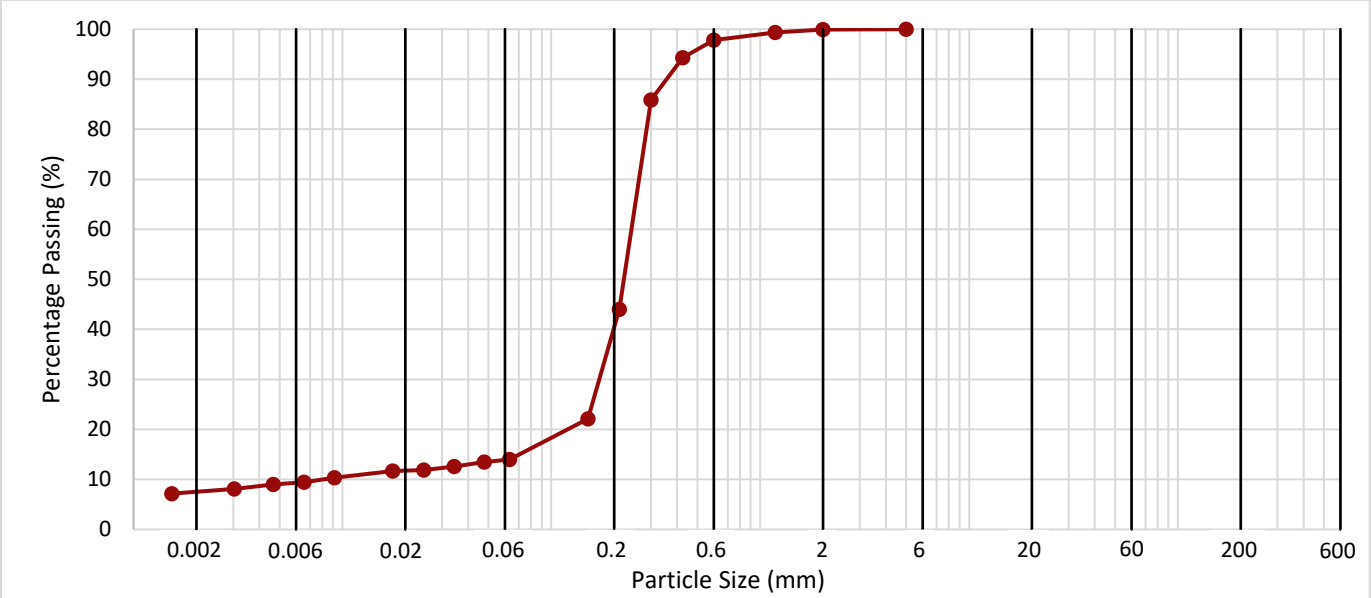
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	19.00	B	28	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0478	13	7	
	0.0343	13		
	0.0245	12		
	0.0174	12		7
	0.0092	10		
	0.0066	9		
	0.0047	9		
	0.0030	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	86
1.18	99	
0.600	98	
0.425	94	
0.300	86	
0.212	44	
0.150	22	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

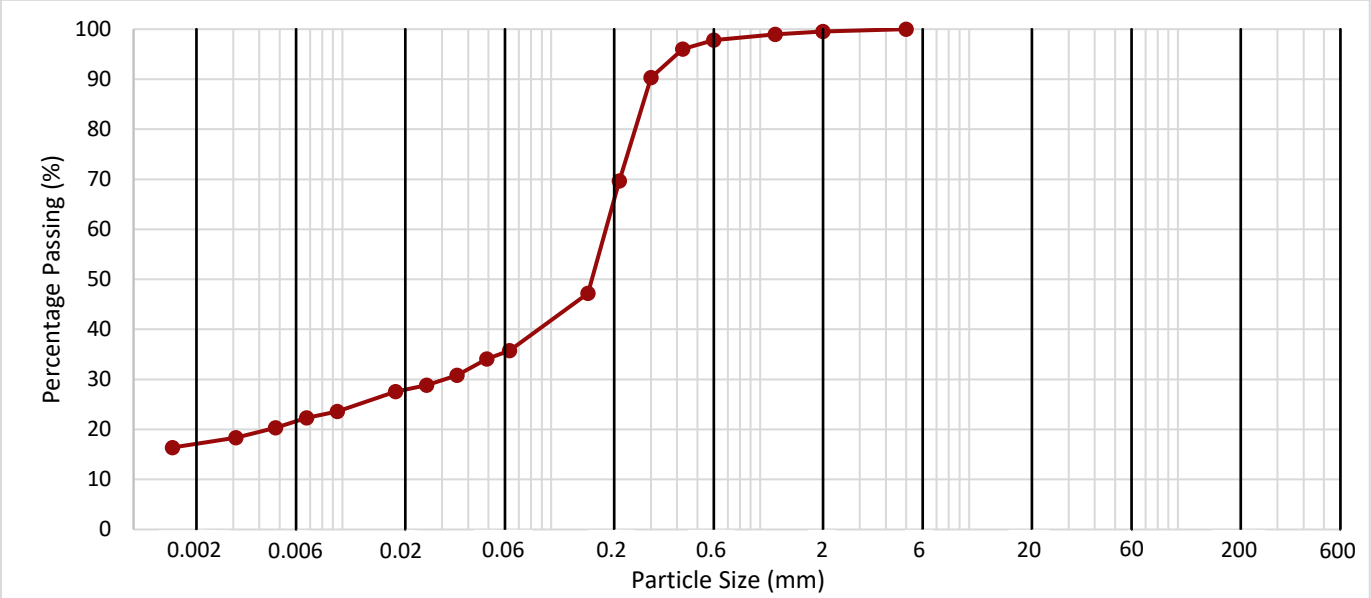
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	22.00	B	34	Very soft dark olive grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0492	34	19
	0.0354	31	
	0.0253	29	
	0.0180	28	Clay by Dry Mass (%)
	0.0095	24	
	0.0067	22	
	0.0048	20	17
	0.0031	18	
	0.0015	16	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	64
1.18	99	
0.600	98	
0.425	96	
0.300	90	
0.212	70	
0.150	47	
0.063	36	

Fines By Dry Mass (%)	
<0.063mm	36

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

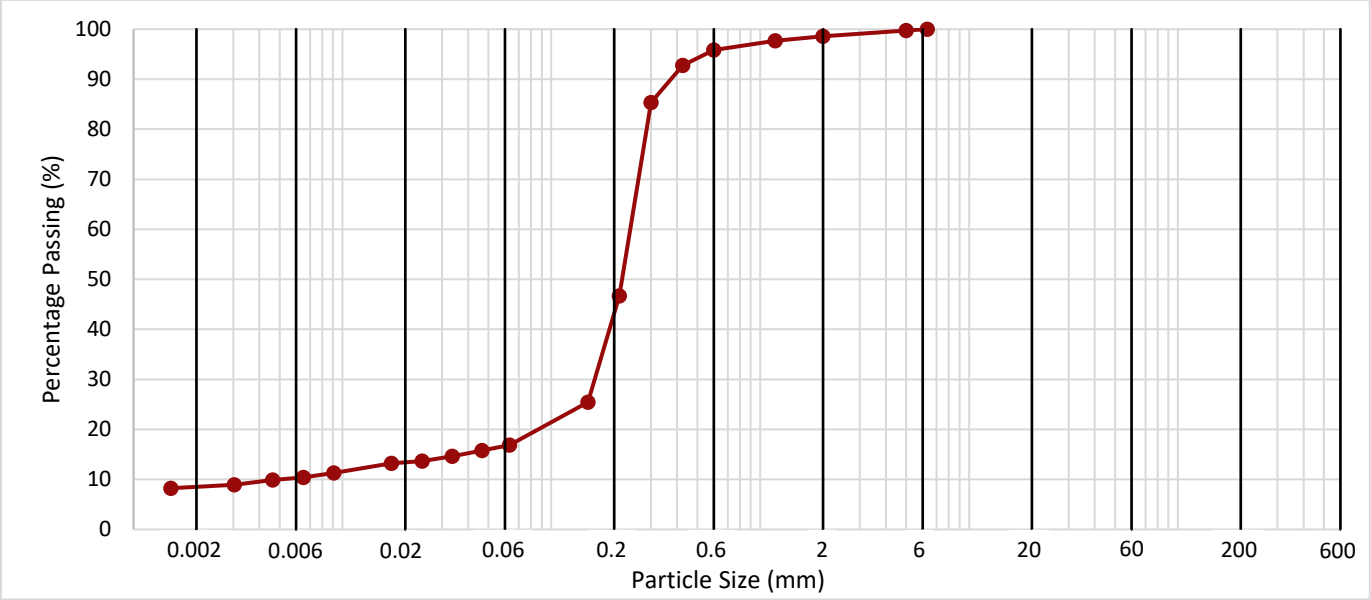
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	23.00	B	37	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0465	16	9
	0.0335	15	
	0.0241	14	
	0.0171	13	Clay by Dry Mass (%)
	0.0091	11	
	0.0065	10	
	0.0046	10	8
	0.0030	9	
	0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	82
1.18	98	
0.600	96	
0.425	93	
0.300	85	
0.212	47	
0.150	25	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

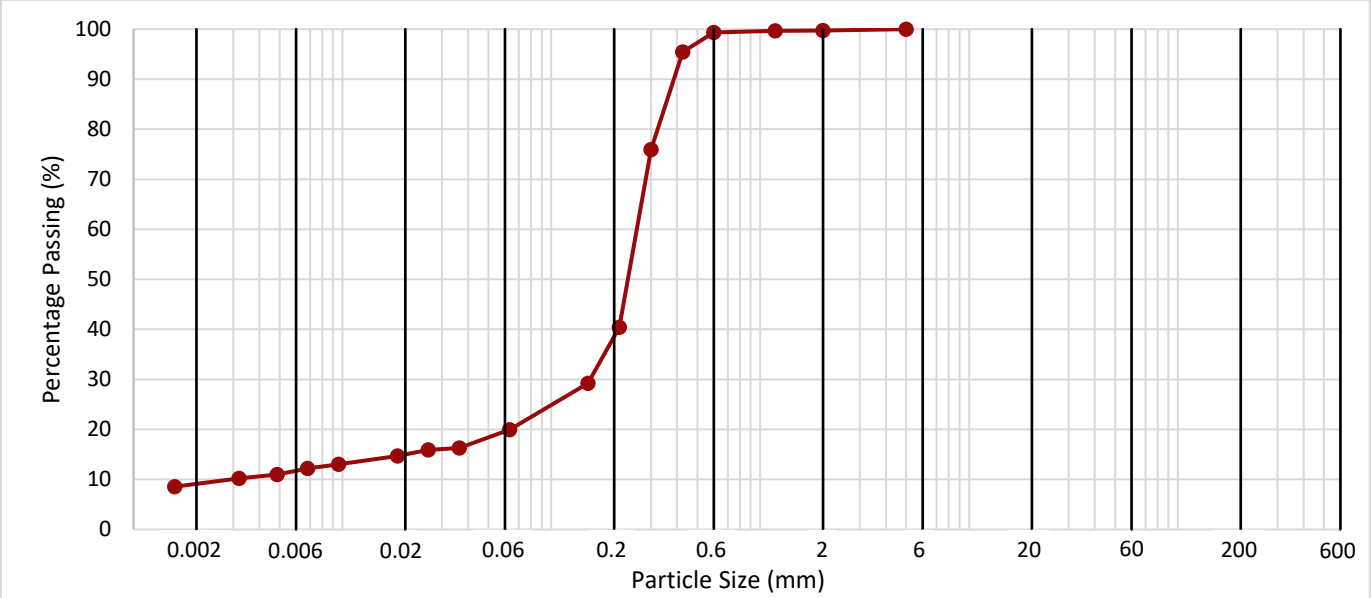
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	27.00	B	44	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0362	16	11	
0.0257	16		
0.0183	15		
0.0096	13		
0.0068	12		
0.0049	11		9
0.0032	10		
0.0016	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	80
1.18	100	
0.600	99	
0.425	95	
0.300	76	
0.212	40	
0.150	29	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

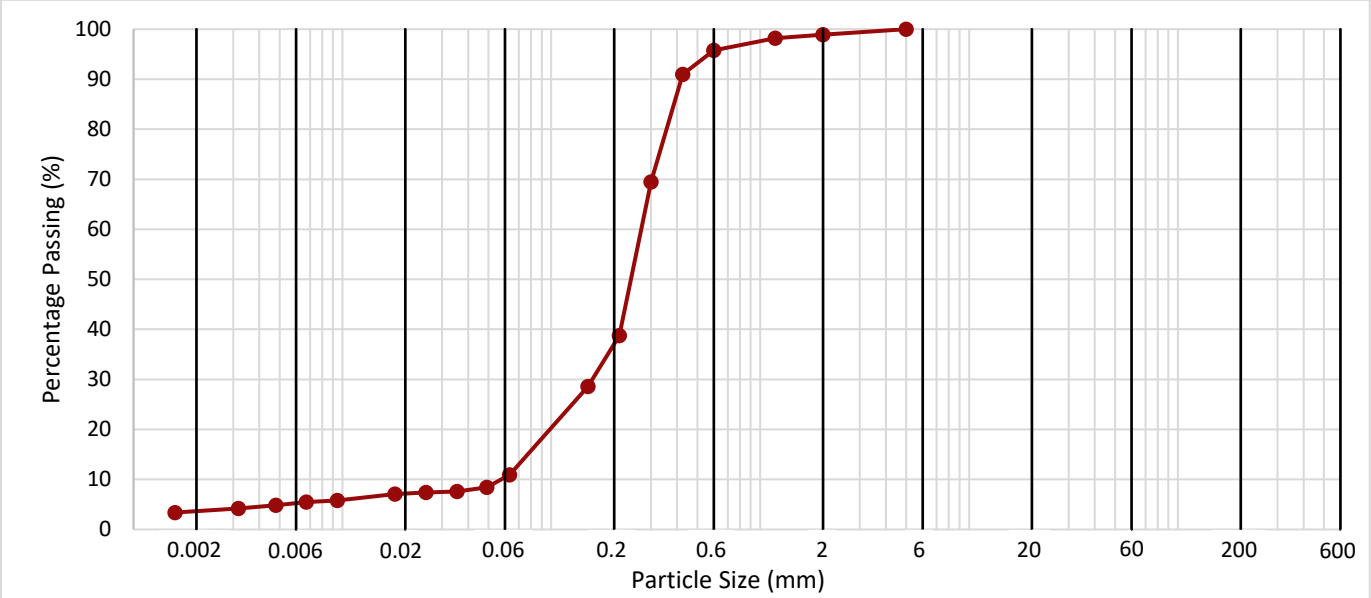
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	30.00	DS	49	Olive grey silty slightly clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0492	8	7	
	0.0354	8		
	0.0251	7		
	0.0179	7		4
	0.0095	6		
	0.0067	5		
	0.0048	5		
	0.0032	4		
	0.0016	3		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	88
1.18	98	
0.600	96	
0.425	91	
0.300	69	
0.212	39	
0.150	29	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

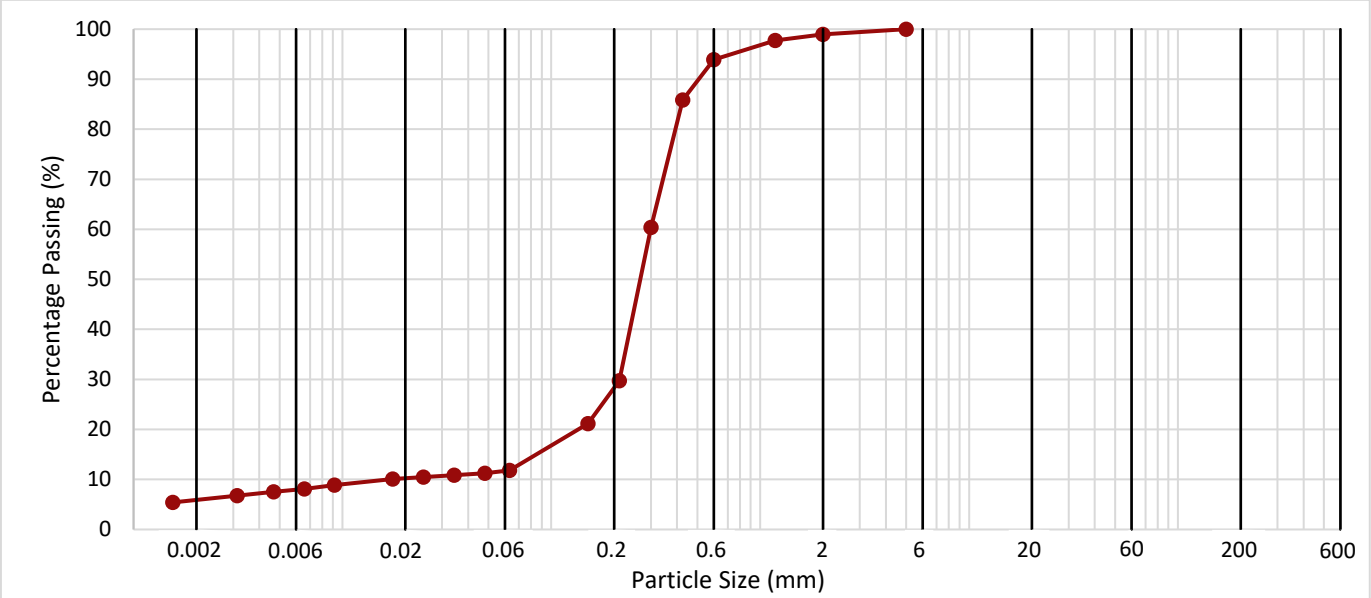
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	33.00	B	56	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0481	11	6	
	0.0343	11		
	0.0244	10		
	0.0174	10		6
	0.0092	9		
	0.0066	8		
	0.0047	8		
	0.0031	7		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	87
1.18	98	
0.600	94	
0.425	86	
0.300	60	
0.212	30	
0.150	21	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

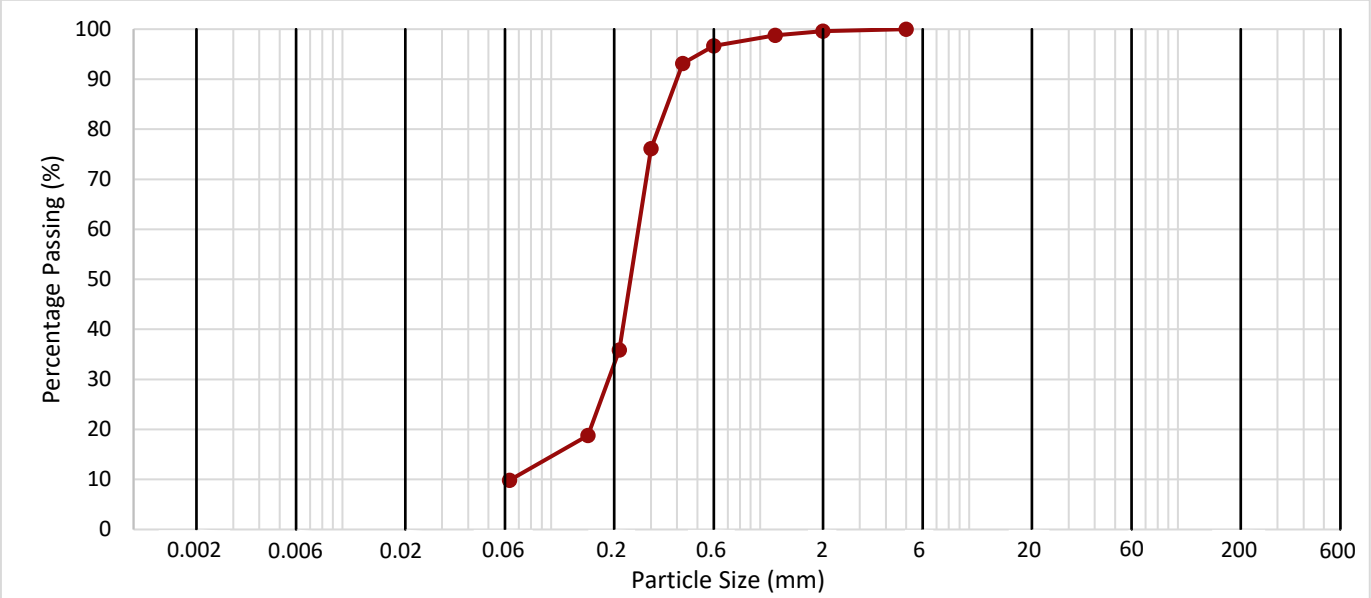
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	38.00	B	66	Dark olive grey silty slightly clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	90
1.18	99	
0.600	97	
0.425	93	
0.300	76	
0.212	36	
0.150	19	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC18	18.00	UT	34	21.7	2.20	1.81	400	127	64			Firm (Medium strength) slightly fissured CLAY with occasional silty/fine sandy pockets.
BHC18	18.00	UT	34	17.5	2.19	1.86	598	814	407			Dark grey very sandy CLAY/very clayey SAND with occasional fine sand/silt pockets.
BHC18	23.00	UT	45	34.0	1.99	1.49	500	183	92			Stiff (High strength) slightly fissured very dark grey CLAY with occasional silty pockets.
BHC18	23.00	UT	45	33.3	2.01	1.51	749	138	69			Stiff (Medium strength) slightly fissured very dark grey CLAY with occasional silty pockets.
BHC18	24.00	UT	48	39.0	1.90	1.37	500	116	58			Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.
BHC18	24.00	UT	48	37.7	1.91	1.39	750	137	69			Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.
BHC19	23.00	UT	35	29.2	1.92	1.49	499	123	62			Firm (Medium strength) very dark grey CLAY with occasional fine sand pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC19	23.00	UT	35	31.6	1.89	1.44	749	114	57			Firm (Medium strength) very dark grey CLAY with occasional fine sand pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

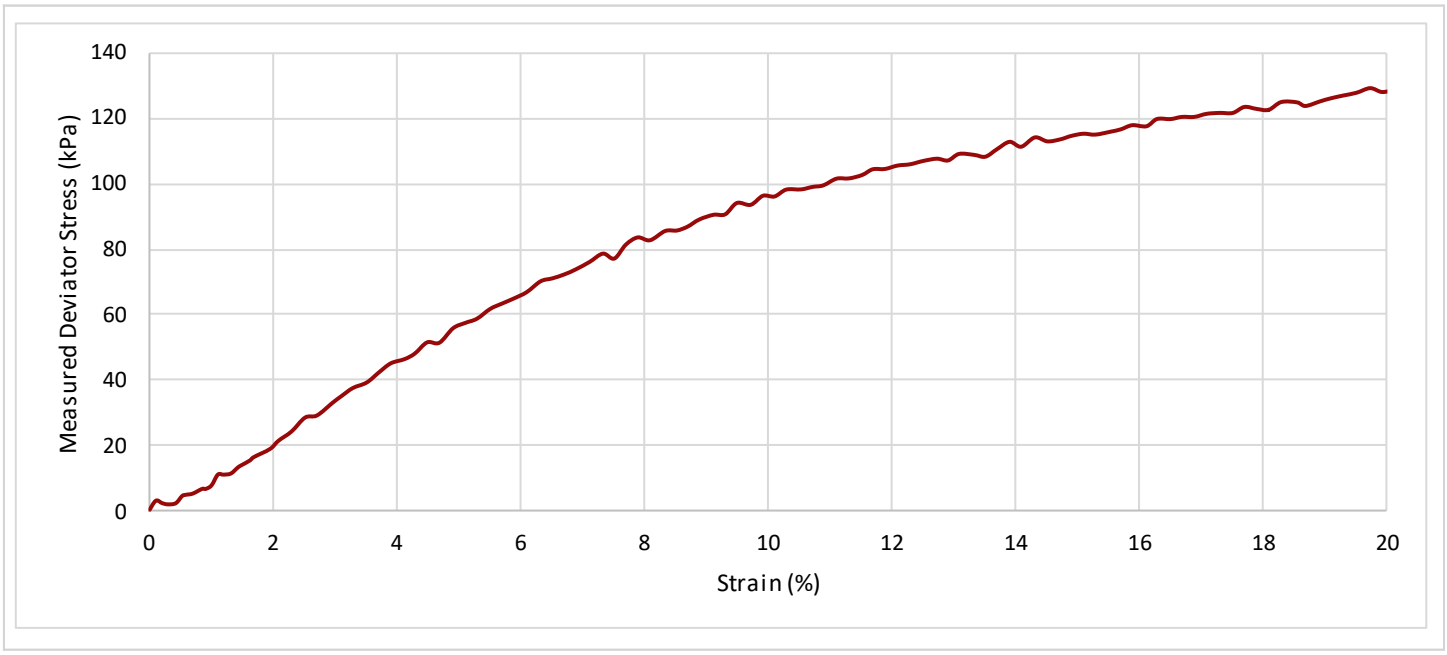
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	18.00	UT	34	Firm (Medium strength) slightly fissured CLAY with occasional silty/fine sandy pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 18.04	155.1	101.3	2744	21.7	2.20	1.81

TEST INFORMATION — Rate of Strain 1.9 % per Min — Rubber Membrane Thickness 0.6 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	400	19.7	2.3	\	127	64		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

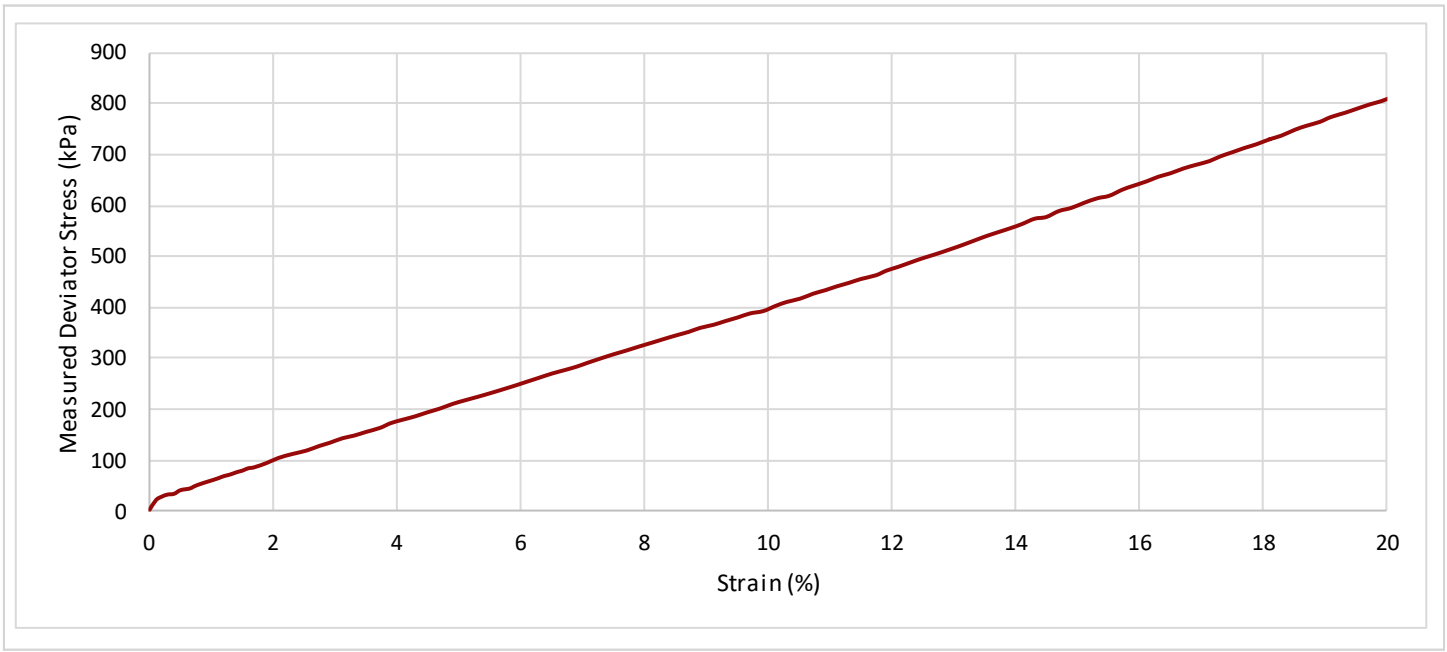
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	18.00	UT	34	Dark grey very sandy CLAY/very clayey SAND with occasional fine sand/silt pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 18.20	168.5	100.2	2916	17.5	2.19	1.86

TEST INFORMATION — Rate of Strain 1.9 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	20.1	1.2	\	814	407		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

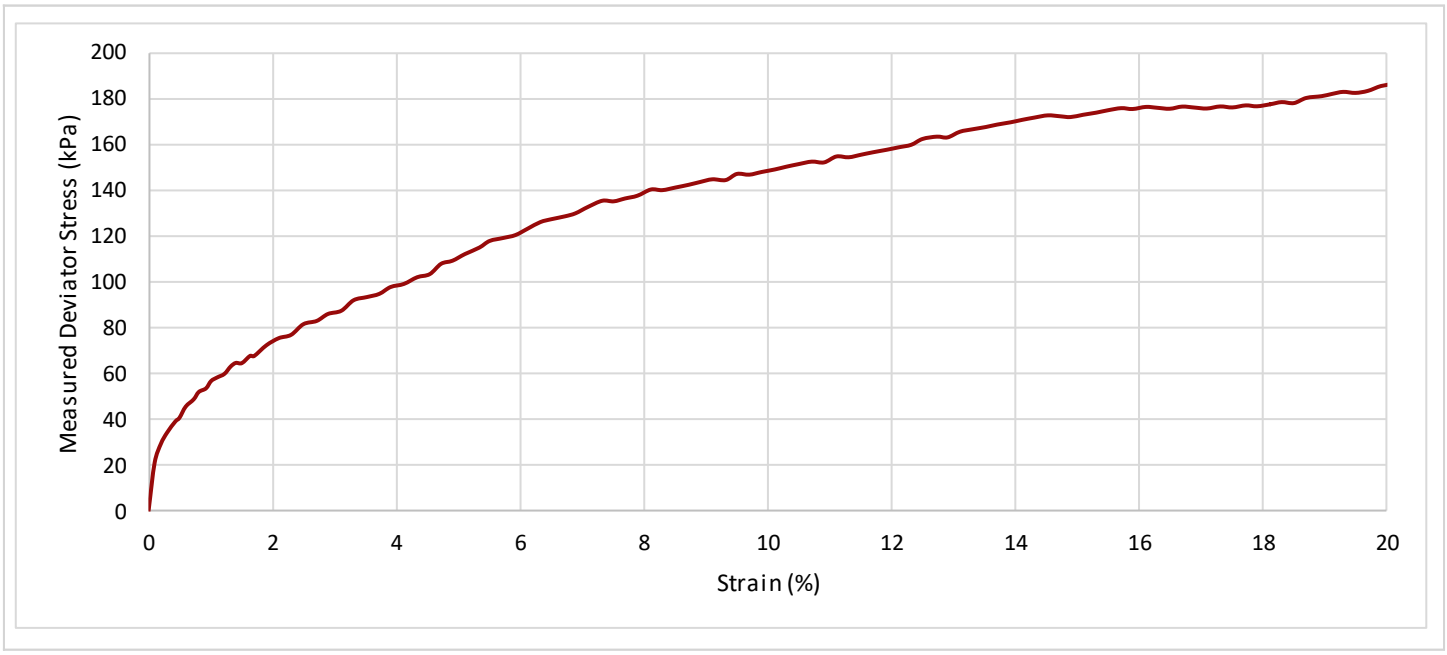
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	23.00	UT	45	Stiff (High strength) slightly fissured very dark grey CLAY with occasional silty pockets.	Sample recovery short - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.05	76.7	36.8	163	34.0	1.99	1.49

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	500	20.1	3.1	\	183	92		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

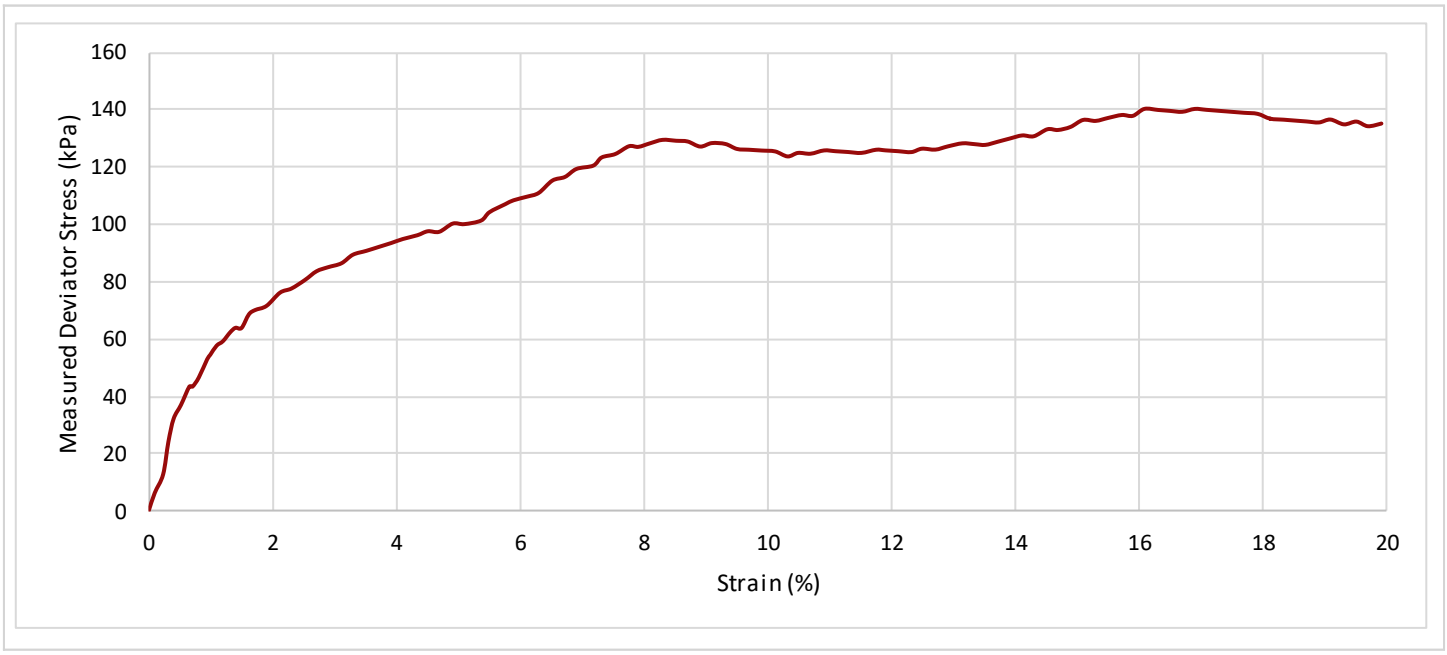
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	23.00	UT	45	Stiff (Medium strength) slightly fissured very dark grey CLAY with occasional silty pockets.	Sample recovery short - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.05	75.5	37.0	163	33.3	2.01	1.51

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	749	16.1	2.6	\	138	69		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

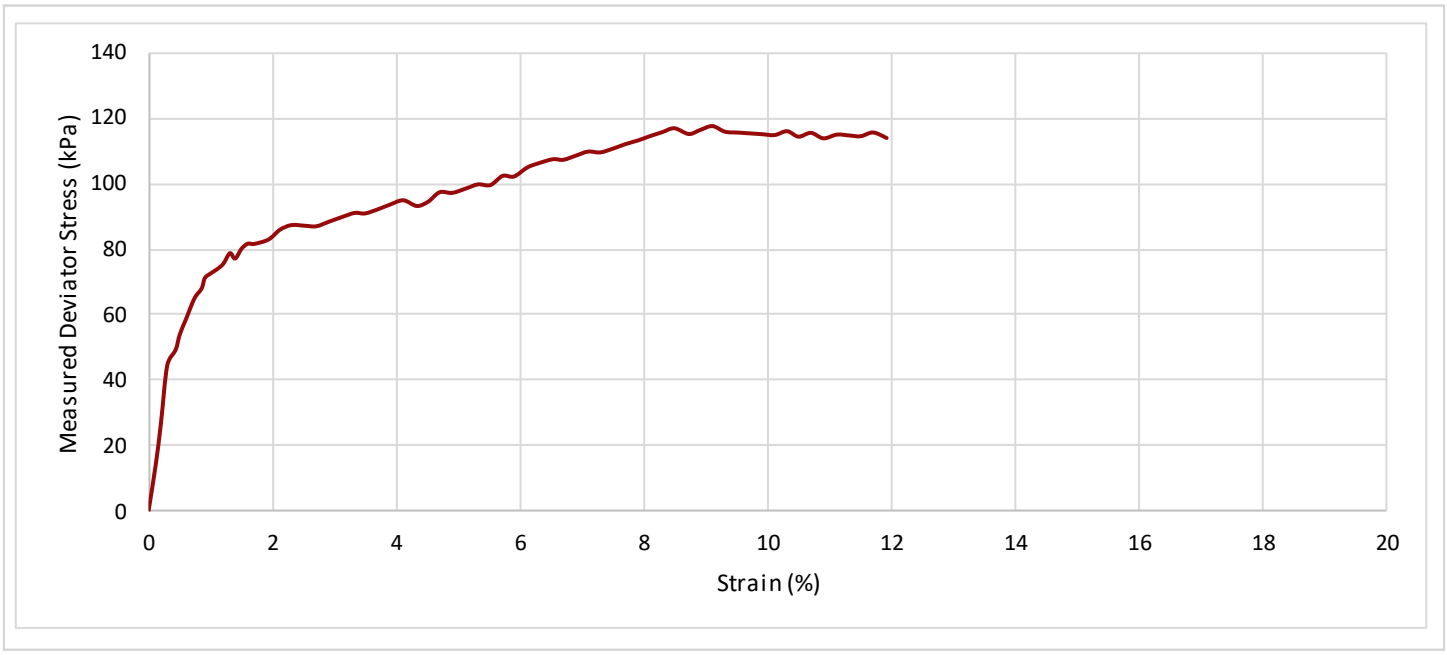
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	24.00	UT	48	Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.	Sample recovery short - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.00	76.4	37.3	159	39.0	1.90	1.37

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	500	9.1	1.7	\	116	58		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

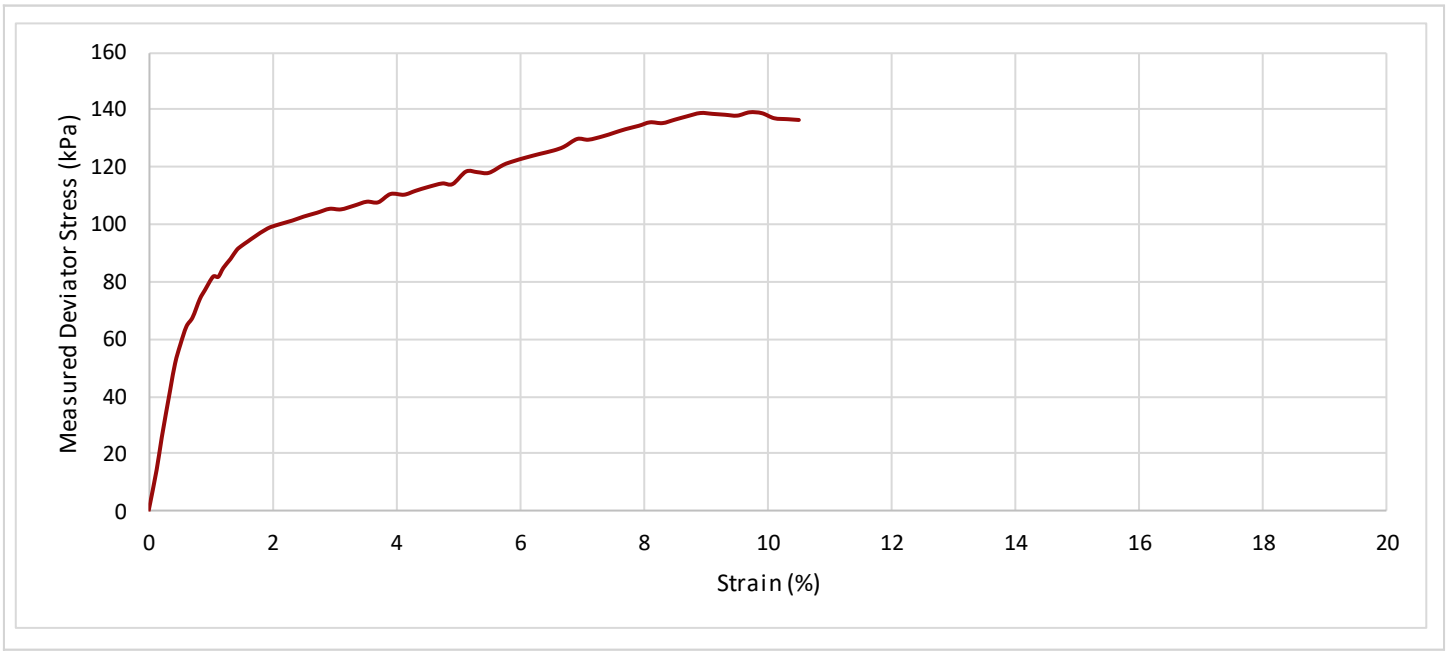
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	24.00	UT	48	Firm (Medium strength) slightly fissured very dark grey CLAY with rare silty pockets.	Sample recovery short - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.00	76.6	37.1	158	37.7	1.91	1.39

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	750	9.7	1.8	\	137	69		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

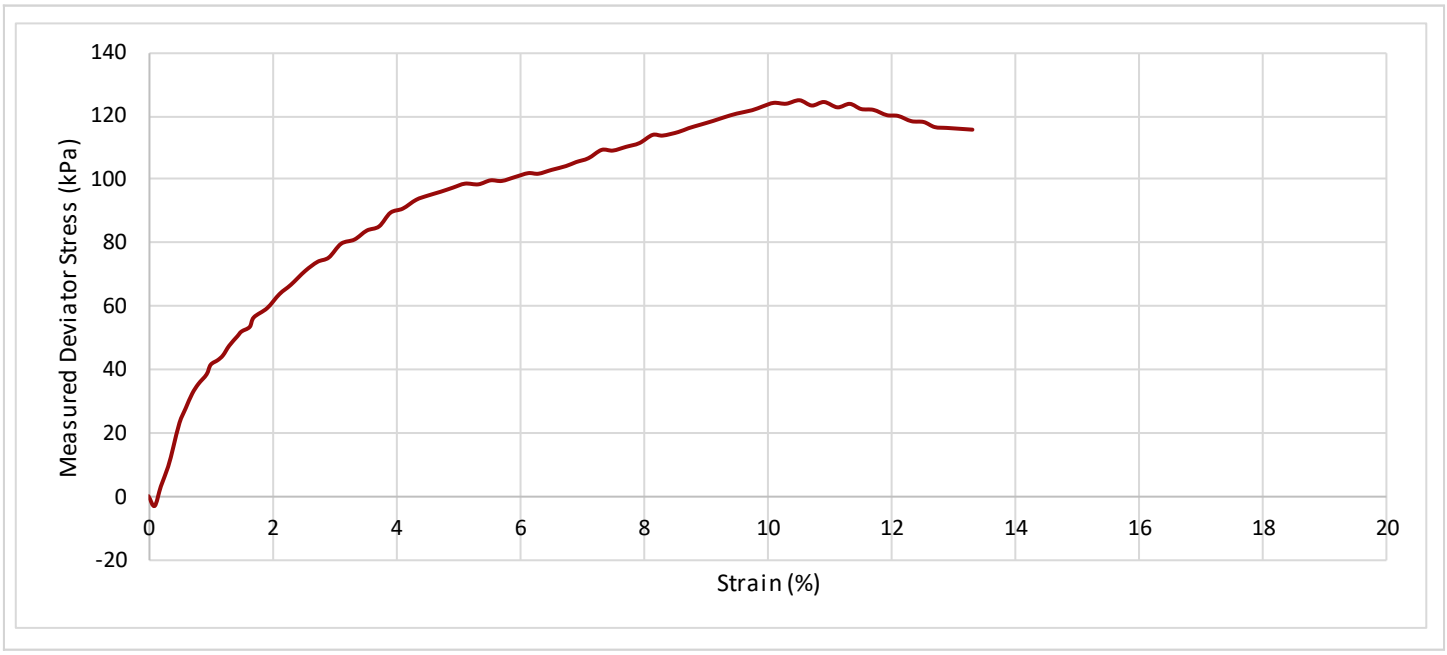
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC19	23.00	UT	35	Firm (Medium strength) very dark grey CLAY with occasional fine sand pockets.	U100 sample changes from sand to clay. U38 specimens prepared from clay portion at bottom.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.40	77.1	37.9	167	29.2	1.92	1.49

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	499	10.5	1.8	\	123	62		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

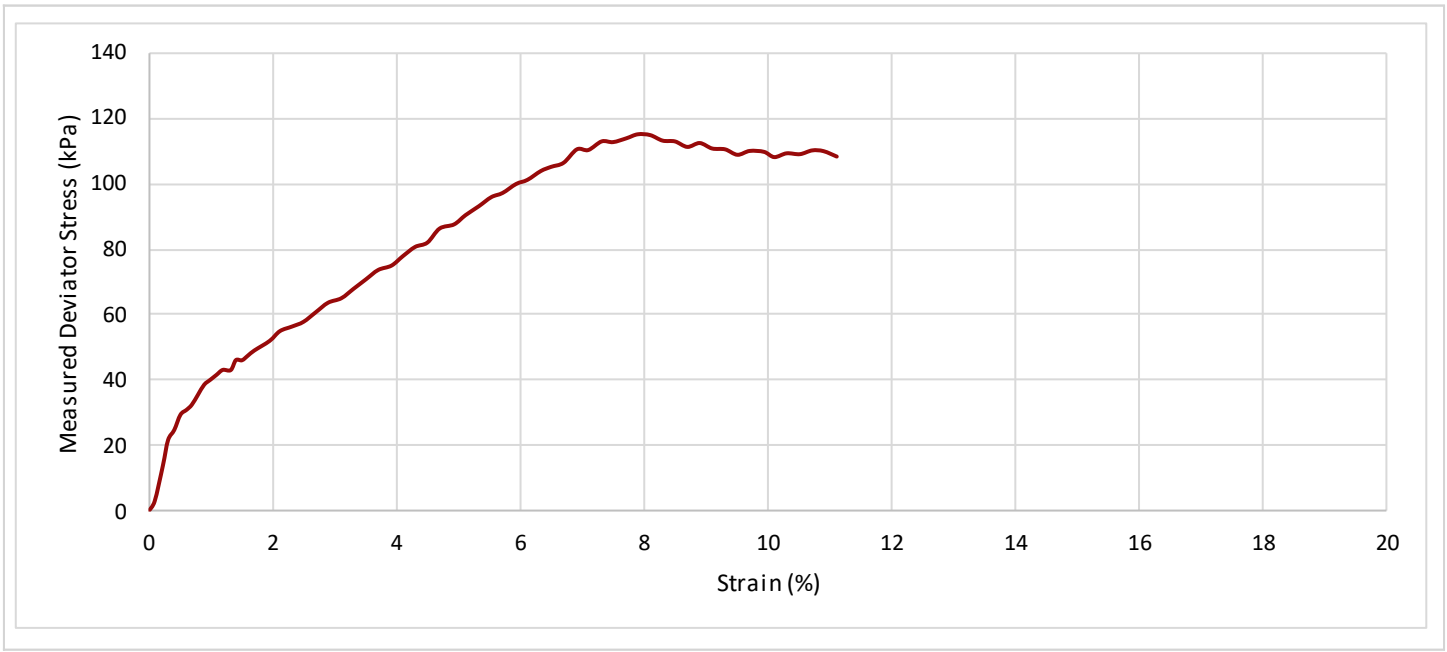
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC19	23.00	UT	35	Firm (Medium strength) very dark grey CLAY with occasional fine sand pockets.	U100 sample changes from sand to clay. U38 specimens prepared from clay portion at bottom.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.40	76.8	37.8	162	31.6	1.89	1.44

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	749	7.9	1.5	\	114	57		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

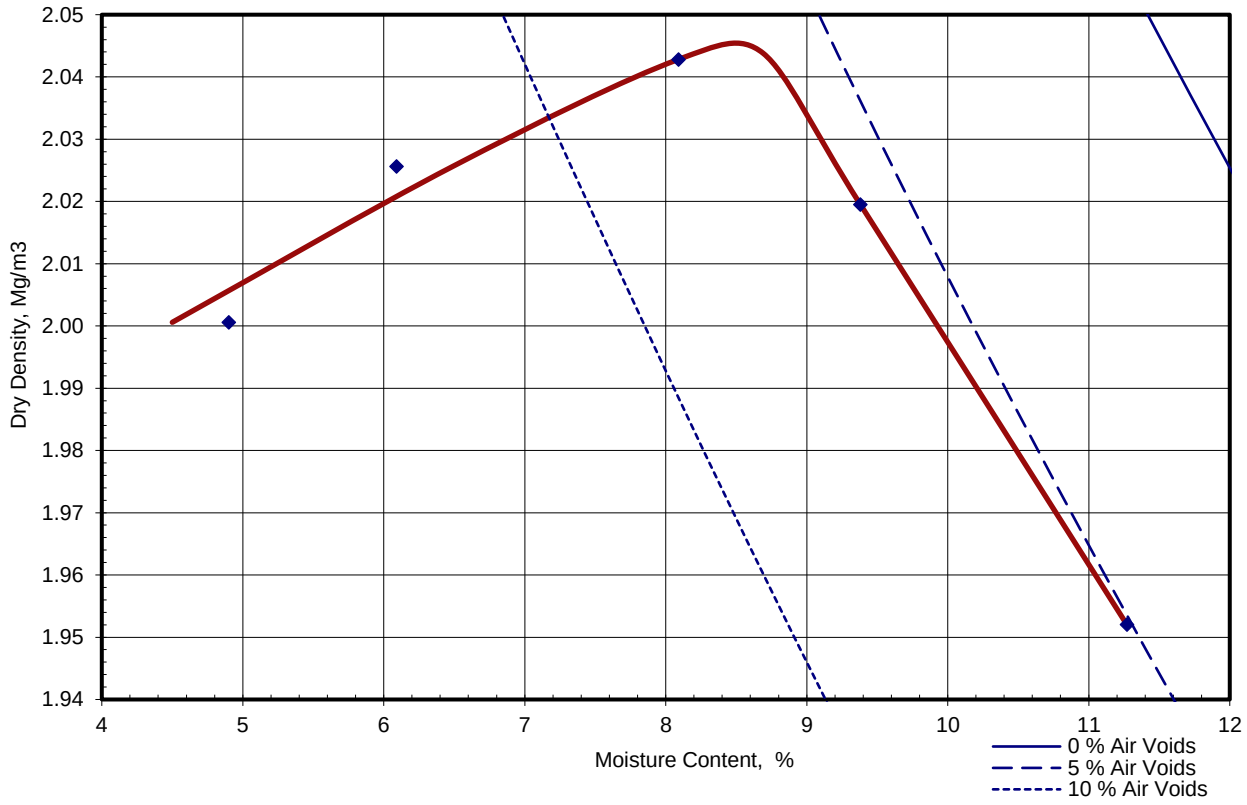
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC18	0.90	B	1	8.1	Brown and dark brown very gravelly silty SAND. Gravel is brown, black and white angular to subrounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	4.8 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density	2.68
Mould Type	1 Litre	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**2.04 Mg/m³**	**Optimum Water Content**	**8.7 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

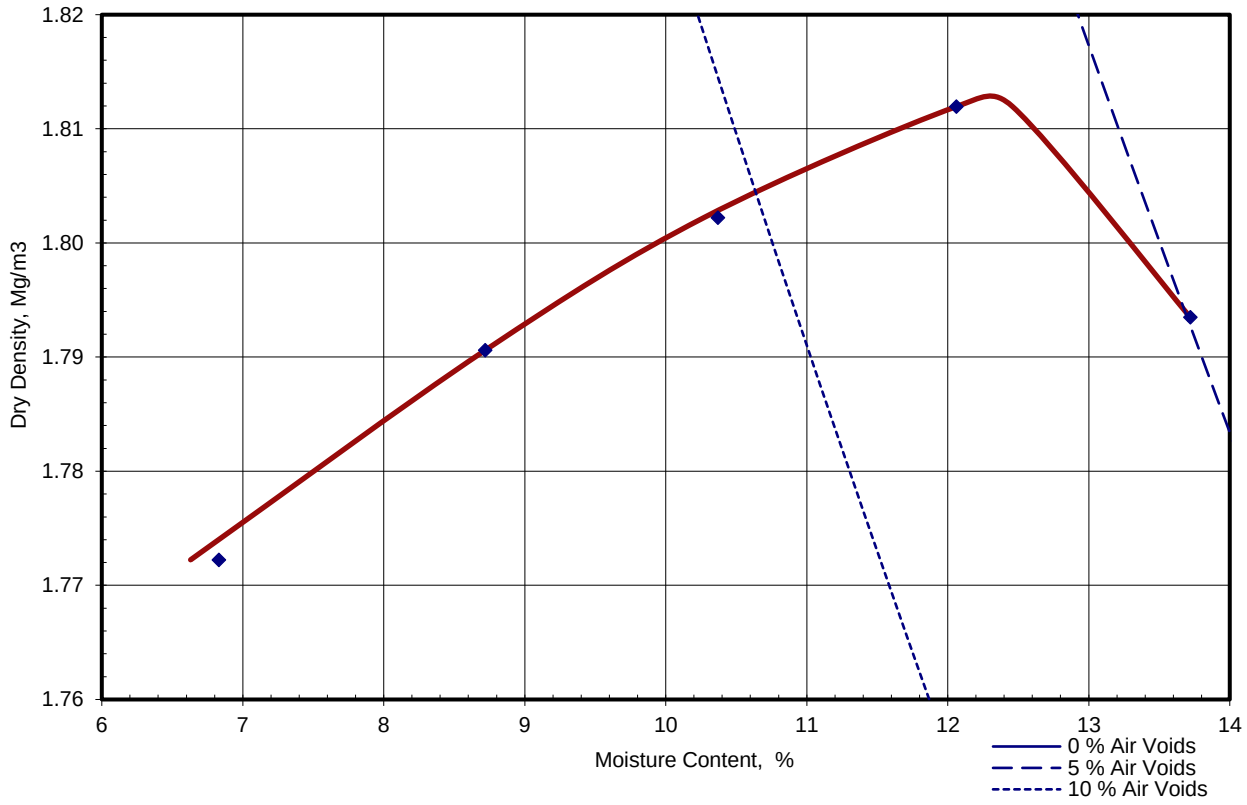
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC19	0.90	B	3	6.8	Light greyish brown slightly gravelly SAND. Gravel is brown, black and white angular and subangular flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	0.0 %	Single or Separate Samples	Single
Grading Zone	1	Particle Density	2.55
Mould Type	1 Litre	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.81 Mg/m³**	**Optimum Water Content**	**12 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC18	0.90	B	1	Brown and dark brown very gravelly silty SAND. Gravel is brown, black and white angular to subrounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		4.8	%
Intitial Specimen Details:	Bulk Density	1.99	Mg/m³
	Dry Density	1.84	Mg/m³

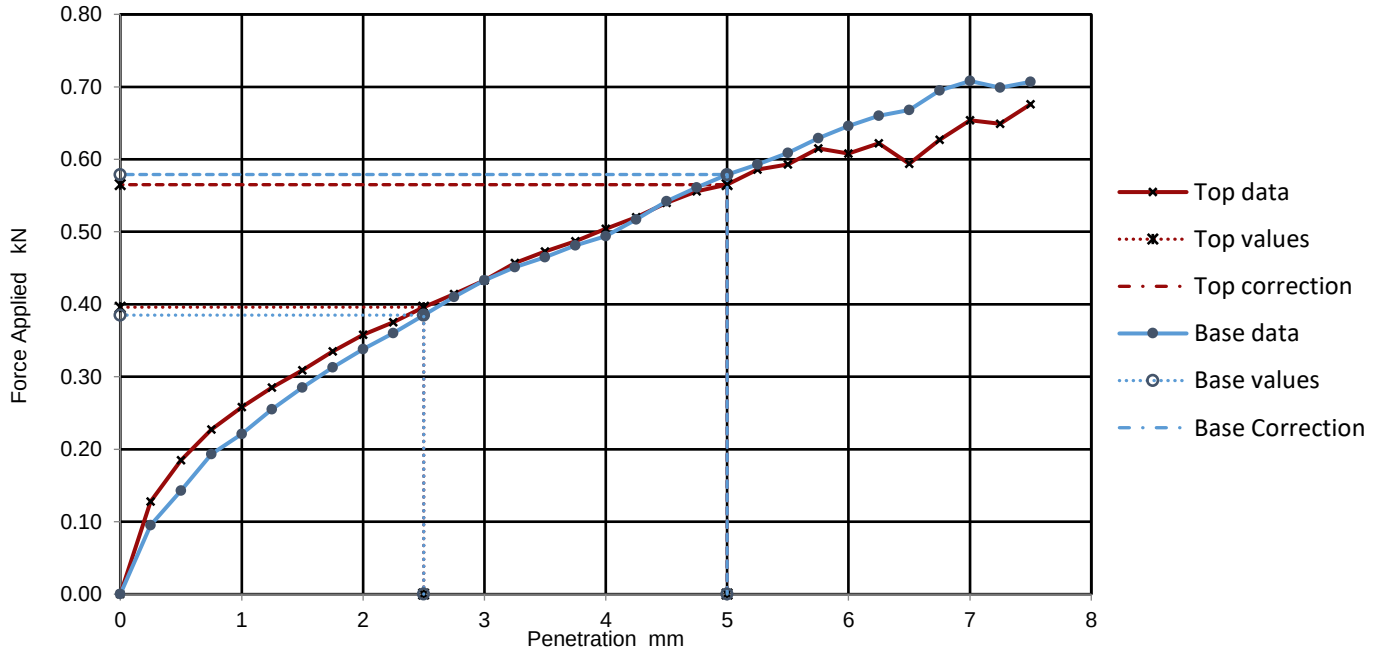
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	4	mins
Amount of Swell Recorded	-0.022	mm
Initial Water Content	8.2	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	3.0	2.8	3.0	3.0	12.3
BASE	No	2.9	2.9	2.9		12.1

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC19	0.90	B	3	Light greyish brown slightly gravelly SAND. Gravel is brown, black and white angular and subangular flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	6	mins
Amount of Swell Recorded	-0.028	mm
Initial Water Content	12.2	%

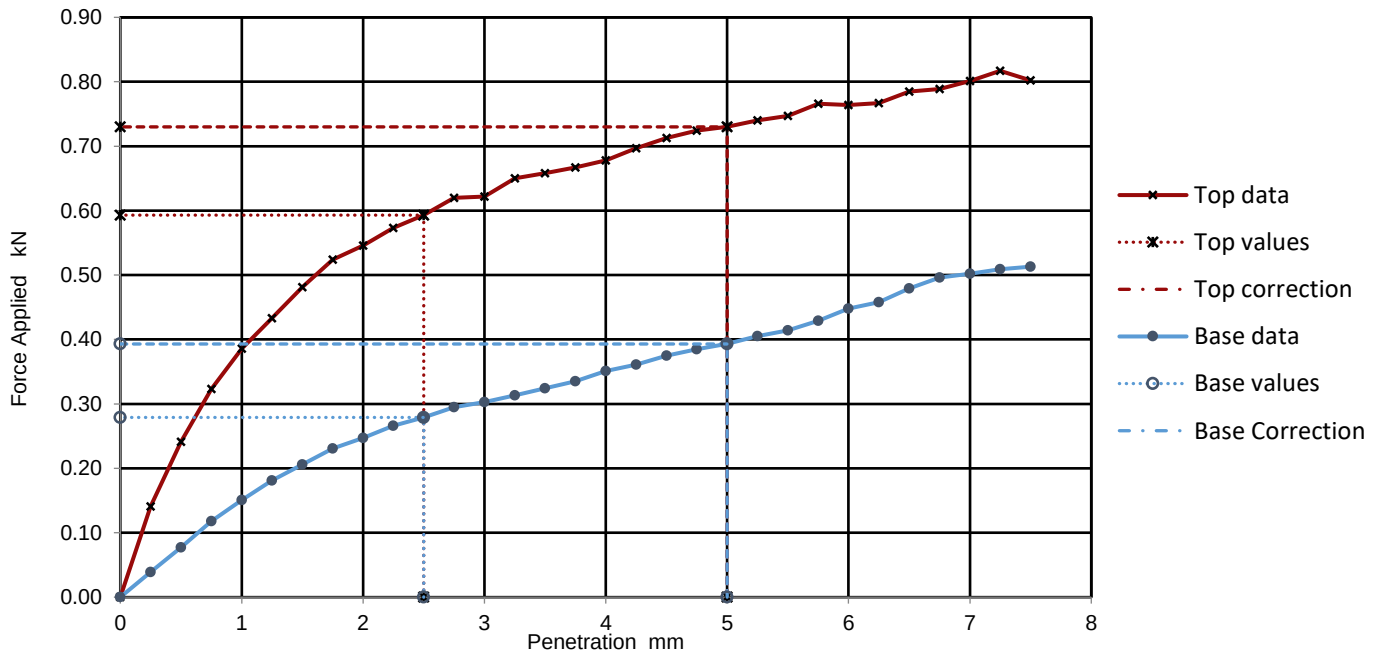
Material Retained on 20mm Sieve Removed			%
Intitial Specimen Details:	Bulk Density	1.83	Mg/m³
	Dry Density	1.63	Mg/m³

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	4.5	3.7	4.5		17.2
BASE	No	2.1	2.0	2.1		16.8

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

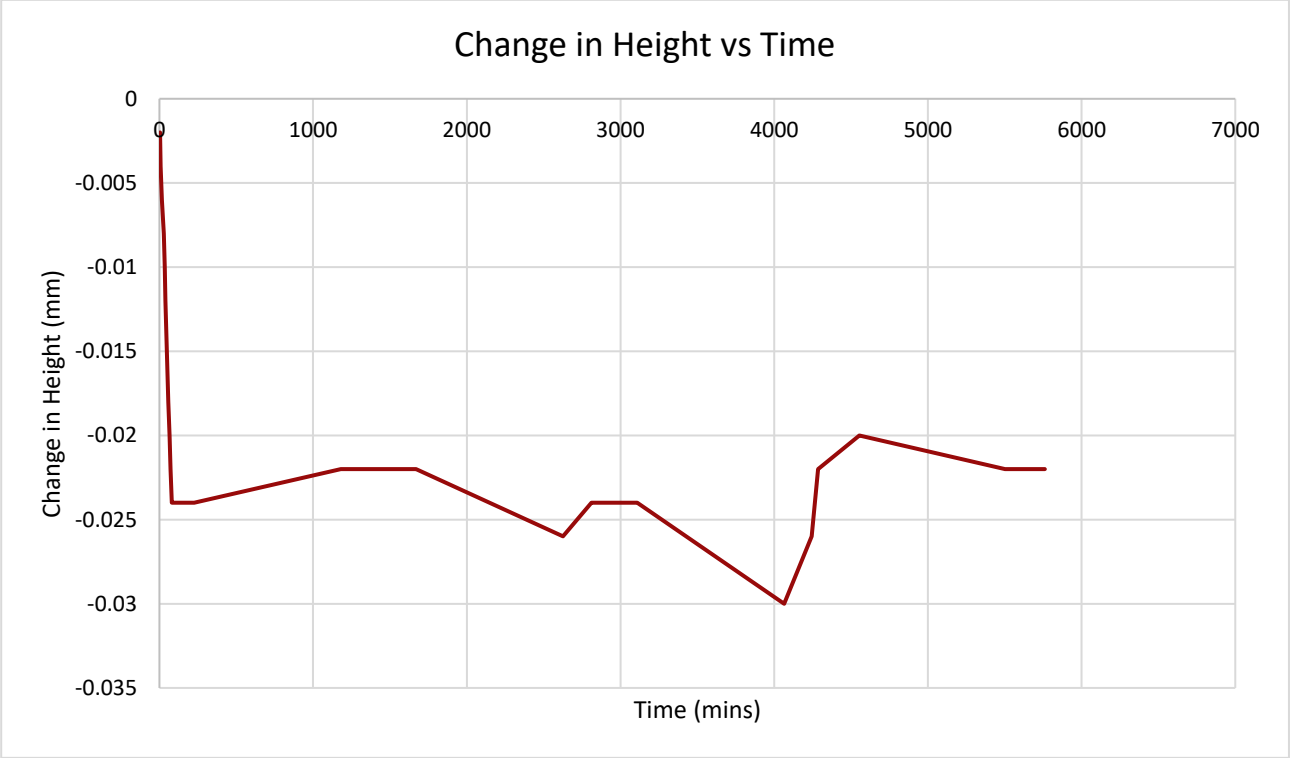
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC18	0.9	B	1	Brown and dark brown very gravelly silty SAND. Gravel is brown, black and white angular to subrounded flint.	

After Soaking

Water Contents	Top (%)	12.3	Bulk Density	1.93	Dry Density	1.84
	Bottom (%)	12.1				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**-0.022**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 23/05/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-8**

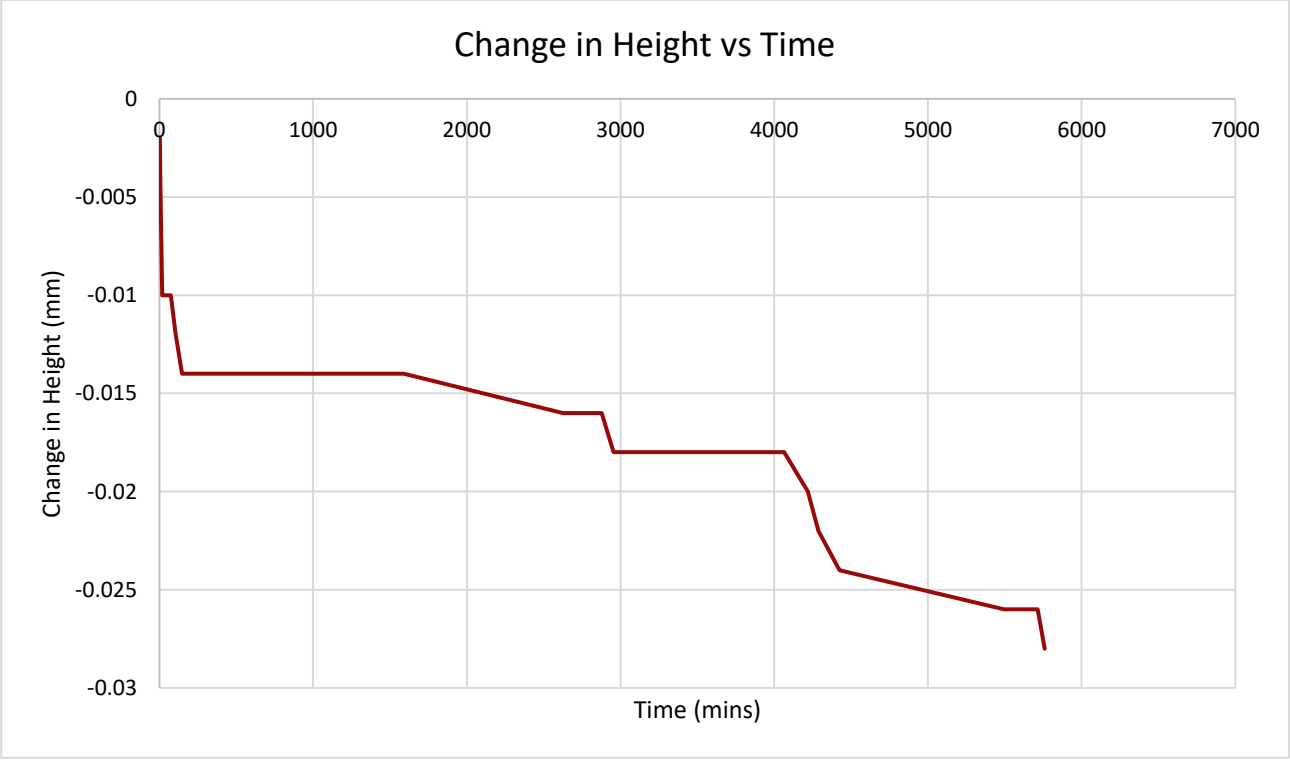
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC19	0.9	B	3	Light greyish brown slightly gravelly SAND. Gravel is brown, black and white angular and subangular flint.	

After Soaking

Water Contents	Top (%)	17.2	Bulk Density	1.93	Dry Density	1.63
	Bottom (%)	16.8				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**-0.028**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-11943-1
Initial Date of Issue:	08-May-2018
Client	Soil Property Testing
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG
Contact(s):	Jon Garner
Project	S31644-8 Lake Lothing

Quotation No.:	Q17-10468	**Date Received:**	01-May-2018
Order No.:	S31644-8	**Date Instructed:**	01-May-2018
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	08-May-2018
Date Approved:	08-May-2018		

Approved By:



Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-8 Lake Lothing

Client: Soil Property Testing		**Chemtest Job No.:**			18-11943	18-11943	18-11943	18-11943	18-11943	18-11943	18-11943	18-11943
Quotation No.: Q17-10468		**Chemtest Sample ID.:**			615751	615752	615753	615754	615755	615756	615757	615758
Order No.: S31644-8		Client Sample Ref.:			BHC18	BHC18	BHC18	BHC18	BHC19	BHC19	BHC19	BHC19
		Client Sample ID.:			B1	B3	B33	B51	B2	B12	B34	B66
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.90	1.70	17.80	25.70	0.50	8.00	22.00	38.00
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	0.10	8.3	20	24	9.7	17	29	16
pH (2.5:1)	N	2010		N/A		[A] 8.4	[A] 5.2	[A] 7.0		[A] 9.1	[A] 6.6	[A] 8.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	0.57	1.1		< 0.010	0.86	0.25
Total Sulphur	U	2175	%	0.010		[A] < 0.010	[A] 0.44	[A] 2.1		[A] < 0.010	[A] 1.1	[A] 0.12
Chloride (Water Soluble)	U	2220	g/l	0.010			[A] < 0.010					
Nitrate (Water Soluble)	N	2220	g/l	0.010			< 0.010					
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] < 0.010	[A] 0.18	[A] 0.44		[A] < 0.010	[A] 0.21	[A] 0.061
Organic Matter BS1377	N	2930	%	0.10	[A] 0.80				[A] 2.0			

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
615751	BHC18	B1		A	Plastic Bag
615752	BHC18	B3		A	Plastic Bag
615753	BHC18	B33		A	Plastic Bag
615754	BHC18	B51		A	Plastic Bag
615755	BHC19	B2		A	Plastic Bag
615756	BHC19	B12		A	Plastic Bag
615757	BHC19	B34		A	Plastic Bag
615758	BHC19	B66		A	Plastic Bag

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

[redacted]

Date Received: 17/04/2018 **Samples Tested Between:** 17/04/2018 **and** 05/06/2018

Remarks:

For the attention of Mr J Glenwright
Your Reference No: 2543,GI

Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-9**	**Target Date**	31/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Loss On Ignition	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR inc. compaction	Soaked CBR Swelling Measure	Compaction 2.5kg	Organic Content (Dichromate)	Liquid/Plastic Limits	Wet Sieve Preparation	Brownfield Site-Pyrite presen	Triaxial Test Single Stage	Compaction 4.5kg	Consolidation	Sample Remarks
BHC08	B	1	0.10	1															
BHC08	B	2	0.60		1	1			1	1	1	1							
BHC08	B	4	1.40		1	1													
BHC08	B	6	2.40		1	1													
BHC08	B	8	3.60		1							1	1	1					
BHC08	B	10	4.80		1			1					1	1					
BHC08	B	16	7.40		1								1	1					
BHC08	B	22	10.40		1								1	1					
BHC08	B	28	13.40		1								1	1	1				
BHC08	B	34	16.40		1								1	1					
BHC08	B	40	19.40		1								1	1					
BHC08	UT	47	23.00		1								1			2			
BHC08	B	48	23.60					1							1				
BHC08	UT	51	25.00		1								1			2			
BHC08	B	56	27.40		1			1							1				
BHC08	B	62	30.40					1											
BHC08	B	68	33.40		1			1											
BHC08	B	74	36.40					1											
BHC08	B	80	39.40					1											
BHC23	B	2	0.70		1		1		1	1	1								
BHC23	D	3	1.20												1				
BHC23	B	6	2.00		1			1											
BHC23	B	12	5.00		1			1											
BHC23	B	15	7.00		1	1													
BHC23	B	22	10.00		1			1											
BHC23	DS	27	12.80		1								1						
BHC23	B	31	14.00		1			1											
BHC24	B	1	0.60		1		1		1	1	1								
BHC24	D	2	1.20									1							
BHC24	B	4	1.50		1		1									1			
BHC24	D	5	2.00												1				
BHC24	B	6	2.10		1		1												
BHC24	B	12	4.50		1			1											
BHC24	B	18	7.50		1	1													
BHC24	B	24	10.50		1	1													

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-9**	**Target Date**	31/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Loss On Ignition	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR inc. compaction	Soaked CBR Swelling Measure	Compaction 2.5kg	Organic Content (Dichromate)	Liquid/Plastic Limits	Wet Sieve Preparation	Brownfield Site-Pyrite presen	Triaxial Test Single Stage	Compaction 4.5kg	Consolidation	Sample Remarks
BHC24	B	31	13.50		1	1								1					
BHC26	B	2	0.70		1	1			1	1	1			1					
BHC26	B	6	2.00		1	1													
BHC26	B	11	6.00		1	1													
BHC26	B	15	10.00		1	1													
BHC26	B	20	14.00		1	1													
BHC32	B	3	1.10		1		1							1					
BHC32	B	6	1.70		1	1													
BHC32	D	8	3.50		1							1	1	1					
BHC32	UT	10	4.00		1								1	1		1			
BHC32	D	11	4.50		1								1	1	1				
BHC32	B	13	4.50					1											
BHC32	UT	14	5.00		1								1			2			
BHC32	D	14	5.34		1								1	1					
BHC32	B	17	6.00					1											
BHC32	B	20	7.00		1			1											
BHC32	UT	23	9.00		1								1			1		1	
BHC32	B	25	9.00					1											
BHC32	B	28	10.10					1											
BHC32	D	29	11.00		1								1	1					
BHC32	B	36	14.00		1			1											
BHC32	UT	41	17.00		1								1			2			
BHC32	B	43	18.00					1											
BHC32	UT	44	19.00		1								1			2			
BHC32	B	46	19.00					1											
BHC32	B	49	21.00		1			1											
BHC32	UT	52	23.00		1								1			2			
BHC32	B	55	24.00					1											
BHC32	B	60	25.00		1			1											
BHC32	UT	56	25.00		1								1	1					
BHC32	D	57	25.70											1					
BHC32	B	66	28.00		1			1											
BHC32	B	72	31.00					1											
BHC32	B	78	34.00					1											
BHC32	B	81	36.00					1											

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-9**	**Target Date**	31/05/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Loss On Ignition	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR inc. compaction	Soaked CBR Swelling Measure	Compaction 2.5kg	Organic Content (Dichromate)	Liquid/Plastic Limits	Wet Sieve Preparation	Brownfield Site-Pyrite presen	Triaxial Test Single Stage	Compaction 4.5kg	Consolidation	Sample Remarks
BHC32	B	87	39.00					1												
Totals				**1**	**51**	**13**	**5**	**28**	**4**	**4**	**4**	**4**	**21**	**13**	**10**	**14**	**1**	**2**					**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC08	0.60 - 1.10	B	2	**13.0**	Dark greyish brown very gravelly silty SAND, with occasional black organic pockets, and brick, cinder and metal fragments. Gravel is brown, white and black angular to subrounded flint.	
BHC08	1.40 - 1.90	B	4	**9.0**	Brown very gravelly slightly silty SAND with occasional firm brown sandy clay lumps. Gravel is black, brown and white angular to rounded flint.	
BHC08	2.40 - 2.90	B	6	**23.9**	Brown gravelly slightly silty clayey SAND. Gravel is black, brown and white angular to subangular flint.	
BHC08	3.60 - 4.00	B	8	**42.1**	Very soft very dark grey slightly gravelly slightly sandy organic CLAY locally oxidised to brown with rare decayed roots and wood fragments. Gravel is fine to coarse flint.	Dried at 50°C due to high organic content.
BHC08	4.80	B	10	**29.7**	Very soft olive slightly sandy silty CLAY with occasional bluish grey and orange mottling.	
BHC08	7.40 - 7.90	B	16	**28.5**	Very soft brownish yellow slightly gravelly sandy silty CLAY. Gravel is fine to medium flint and quartzite.	
BHC08	10.40 - 10.90	B	22	**22.0**	Pale olive slightly silty slightly clayey fine to medium SAND.	
BHC08	13.40 - 13.90	B	28	**20.0**	Olive yellow slightly gravelly silty slightly clayey slightly organic fine to coarse SAND. Gravel is fine to medium flint and quartzite.	
BHC08	16.40 - 16.90	B	34	**22.4**	Olive grey silty slightly clayey slightly organic fine to medium SAND.	
BHC08	19.40 - 19.90	B	40	**19.9**	Olive grey silty slightly clayey slightly organic fine to medium SAND.	
BHC08	23.00 - 23.45	UT	47	**32.1**	Soft dark grey slightly organic CLAY with occasional fine sand/silt pockets.	
BHC08	23.00 - 23.45	UT	47	**29.6**	Soft dark grey slightly organic CLAY with occasional fine sand/silt pockets.	
BHC08	25.00 - 25.45	UT	51	**30.5**	Firm dark grey slightly organic CLAY with occasional fine sand pockets.	
BHC08	25.00 - 25.45	UT	51	**32.7**	Firm dark grey slightly organic CLAY with occasional fine sand pockets.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC08	27.40 - 27.90	B	56	**29.7**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	
BHC08	33.40 - 33.90	B	68	**24.6**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	
BHC23	0.70 - 1.00	B	2	**10.8**	Dark brown gravelly silty slightly clayey SAND with rare concrete and brick fragments. Gravel is brown, black and white angular to subrounded flint.	
BHC23	2.00 - 2.50	B	6	**20.5**	Soft brownish yellow slightly gravelly very sandy silty CLAY with rare light bluish grey mottling.	
BHC23	5.00 - 5.50	B	12	**21.9**	Yellow silty clayey SAND with rare light bluish grey pockets.	
BHC23	7.00 - 7.50	B	15	**18.9**	Pale olive yellow silty clayey SAND.	
BHC23	10.00 - 10.50	B	22	**16.4**	Olive slightly gravelly silty clayey SAND with rare bluish grey mottling. Gravel is fine flint.	
BHC23	12.80	DS	27	**32.5**	Soft thinly laminated bluish grey silty CLAY with occasional orange silt partings.	
BHC23	14.00 - 14.50	B	31	**16.4**	Olive silty clayey SAND.	
BHC24	0.60 - 1.00	B	1	**14.1**	Black gravelly silty slightly clayey SAND with occasional concrete fragments. Gravel is brown, white and black angular to rounded flint.	
BHC24	1.50 - 1.90	B	4	**14.6**	Dark greyish brown very gravelly silty clayey SAND with occasional black pockets, and brick fragments. Gravel is black, brown and white angular to rounded flint.	
BHC24	2.10 - 2.30	B	6	**12.7**	Brown gravelly very silty slightly clayey SAND. Gravel is brown, white and black angular to rounded flint.	
BHC24	4.50 - 5.00	B	12	**21.6**	Pale olive silty clayey SAND with occasional light bluish grey mottling.	
BHC24	7.50 - 8.00	B	18	**22.9**	Pale olive slightly silty slightly clayey slightly organic SAND.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC24	10.50 - 11.00	B	24	**17.7**	Pale brown slightly gravelly slightly silty SAND with occasional grey pockets. Gravel is black, white and brown angular flint.	
BHC24	13.50 - 14.00	B	31	**16.7**	Olive slightly gravelly silty clayey SAND. Gravel is brown, black and white angular to subangular flint.	
BHC26	0.70 - 1.00	B	2	**7.0**	Black and dark orangish brown gravelly slightly silty SAND with occasional brick and asphalt fragments. Gravel is brown, black and white angular to subrounded flint.	
BHC26	2.00 - 2.25	B	6	**14.7**	Light brown gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint.	
BHC26	6.00 - 6.50	B	11	**12.6**	Yellowish brown very gravelly SAND with occasional grey pockets. Gravel is black, brown and white angular to rounded flint.	
BHC26	10.00 - 10.50	B	15	**21.1**	Yellowish brown SAND.	
BHC26	14.00 - 14.50	B	20	**19.2**	Light yellowish brown slightly gravelly slightly silty SAND. Gravel is black, white and brown angular to subangular flint.	
BHC32	1.10 - 1.30	B	3	**15.8**	Yellowish brown slightly gravelly silty SAND with frequent brown very clayey lumps. Gravel is black, brown and white angular to subrounded flint.	
BHC32	1.70 - 2.15	B	6	**23.2**	Olive brown gravelly silty clayey SAND. Gravel is black, brown and white angular to subrounded flint.	
BHC32	3.50 - 3.95	D	8	**53.9**	Very soft very dark grey silty organic CLAY with rare fossil and shell fragments.	
BHC32	4.00 - 4.38	UT	10	**15.5**	Black slightly peaty fine to medium SAND with rare decayed plant material.	
BHC32	4.50 - 4.95	D	11	**21.7**	Very dark grey silty slightly clayey organic SAND locally oxidised to brown.	
BHC32	5.00 - 5.34	UT	14	**24.7**	Soft light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey organic pockets. Sand is fine.	
BHC32	5.00 - 5.34	UT	14	**25.7**	Soft light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey organic pockets. Sand is fine.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC32	5.34 - 5.39	D	14	**25.7**	Very soft very dark brownish grey sandy silty organic CLAY. Sand is fine to medium.	
BHC32	7.00 - 7.50	B	20	**23.0**	Olive brown silty clayey slightly organic SAND.	
BHC32	9.00 - 9.41	UT	23	**19.4**	Light grey slightly clayey fine to medium SAND with orange mottling.	
BHC32	11.00 - 11.45	D	29	**16.7**	Dark brownish grey gravelly silty fine to coarse SAND with rare very soft clayey lumps. Gravel is fine to medium flint and quartzite.	
BHC32	14.00 - 14.50	B	36	**18.1**	Dark bluish grey and brown slightly gravelly silty clayey SAND. Gravel is fine angular to subangular flint.	
BHC32	17.00 - 17.45	UT	41	**20.7**	Mottled grey and dark grey silty clayey slightly organic fine to medium SAND with occasional clay pockets.	
BHC32	17.00 - 17.45	UT	41	**19.8**	Mottled grey and dark grey silty clayey slightly organic fine to medium SAND with occasional clay pockets.	
BHC32	19.00 - 19.45	UT	44	**16.2**	Stiff (High strength) mottled grey and dark grey sandy silty slightly organic CLAY locally oxidised to light olive brown. Sand is fine to medium.	
BHC32	19.00 - 19.45	UT	44	**15.5**	Stiff (High strength) mottled grey and dark grey sandy silty slightly organic CLAY locally oxidised to light olive brown. Sand is fine to medium.	
BHC32	21.00 - 21.50	B	49	**28.9**	Dark olive grey silty clayey slightly organic SAND.	
BHC32	23.00 - 23.45	UT	52	**32.1**	Very soft slightly fissured dark grey CLAY with occasional silty pockets.	
BHC32	23.00 - 23.45	UT	52	**32.1**	Very soft slightly fissured dark grey CLAY with occasional silty pockets.	
BHC32	25.00 - 25.45	UT	56	**19.2**	Firm dark grey very sandy silty CLAY with occasional shell debris.	
BHC32	25.00 - 25.50	B	60	**32.1**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC32	28.00 - 28.50	B	66	**25.4**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

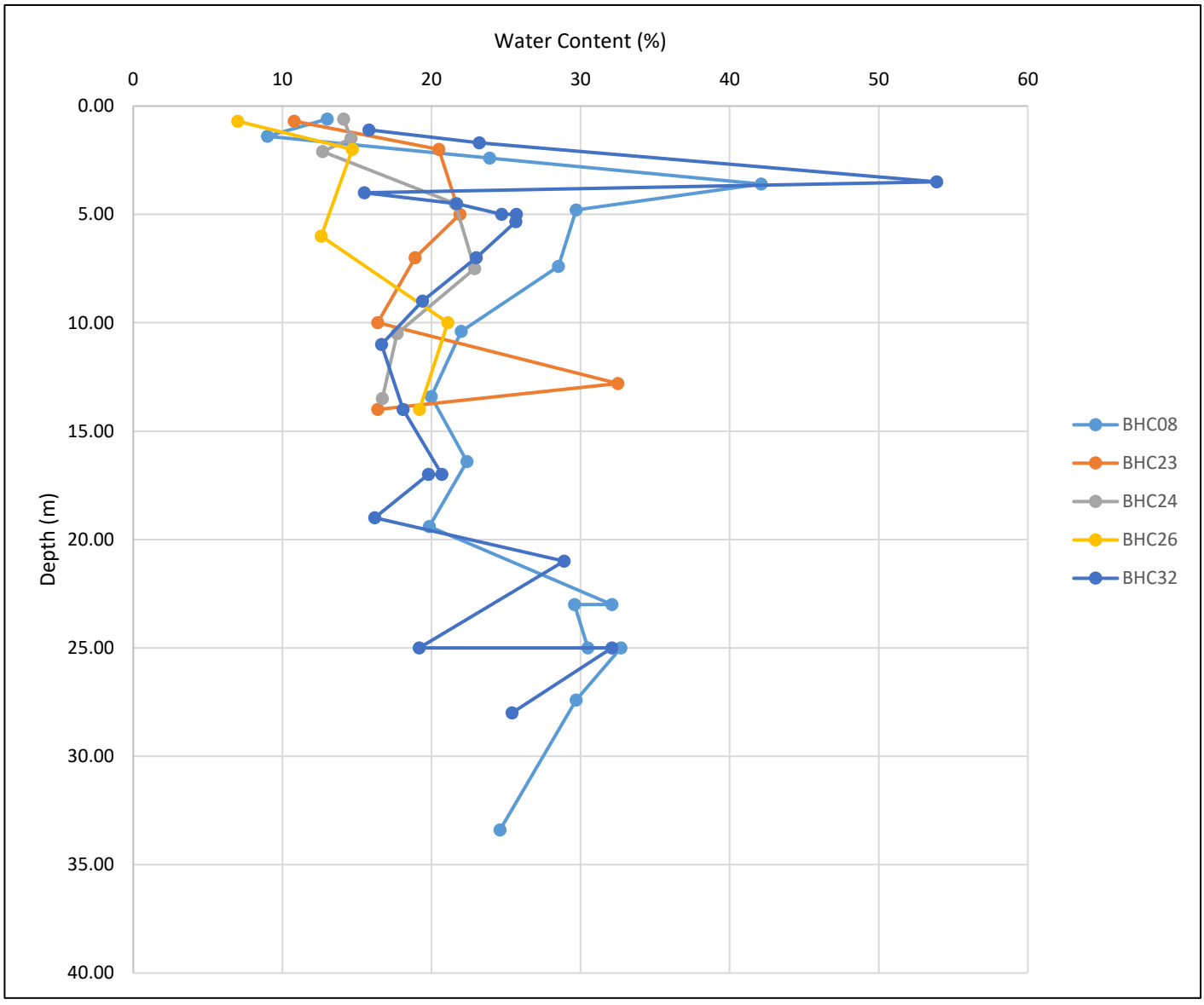
ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

WATER CONTENT VS DEPTH BELOW GROUND LEVEL



Method of Preparation:	BSEN ISO 17892-1: 2014
Method of Test:	BSEN ISO 17892-1: 2014
Type of Sample Key:	U - Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

UKAS TESTING 0988

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF THE PLASTIC LIMIT

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content	Description	Remarks
BHC08	10.40 - 10.90	B	22	**22.0**	Pale olive slightly silty slightly clayey fine to medium SAND.	

Preparation:	Wet Sieved	Percentage of mass passing 0.425mm sieve:	97

TEST CONDITIONS

1	Can a 20g ball be formed and dried between the palms of the hands?	YES
2	Do slight cracks appear on its surface as it is being hand dried?	NO
3	Is it possible to form 5g subsamples into a thread of approximately 6mm diameter?	YES
4	Is it possible to reduce 6mm threads to 3mm diameter in between 5-10 complete rolls (10-15 for heavy clays)?	NO
5	After alternately forming into threads and rolling out is it possible to shear the thread both longitudinally and transversely when it is rolled to about 3mm?	NO

	NOTE:	DIFFICULT
	For soils that are marginally plastic it is often difficult to obtain the correct crumbling conditions (if "difficult" define as non-plastic)	n/a

NON-PLASTIC BY BS1377: PART 1: 1990: 2.2.10

A soil with a plasticity of zero, or one on which the plastic limit cannot be determined

All conditions 1-5 must be achievable for material to be deemed plastic; if achieved, measure water content.

Plastic Limit (%)	
Non-Plastic	**YES**

If plastic limit is obtainable, does *liquid limit - plastic limit = zero* : if so material is defined as non-plastic.

Liquid Limit (%)	
Liquid Limit - Plastic Limit (%)	

Method of Preparation:	BS1377: Part 1: 1990: 7.4.3 & BS1377: Part 2: 1990:4.2
Method of Test:	BS1377: Part 2: 1990: 5.3
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C= Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0988

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF THE PLASTIC LIMIT

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content	Description	Remarks
BHC08	19.40 - 19.90	B	40	**19.9**	Olive grey silty slightly clayey slightly organic fine to medium SAND.	

Preparation:	Wet Sieved	Percentage of mass passing 0.425mm sieve:	91

TEST CONDITIONS

1	Can a 20g ball be formed and dried between the palms of the hands?	YES
2	Do slight cracks appear on its surface as it is being hand dried?	NO
3	Is it possible to form 5g subsamples into a thread of approximately 6mm diameter?	YES
4	Is it possible to reduce 6mm threads to 3mm diameter in between 5-10 complete rolls (10-15 for heavy clays)?	YES
5	After alternately forming into threads and rolling out is it possible to shear the thread both longitudinally and transversely when it is rolled to about 3mm?	YES

	NOTE:	DIFFICULT
	For soils that are marginally plastic it is often difficult to obtain the correct crumbling conditions (if "difficult" define as non-plastic)	YES

NON-PLASTIC BY BS1377: PART 1: 1990: 2.2.10

A soil with a plasticity of zero, or one on which the plastic limit cannot be determined

All conditions 1-5 must be achievable for material to be deemed plastic; if achieved, measure water content.

Plastic Limit (%)	
Non-Plastic	**YES**

If plastic limit is obtainable, does *liquid limit - plastic limit = zero* : if so material is defined as non-plastic.

Liquid Limit (%)	
Liquid Limit - Plastic Limit (%)	

Method of Preparation:	BS1377: Part 1: 1990: 7.4.3 & BS1377: Part 2: 1990:4.2
Method of Test:	BS1377: Part 2: 1990: 5.3
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C= Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

UKAS TESTING 0988

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF THE PLASTIC LIMIT

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content	Description	Remarks
BHC32	1.00 - 11.4	D	29	**16.7**	Dark brownish grey gravelly silty fine to coarse SAND with rare very soft clayey lumps. Gravel is fine to medium flint and quartzite.	

Preparation:	Wet Sieved	Percentage of mass passing 0.425mm sieve:	57

TEST CONDITIONS

1	Can a 20g ball be formed and dried between the palms of the hands?	YES
2	Do slight cracks appear on its surface as it is being hand dried?	NO
3	Is it possible to form 5g subsamples into a thread of approximately 6mm diameter?	NO
4	Is it possible to reduce 6mm threads to 3mm diameter in between 5-10 complete rolls (10-15 for heavy clays)?	NO
5	After alternately forming into threads and rolling out is it possible to shear the thread both longitudinally and transversely when it is rolled to about 3mm?	NO

	NOTE:	DIFFICULT
	For soils that are marginally plastic it is often difficult to obtain the correct crumbling conditions (if "difficult" define as non-plastic)	n/a

NON-PLASTIC BY BS1377: PART 1: 1990: 2.2.10

A soil with a plasticity of zero, or one on which the plastic limit cannot be determined

All conditions 1-5 must be achievable for material to be deemed plastic; if achieved, measure water content.

Plastic Limit (%)	
Non-Plastic	**YES**

If plastic limit is obtainable, does *liquid limit - plastic limit = zero* : if so material is defined as non-plastic.

Liquid Limit (%)	
Liquid Limit - Plastic Limit (%)	

Method of Preparation:	BS1377: Part 1: 1990: 7.4.3 & BS1377: Part 2: 1990:4.2
Method of Test:	BS1377: Part 2: 1990: 5.3
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C= Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC08	3.60 - 4.00	B	8	**42.1**	54	21	33	0.64	Wet Sieved	14 (M)	49.0*	28	Very soft very dark grey slightly gravelly slightly sandy organic CLAY locally oxidised to brown with rare decayed roots and wood fragments. Gravel is fine to coarse flint.	CHO
BHC08	4.80	B	10	**29.7**	41	17	24	0.53	Wet Sieved	3 (M)	30.5*	94	Very soft olive slightly sandy silty CLAY with occasional bluish grey and orange mottling.	CI
BHC08	7.40 - 7.90	B	16	**28.5**	25	16	9	1.39	Wet Sieved	5 (M)	30.0*	124	Very soft brownish yellow slightly gravelly sandy silty CLAY. Gravel is fine to medium flint and quartzite.	CL
BHC08	13.40 - 13.90	B	28	**20.0**	22	18	4	0.50	Wet Sieved	27 (M)	27.4*	29	Olive yellow slightly gravelly silty slightly clayey slightly organic fine to coarse SAND. Gravel is fine to medium flint and quartzite.	MLO
BHC08	16.40 - 16.90	B	34	**22.4**	22	18	4	1.10	Wet Sieved	12 (M)	25.4*	29	Olive grey silty slightly clayey slightly organic fine to medium SAND.	MLO
BHC08	23.00 - 23.45	UT	47	**32.1**	50	20	30	0.40	From Natural	0 (A)		123	Soft dark grey slightly organic CLAY with occasional fine sand/silt pockets.	CIO/CHO
BHC08	25.00 - 25.45	UT	51	**30.5**	53	22	31	0.27	From Natural	0 (A)		25	Firm dark grey slightly organic CLAY with occasional fine sand pockets.	CHO
BHC23	12.80	DS	27	**32.5**	50	23	27	0.35	From Natural	0 (A)		26	Soft thinly laminated bluish grey silty CLAY with occasional orange silt partings.	CI/CH

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.3, 4.4, 5.3, 5.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC32	3.50 - 3.95	D	8	**53.9**	57	24	33	0.91	Wet Sieved	9 (M)	59.2*	27	Very soft very dark grey silty organic CLAY with rare fossil and shell fragments.	CHO
BHC32	4.00 - 4.38	UT	10	**15.5**	50	30	20	-0.73	Wet Sieved	15 (M)	18.2*	26	Black slightly peaty fine to medium SAND with rare decayed plant material.	MIO/MHO
BHC32	4.50 - 4.95	D	11	**21.7**	20	15	5	1.34	Wet Sieved	25 (M)	28.9*	26	Very dark grey silty slightly clayey organic SAND locally oxidised to brown.	MLO
BHC32	5.00 - 5.34	UT	14	**24.7**	33	16	17	0.51	From Natural	0 (A)		25	Soft light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey organic pockets. Sand is fine.	CL
BHC32	5.34 - 5.39	D	14	**25.7**	27	17	10	0.87	Wet Sieved	24 (M)	33.8*	27	Very soft very dark brownish grey sandy silty organic CLAY. Sand is fine to medium.	CLO
BHC32	9.00 - 9.41	UT	23	**19.4**	25	17	8	0.30	From Natural	0 (A)		149	Light grey very sandy silty CLAY with orange mottling. Sand is fine to medium.	CL
BHC32	17.00 - 17.45	UT	41	**20.7**	23	14	9	0.74	From Natural	0 (A)		26	Mottled grey and dark grey sandy silty slightly organic CLAY. Sand is fine to medium.	CLO
BHC32	19.00 - 19.45	UT	44	**16.2**	42	16	26	0.01	From Natural	0 (A)		26	Stiff (High strength) mottled grey and dark grey sandy silty slightly organic CLAY locally oxidised to light olive brown. Sand is fine to medium.	CIO

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.3, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC32	23.00 - 23.45	UT	52	**32.1**	38	18	20	0.71	From Natural	0 (A)		24	Very soft slightly fissured dark grey CLAY with occasional silty pockets.	CI
BHC32	25.00 - 25.45	UT	56	**19.2**	32	15	17	0.25	Wet Sieved	6 (M)	20.4*	27	Firm dark grey very sandy silty CLAY with occasional shell debris.	CL

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.3, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

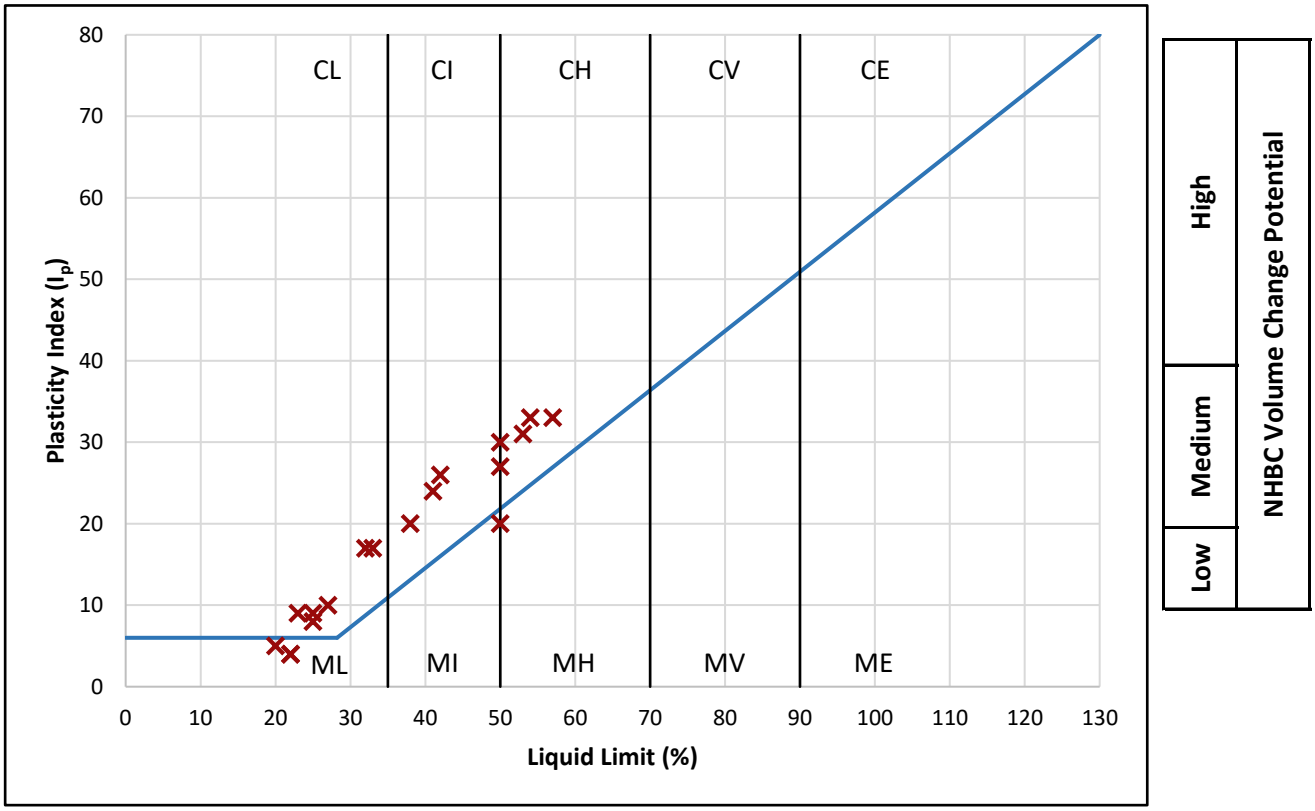
DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 4.3/4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

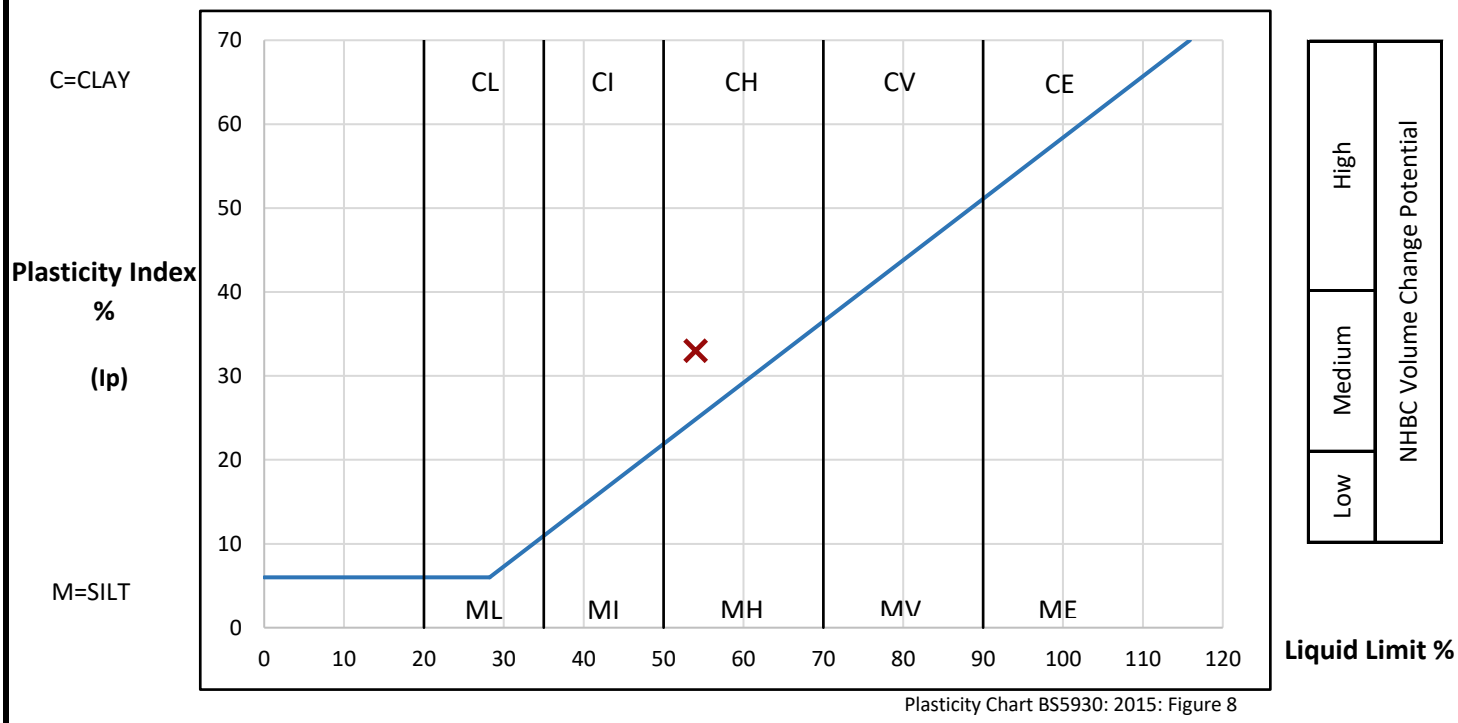
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	3.60 - 4.00	B	8	42.1	Very soft very dark grey slightly gravelly slightly sandy organic CLAY locally oxidised to brown with rare decayed roots and wood fragments. Gravel is fine to coarse flint.	Specimen oven dried at 50°C due to high organic content.

PREPARATION				Liquid Limit	54 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	21 %
Sample retained 0.425mm sieve	(Measured)	14 %		Plasticity Index	33 %
Corrected water content for material passing 0.425mm		49.0 %		Liquidity Index	0.64
Sample retained 2mm sieve	(Measured)	4 %		NHBC Modified (I'p)	28 %
Curing time	28 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

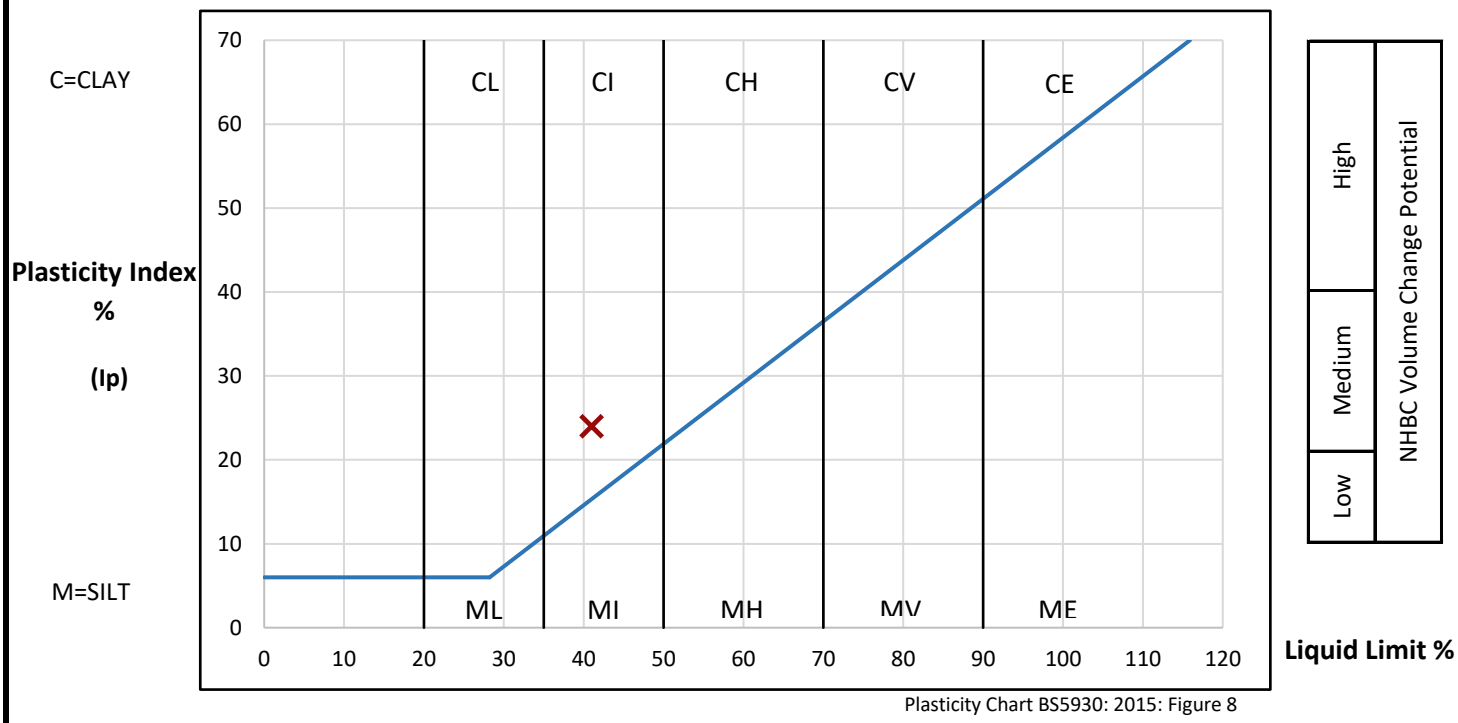
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	4.80	B	10	29.7	Very soft olive slightly sandy silty CLAY with occasional bluish grey and orange mottling.	

PREPARATION				Liquid Limit	41 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	3 %		Plasticity Index	24 %
Corrected water content for material passing 0.425mm		30.5 %		Liquidity Index	0.53
Sample retained 2mm sieve	(Measured)	0 %		NHBC Modified (I'p)	23 %
Curing time	94 hrs	Clay Content	22 %	Derived Activity	1.09



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

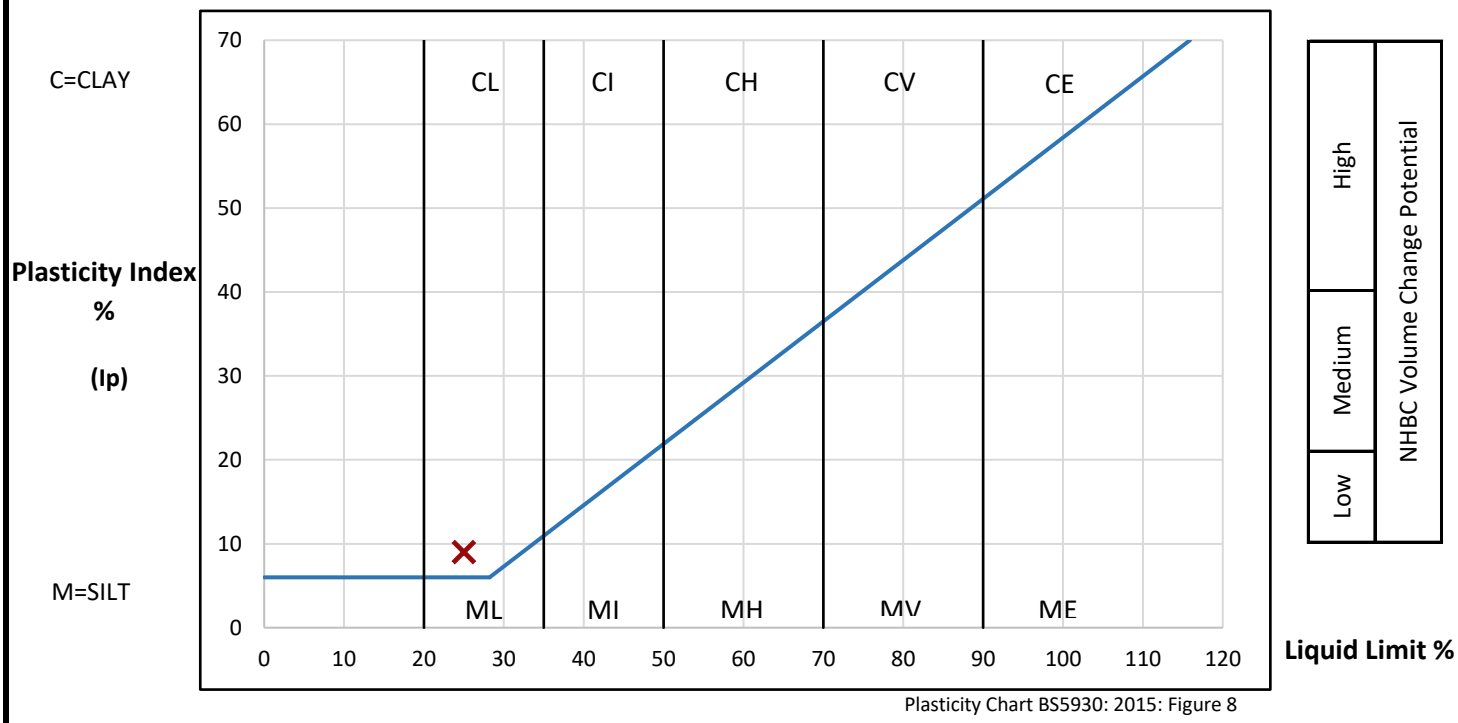
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	7.40 - 7.90	B	16	28.5	Very soft brownish yellow slightly gravelly sandy silty CLAY. Gravel is fine to medium flint and quartzite.	

PREPARATION				Liquid Limit	25 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	5 %		Plasticity Index	9 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.39
Sample retained 2mm sieve	(Measured)	2 %		NHBC Modified (I'p)	9 %
Curing time	124 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

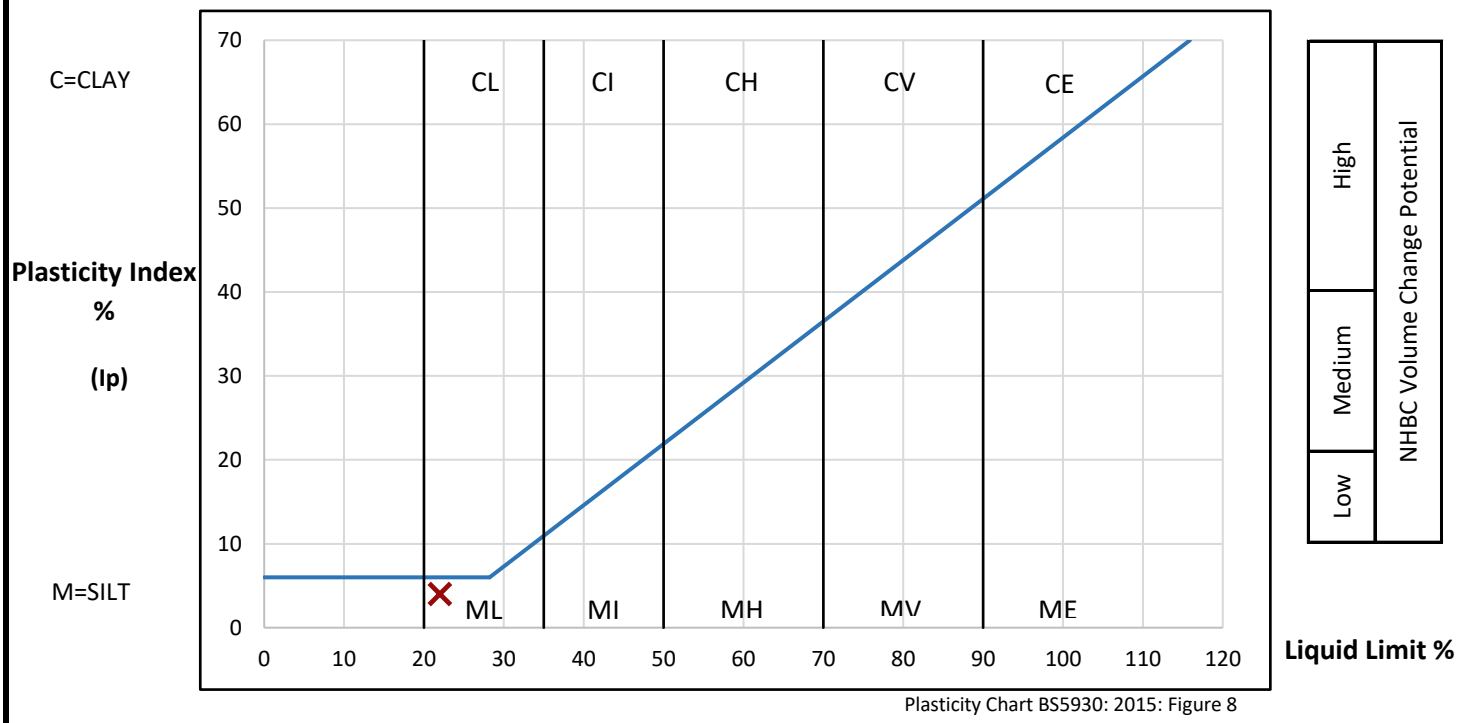
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	13.40 - 13.90	B	28	20.0	Olive yellow slightly gravelly silty slightly clayey slightly organic fine to coarse SAND. Gravel is fine to medium flint and quartzite.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	27 %		Plasticity Index	4 %
Corrected water content for material passing 0.425mm		27.4 %		Liquidity Index	0.50
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	3 %
Curing time	29 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

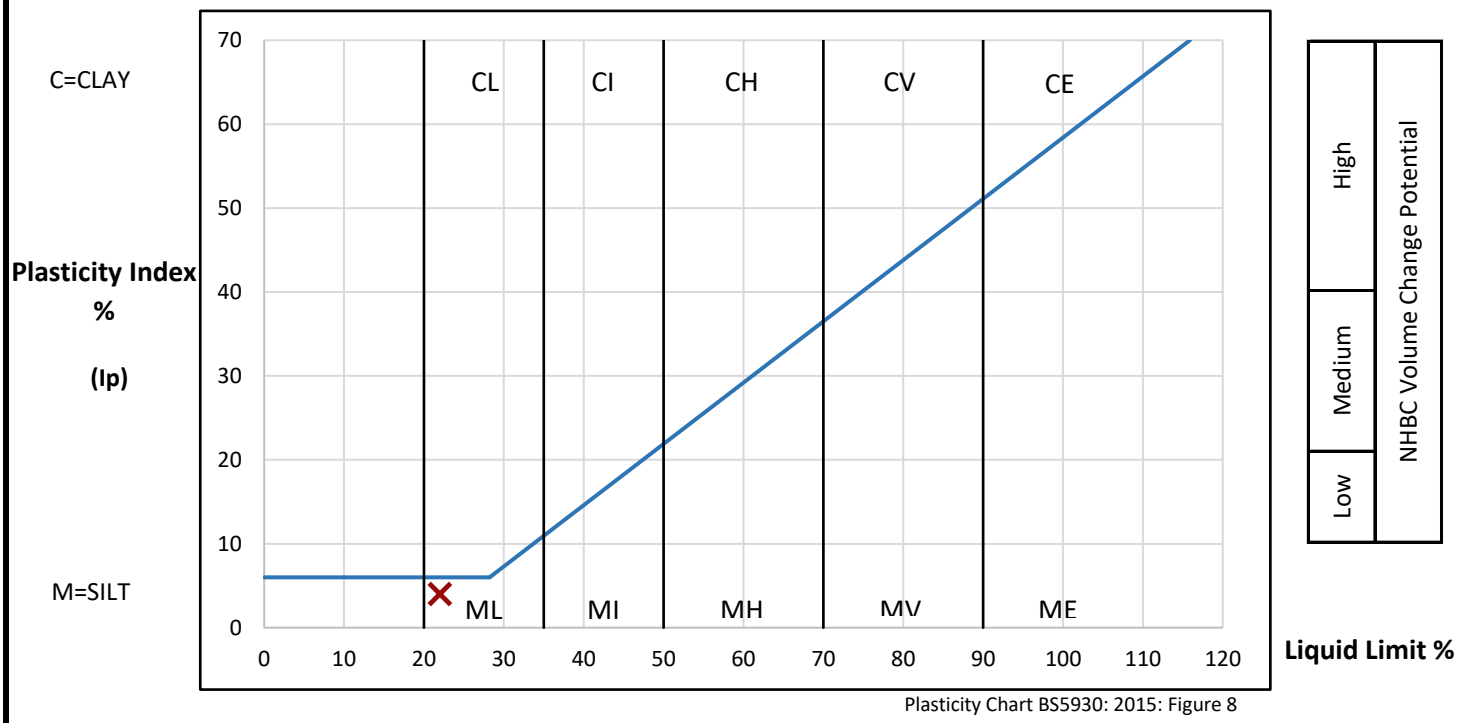
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	16.40 - 16.90	B	34	22.4	Olive grey silty slightly clayey slightly organic fine to medium SAND.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	12 %		Plasticity Index	4 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.10
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	4 %
Curing time	29 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

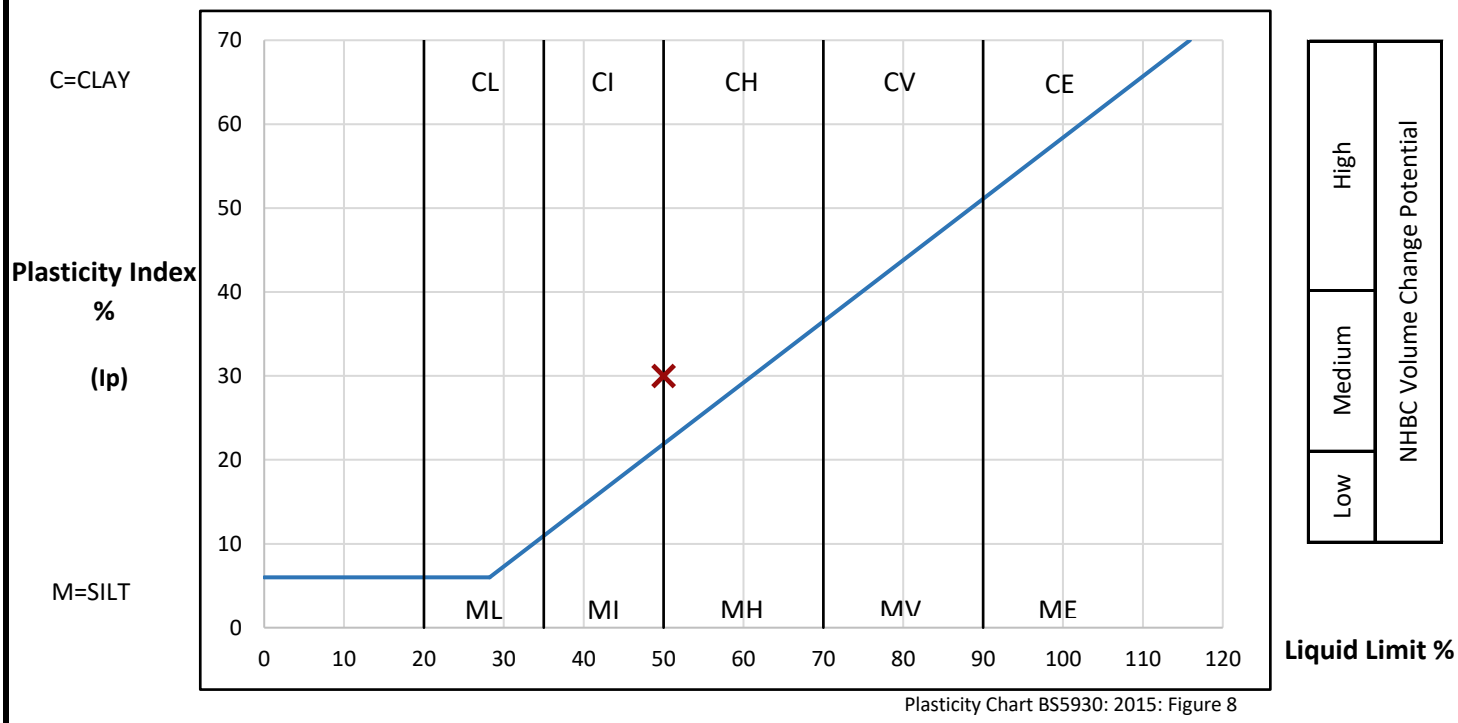
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	23.00 - 23.45	UT	47	32.1	Soft dark grey slightly organic CLAY with occasional fine sand/silt pockets.	

PREPARATION				Liquid Limit	50 %
Method of preparation		From natural		Plastic Limit	20 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	30 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.40
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	123 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

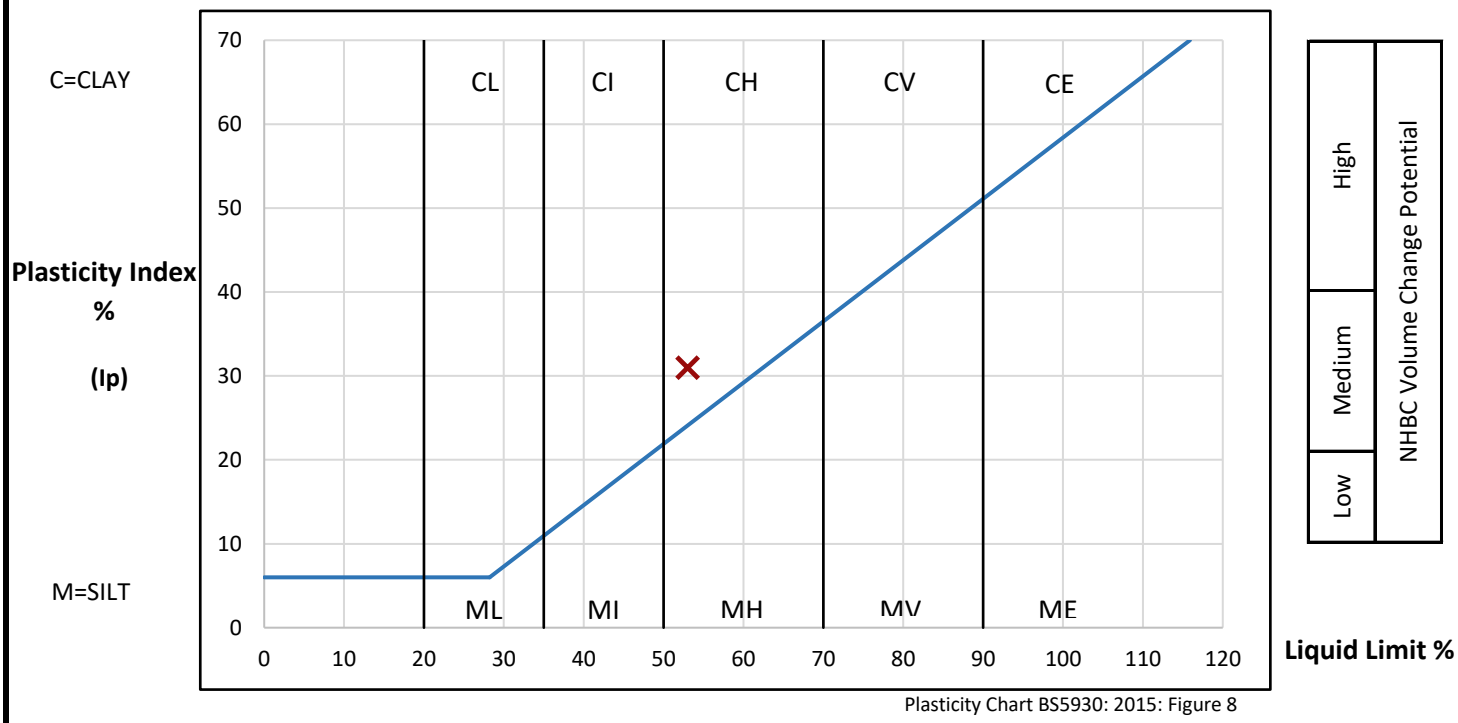
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC08	25.00 - 25.45	UT	51	30.5	Firm dark grey slightly organic CLAY with occasional fine sand pockets.	

PREPARATION				Liquid Limit	53 %
Method of preparation		From natural		Plastic Limit	22 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	31 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.27
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	25 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

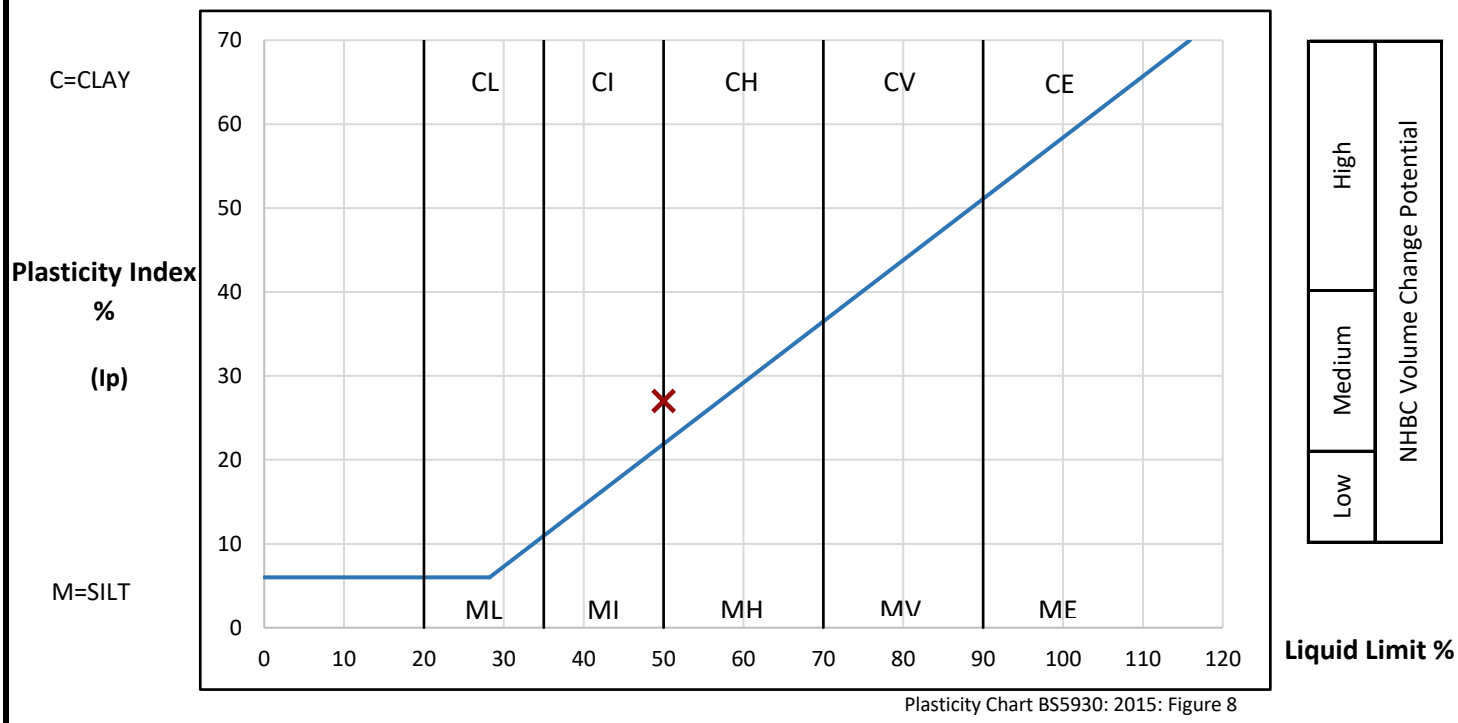
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC23	12.80	DS	27	32.5	Soft thinly laminated bluish grey silty CLAY with occasional orange silt partings.	

PREPARATION				Liquid Limit	50 %
Method of preparation		From natural		Plastic Limit	23 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	27 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.35
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

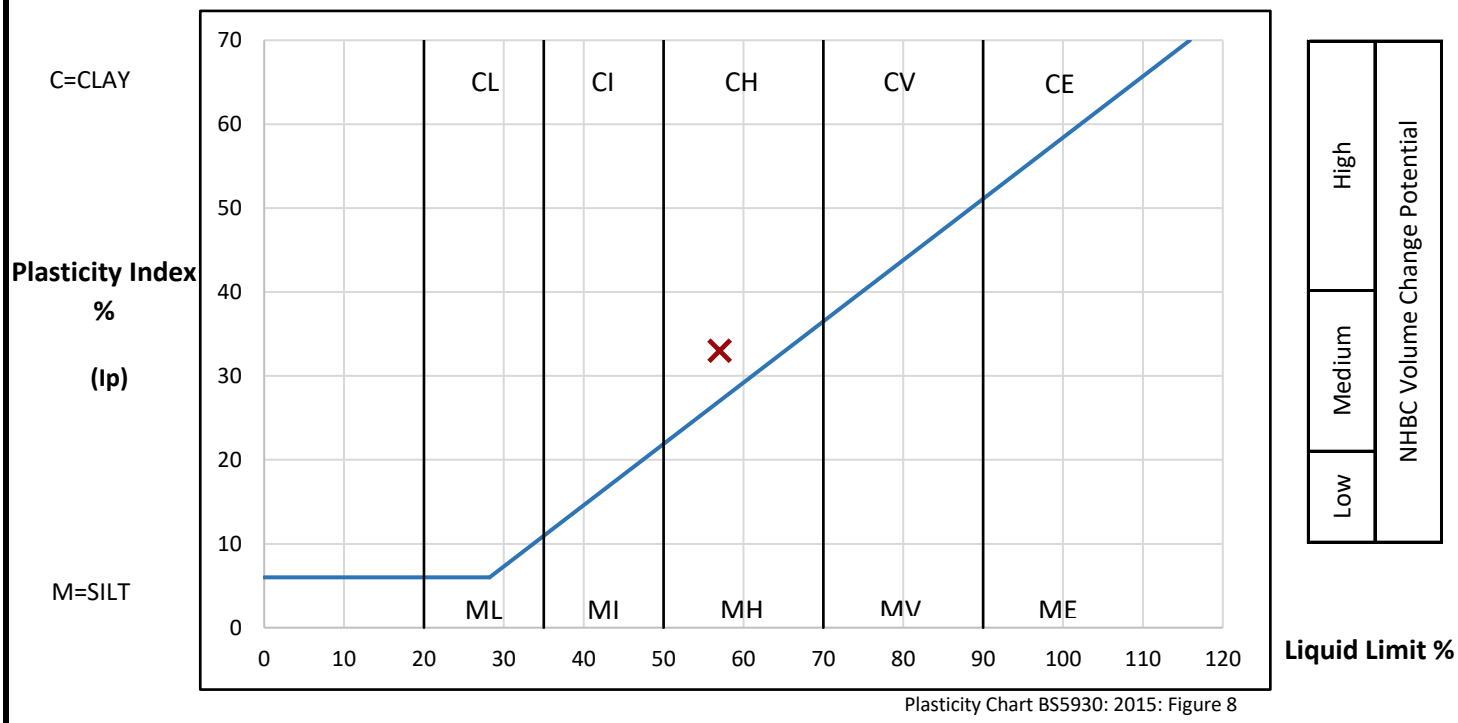
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	3.50 - 3.95	D	8	53.9	Very soft very dark grey silty organic CLAY with rare fossil and shell fragments.	

PREPARATION				Liquid Limit	57 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	24 %
Sample retained 0.425mm sieve	(Measured)	9 %		Plasticity Index	33 %
Corrected water content for material passing 0.425mm		59.2 %		Liquidity Index	0.91
Sample retained 2mm sieve	(Measured)	3 %		NHBC Modified (I'p)	30 %
Curing time	27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

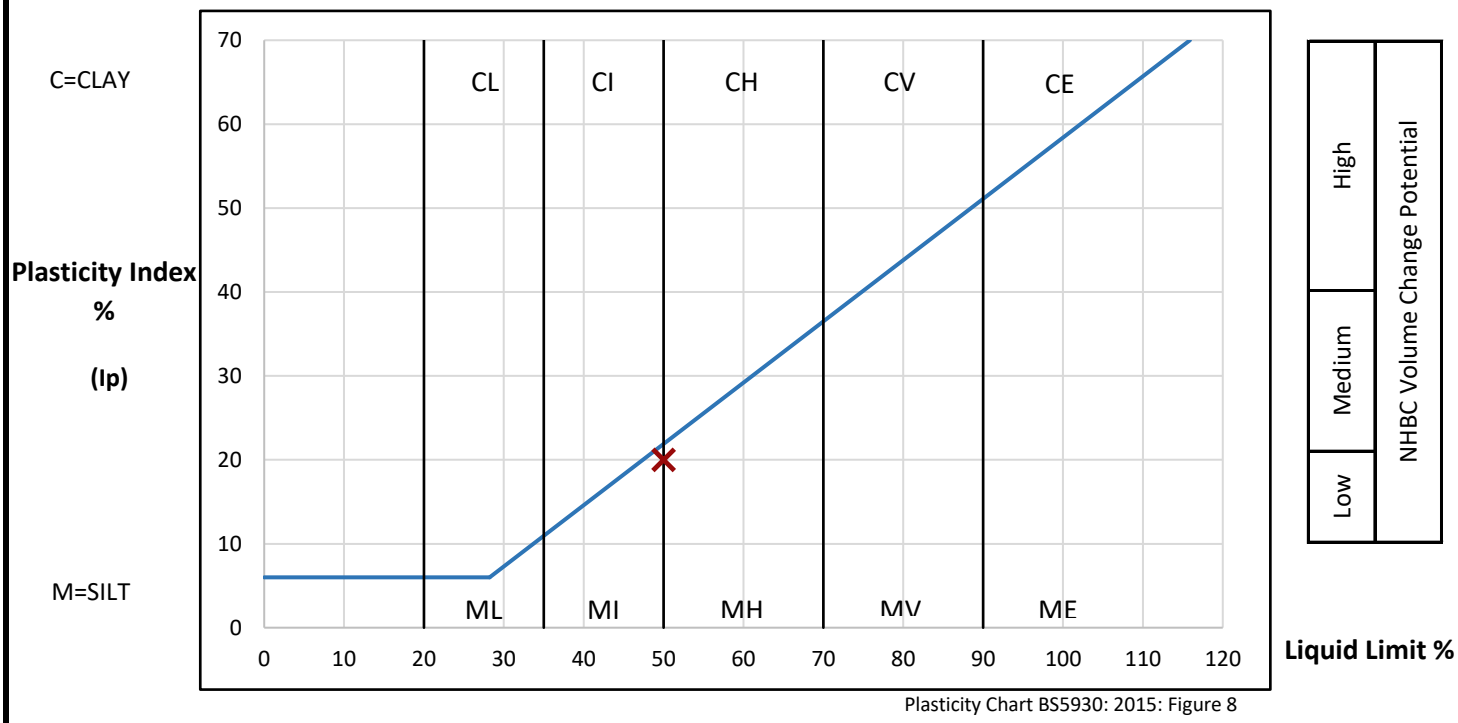
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	4.00 - 4.38	UT	10	15.5	Black slightly peaty fine to medium SAND with rare decayed plant material.	

PREPARATION				Liquid Limit	50 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	30 %
Sample retained 0.425mm sieve	(Measured)	15 %		Plasticity Index	20 %
Corrected water content for material passing 0.425mm		15.5 %		Liquidity Index	-0.73
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	17 %
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

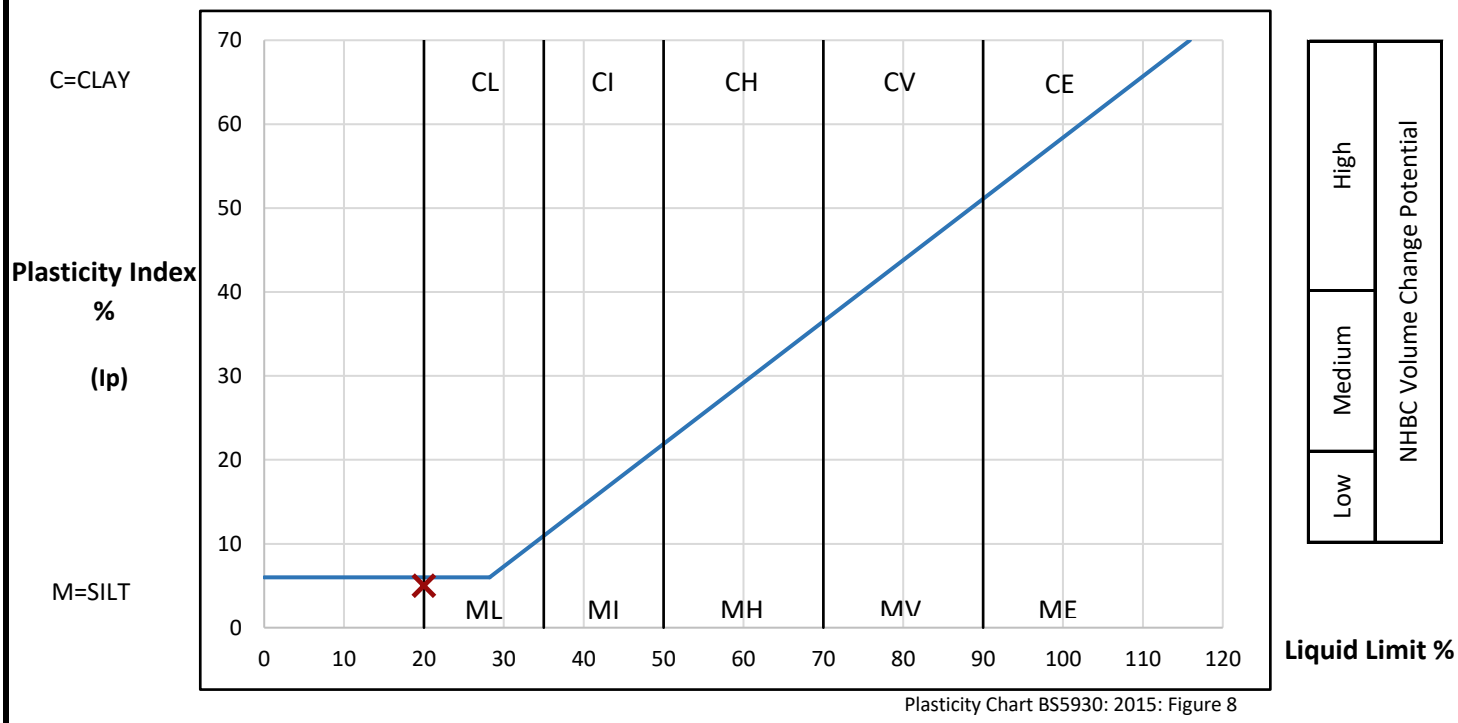
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	4.50 - 4.95	D	11	21.7	Very dark grey silty slightly clayey organic SAND locally oxidised to brown.	

PREPARATION				Liquid Limit	20 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	25 %		Plasticity Index	5 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.34
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	4 %
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

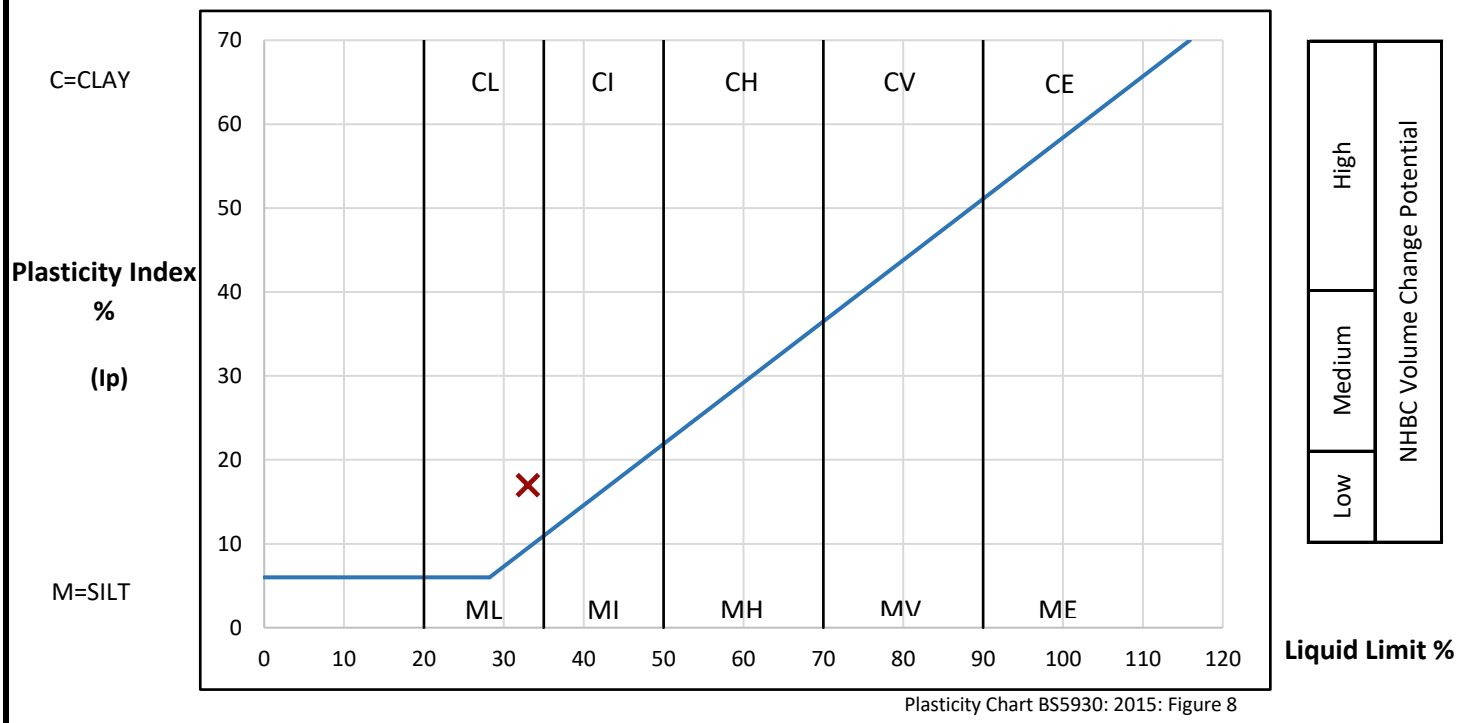
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	5.00 - 5.34	UT	14	24.7	Soft light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey organic pockets. Sand is fine.	

PREPARATION				Liquid Limit	33 %
Method of preparation		From natural		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	17 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.51
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	25 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

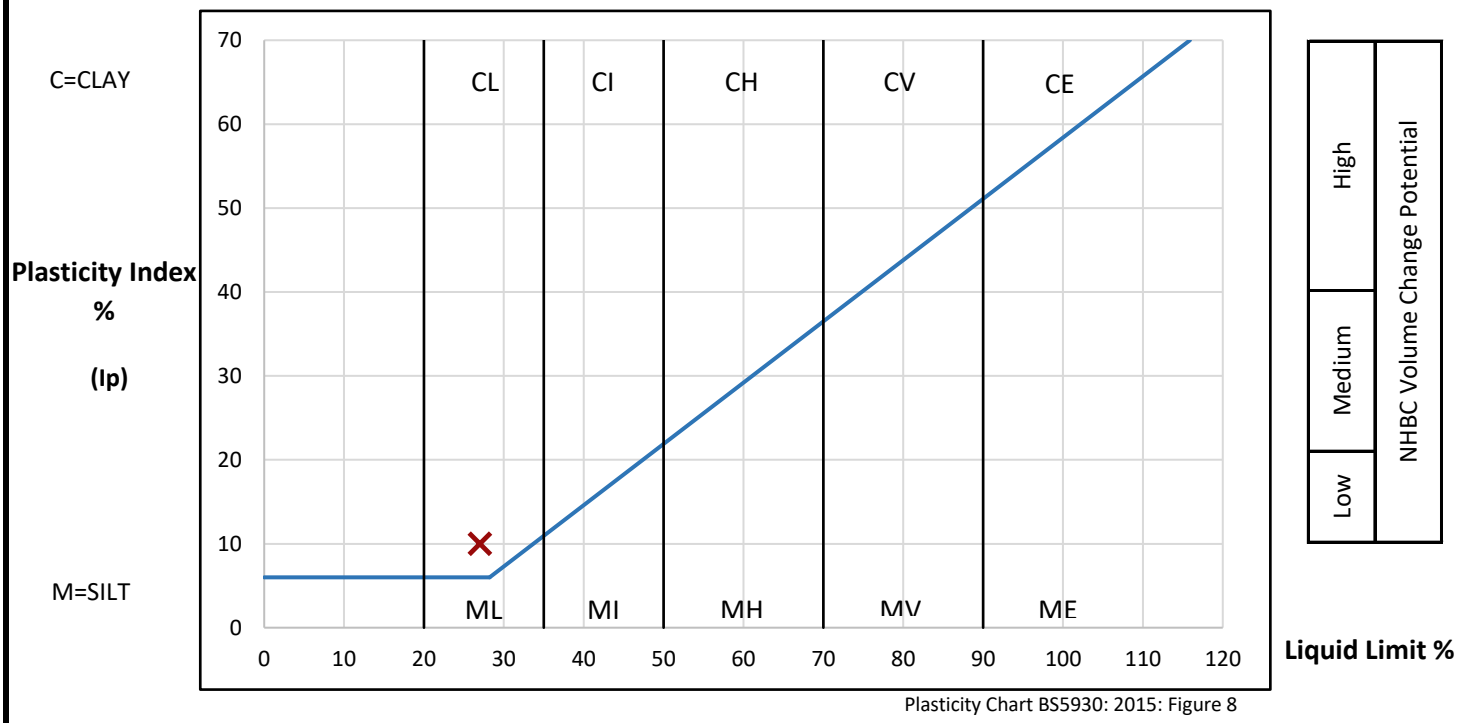
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	5.34 - 5.39	D	14	25.7	Very soft very dark brownish grey sandy silty organic CLAY. Sand is fine to medium.	

PREPARATION				Liquid Limit	27 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	24 %		Plasticity Index	10 %
Corrected water content for material passing 0.425mm		33.8 %		Liquidity Index	0.87
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	8 %
Curing time	27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

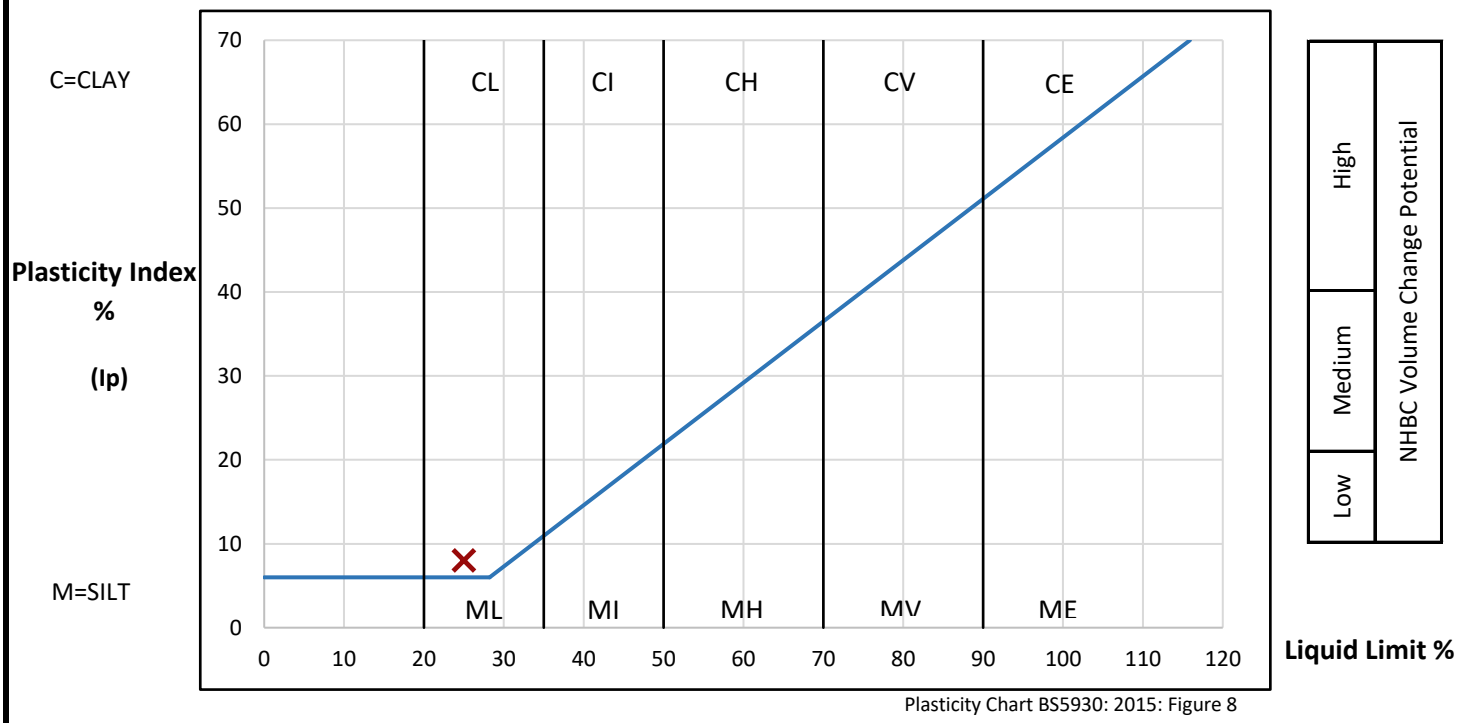
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	9.00 - 9.41	UT	23	19.4	Light grey very sandy silty CLAY with orange mottling. Sand is fine to medium.	

PREPARATION				Liquid Limit	25 %
Method of preparation		From natural		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	8 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.30
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	149 hrs		Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

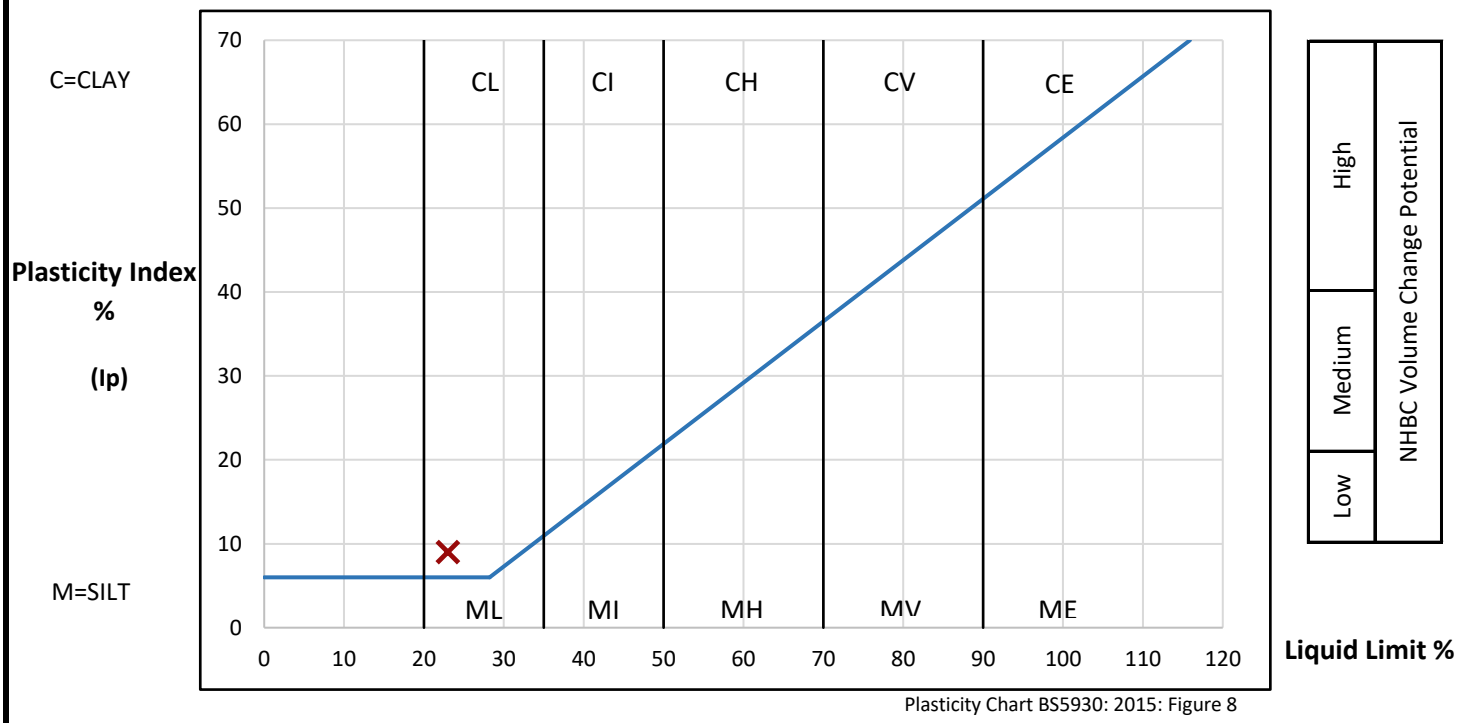
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	17.00 - 17.45	UT	41	20.7	Mottled grey and dark grey sandy silty slightly organic CLAY. Sand is fine to medium.	

PREPARATION				Liquid Limit	23 %
Method of preparation		From natural		Plastic Limit	14 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	9 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.74
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

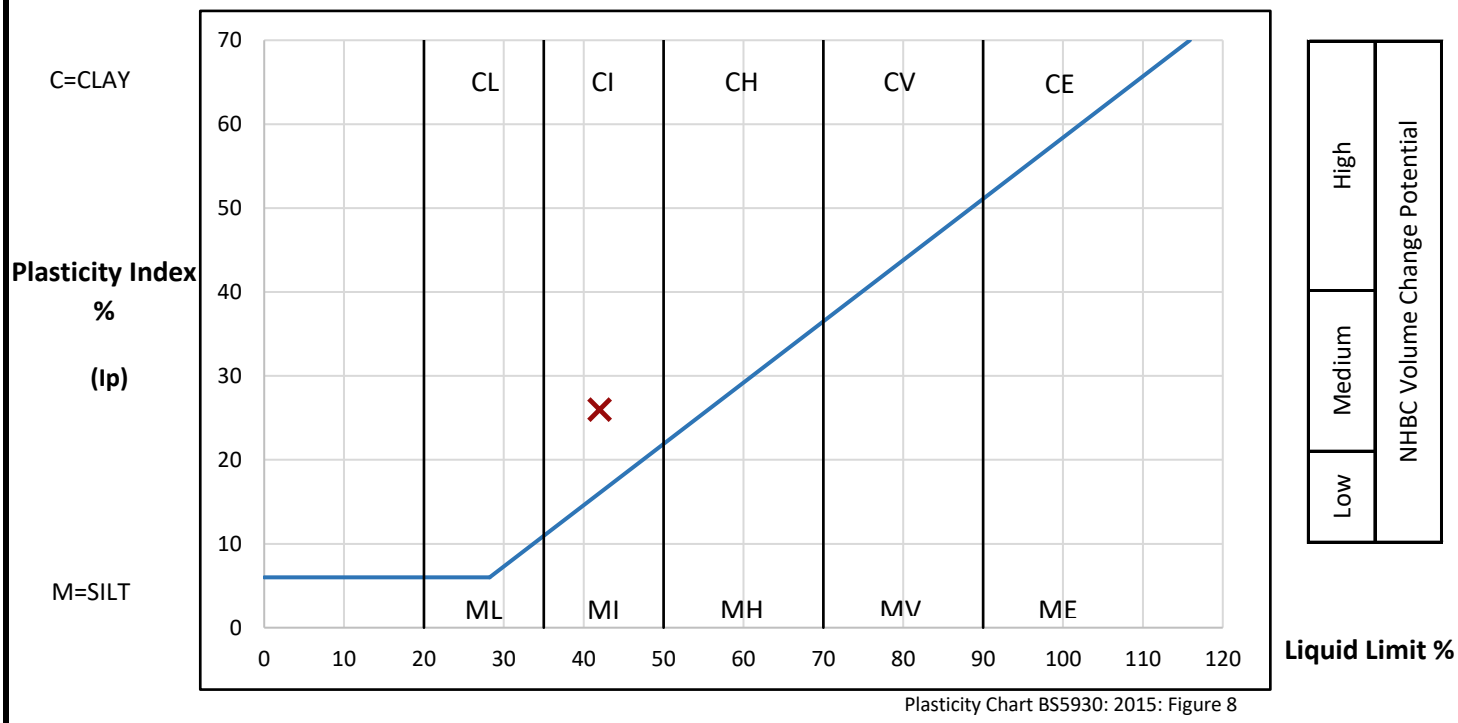
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	19.00 - 19.45	UT	44	16.2	Stiff (High strength) mottled grey and dark grey sandy silty slightly organic CLAY locally oxidised to light olive brown. Sand is fine to medium.	

PREPARATION				Liquid Limit	42 %
Method of preparation		From natural		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	26 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.01
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

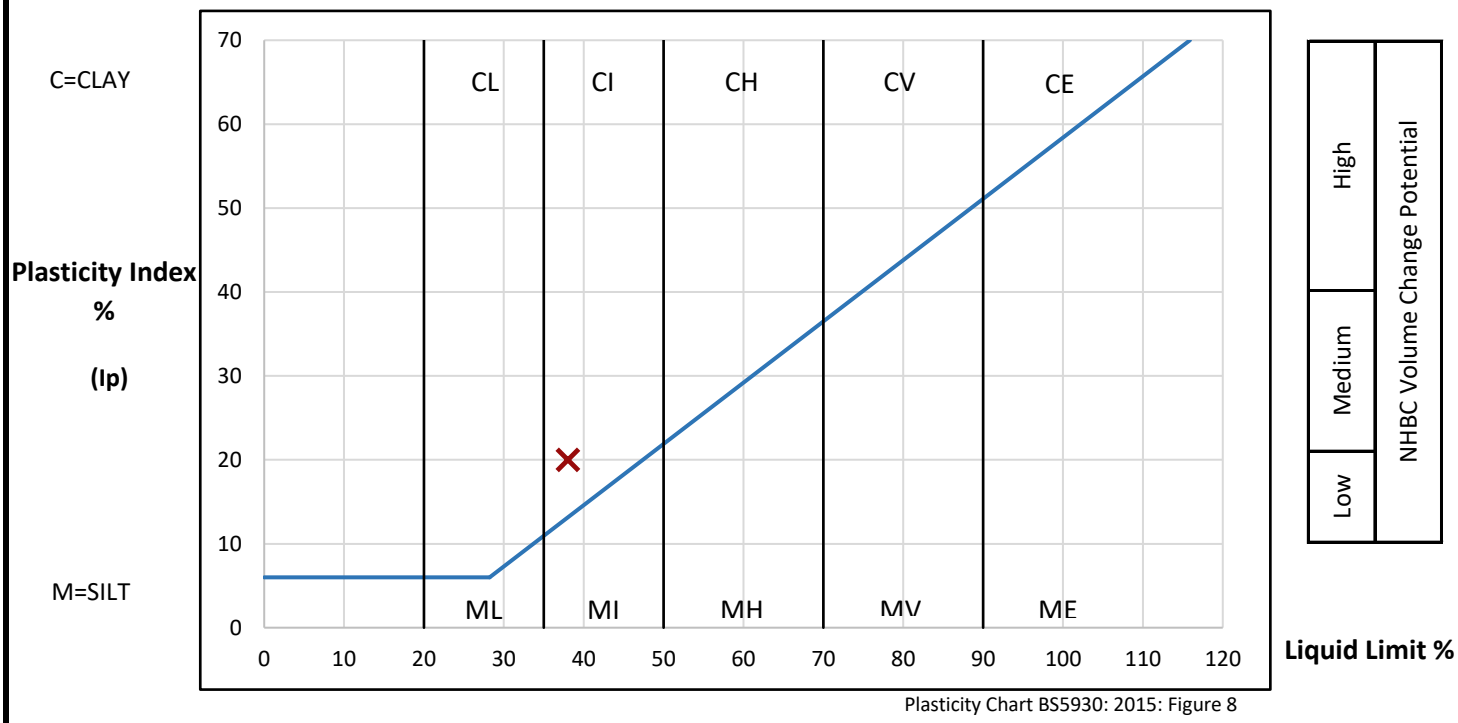
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	23.00 - 23.45	UT	52	32.1	Very soft slightly fissured dark grey CLAY with occasional silty pockets.	

PREPARATION				Liquid Limit	38 %
Method of preparation		From natural		Plastic Limit	18 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	20 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.71
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

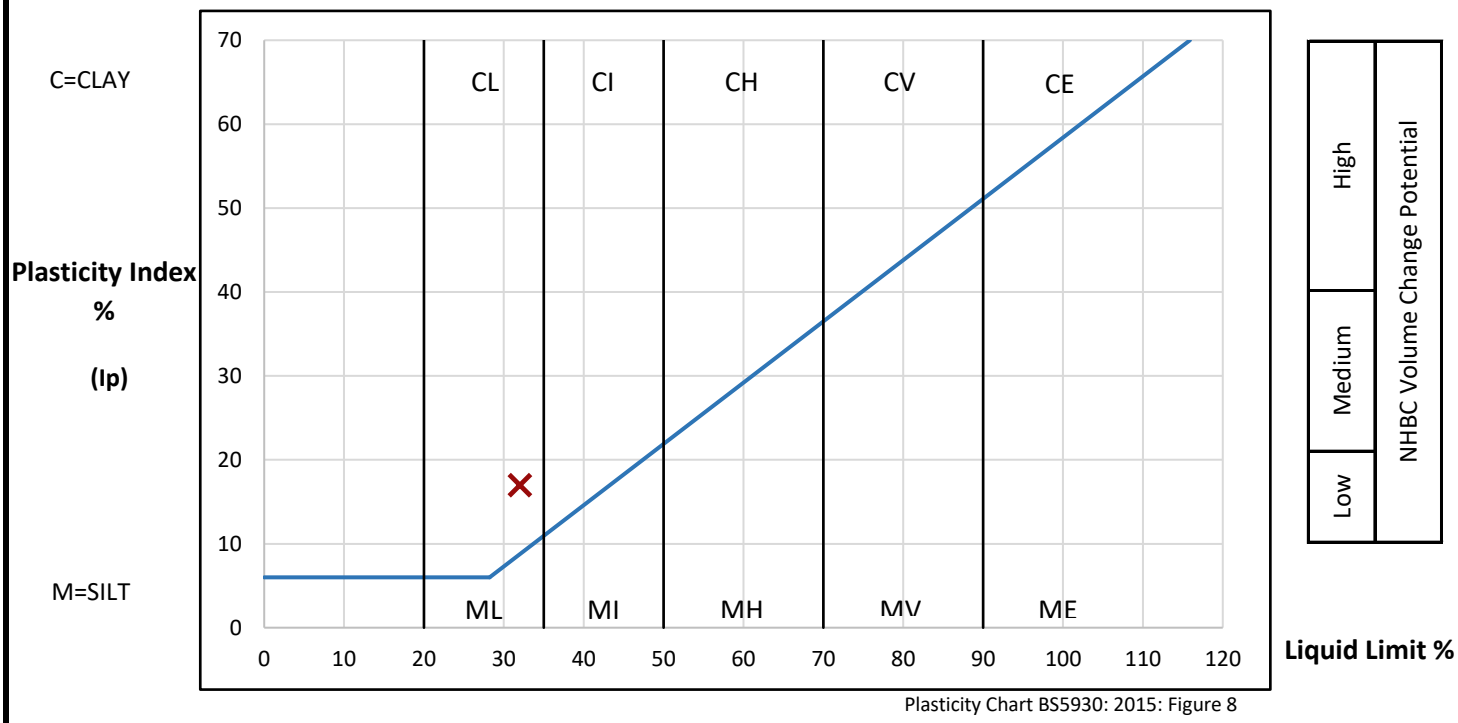
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC32	25.00 - 25.45	UT	56	19.2	Firm dark grey very sandy silty CLAY with occasional shell debris.	

PREPARATION				Liquid Limit	32 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	6 %		Plasticity Index	17 %
Corrected water content for material passing 0.425mm		20.4 %		Liquidity Index	0.25
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	16 %
Curing time	27 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

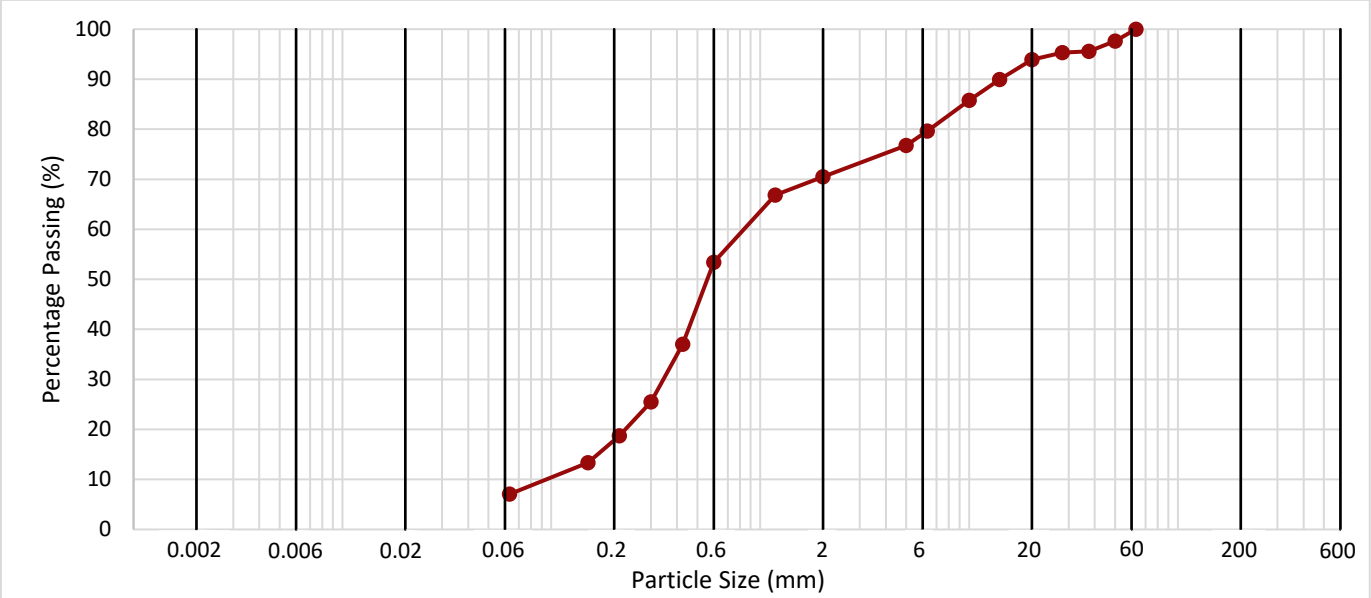
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	0.60 - 1.10	B	2	Dark greyish brown very gravelly silty SAND, with occasional black organic pockets, and brick, cinder and metal fragments. Gravel is brown, white and black angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	71	64
1.18	67	
0.600	53	
0.425	37	
0.300	26	
0.212	19	
0.150	13	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		29
125		
90		
63	100	
50	98	
37.5	96	
28	95	
20	94	
14	90	
10	86	
6.3	80	
5	77	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

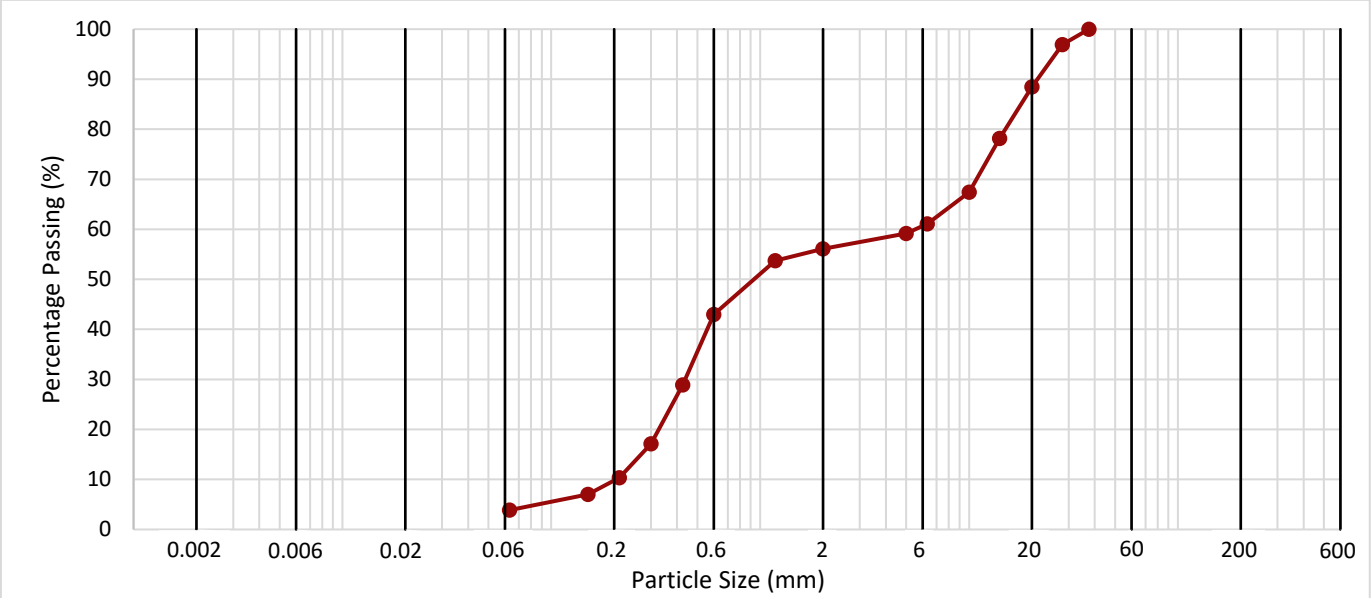
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	1.40 - 1.90	B	4	Brown very gravelly slightly silty SAND with occasional firm brown sandy clay lumps. Gravel is black, brown and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	56	52
1.18	54	
0.600	43	
0.425	29	
0.300	17	
0.212	10	
0.150	7	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	4

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		44
125		
90		
63		
50		
37.5	100	
28	97	
20	88	
14	78	
10	67	
6.3	61	
5	59	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

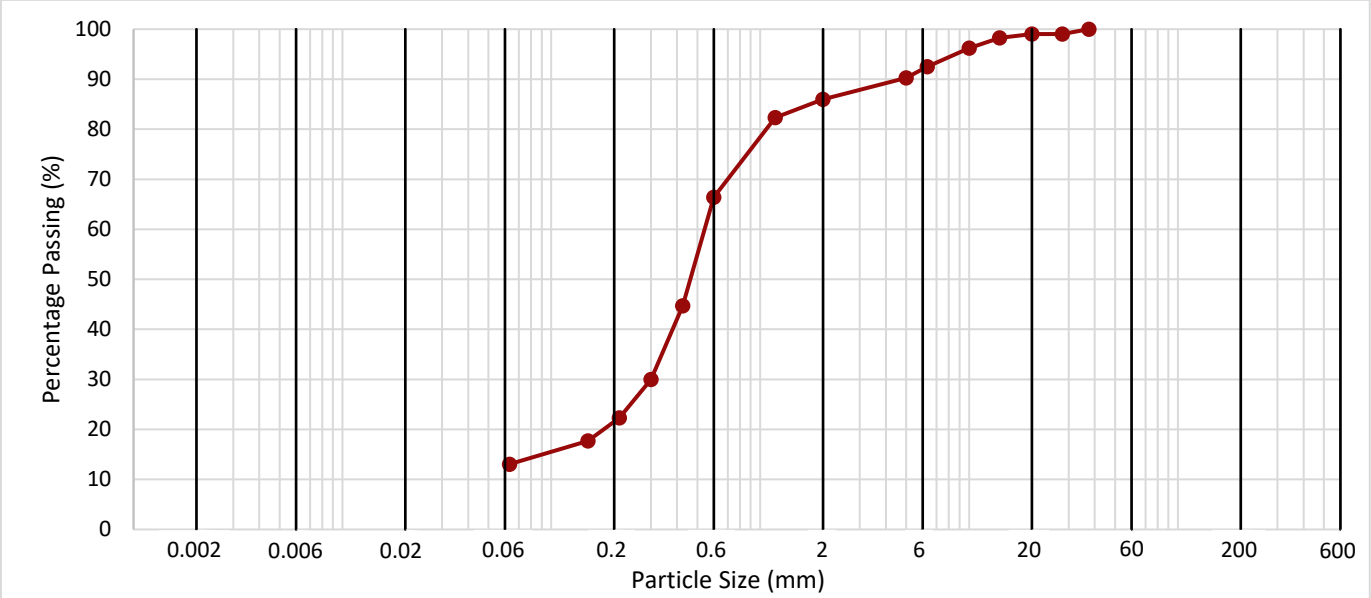
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	2.40 - 2.90	B	6	Brown gravelly slightly silty clayey SAND. Gravel is black, brown and white angular to subangular flint.	All material required for wet sieve. No hydrometer tested.

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	86	73
1.18	82	
0.600	66	
0.425	45	
0.300	30	
0.212	22	
0.150	18	
0.063	13	

Fines By Dry Mass (%)	
<0.063mm	13

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		14
125		
90		
63		
50		
37.5	100	
28	99	
20	99	
14	98	
10	96	
6.3	92	
5	90	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

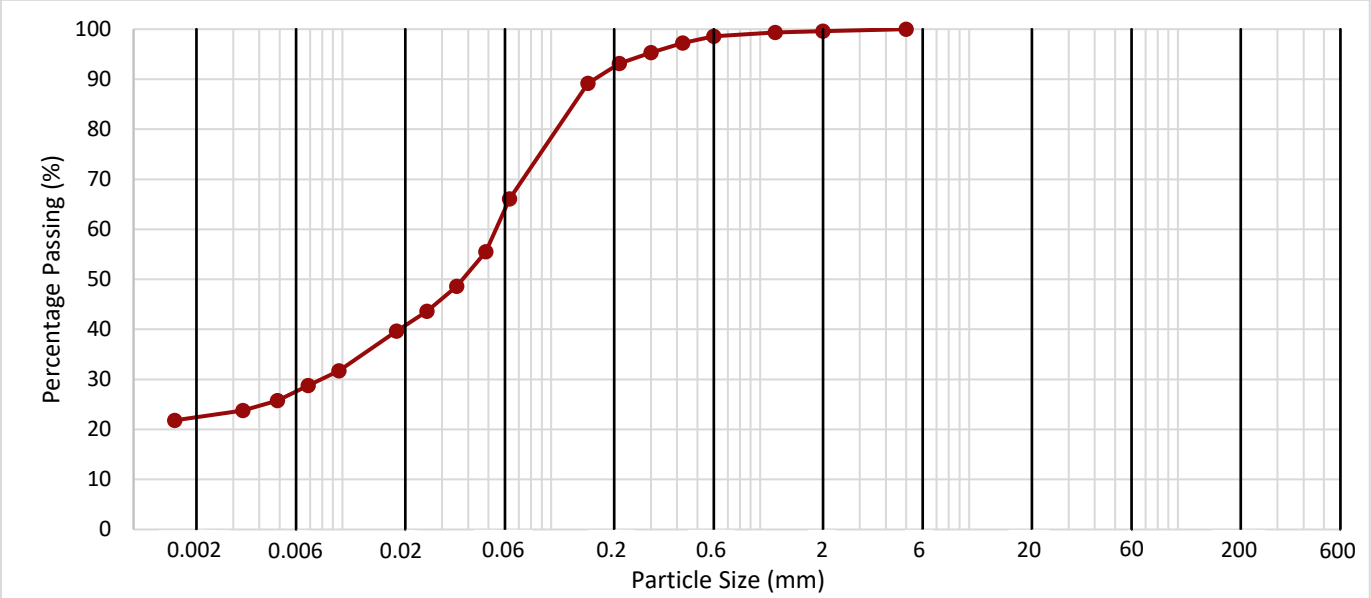
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	4.80	B	10	Very soft olive slightly sandy silty CLAY with occasional bluish grey and orange mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0487	56	44	
	0.0353	49		
	0.0254	44		
	0.0182	40		22
	0.0096	32		
	0.0068	29		
	0.0049	26		
	0.0033	24		
	0.0016	22		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	34
1.18	99	
0.600	99	
0.425	97	
0.300	95	
0.212	93	
0.150	89	
0.063	66	

Fines By Dry Mass (%)	
<0.063mm	66

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

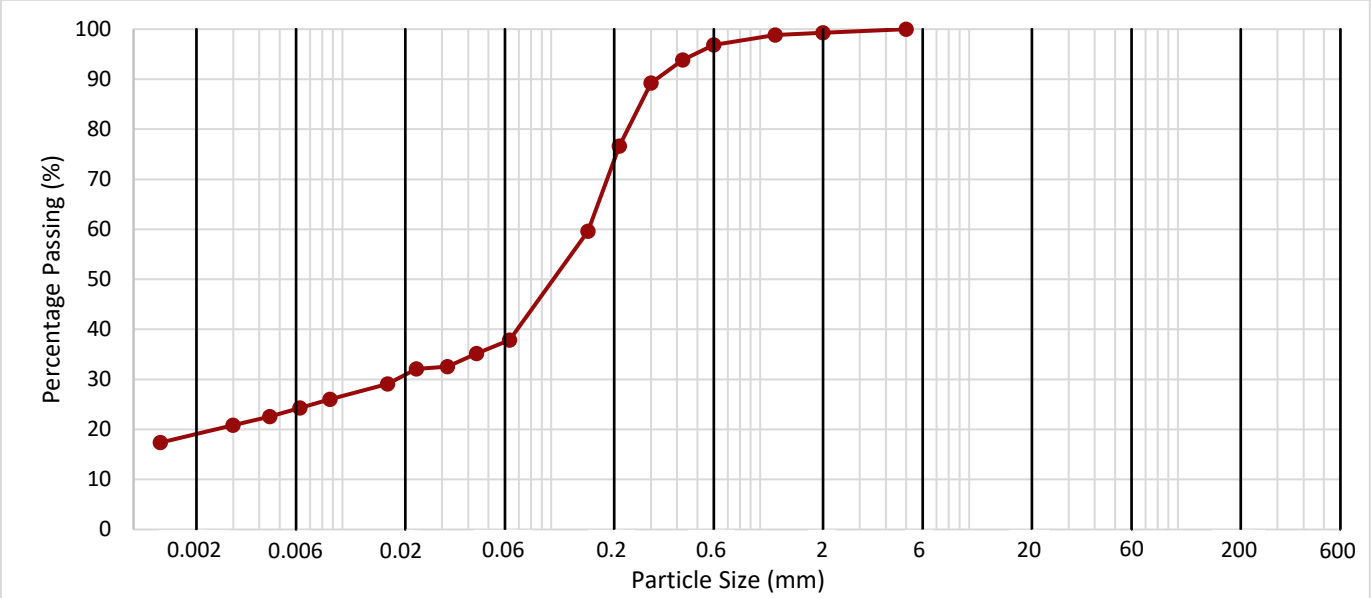
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	23.60 - 23.90	B	48	Dark grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0439	35	19	
	0.0319	33		
	0.0226	32		
	0.0165	29		19
	0.0087	26		
	0.0063	24		
	0.0045	23		
	0.0030	21		
	0.0013	17		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	61
1.18	99	
0.600	97	
0.425	94	
0.300	89	
0.212	77	
0.150	60	
0.063	38	

Fines By Dry Mass (%)	
<0.063mm	38

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

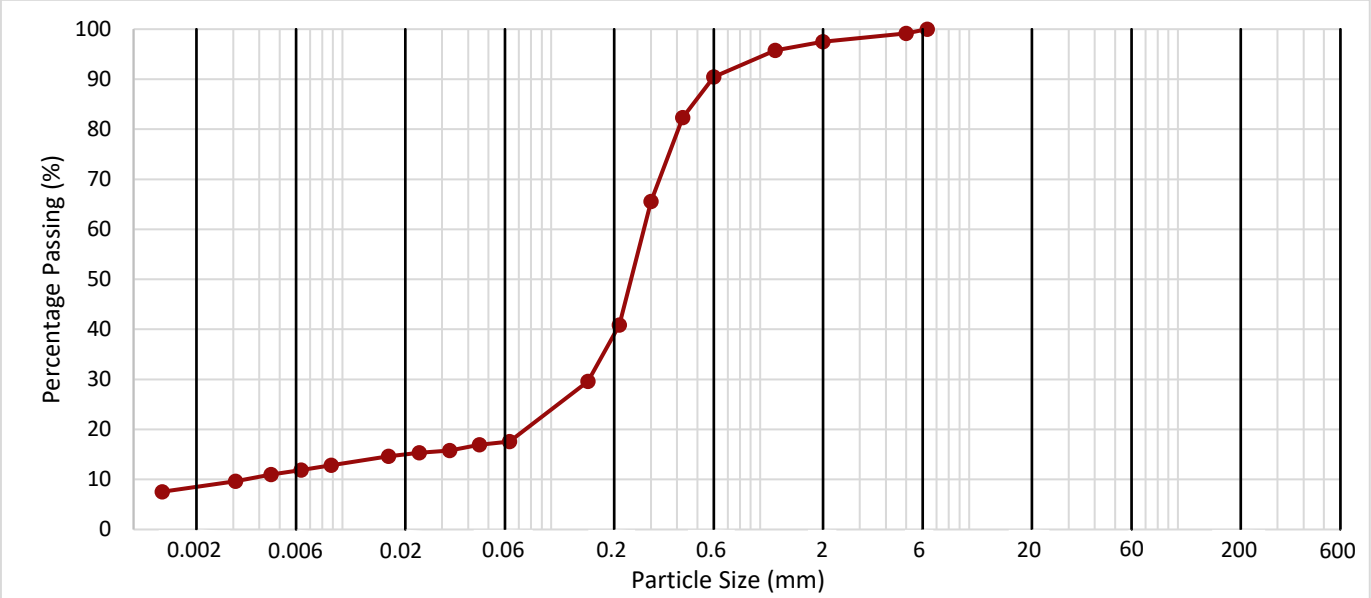
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	27.40 - 27.90	B	56	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0453	17	10
	0.0327	16	
	0.0233	15	
	0.0166	15	Clay by Dry Mass (%)
	0.0089	13	
	0.0063	12	
	0.0046	11	8
	0.0031	10	
	0.0014	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	97	79
1.18	96	
0.600	90	
0.425	82	
0.300	66	
0.212	41	
0.150	30	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		3
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

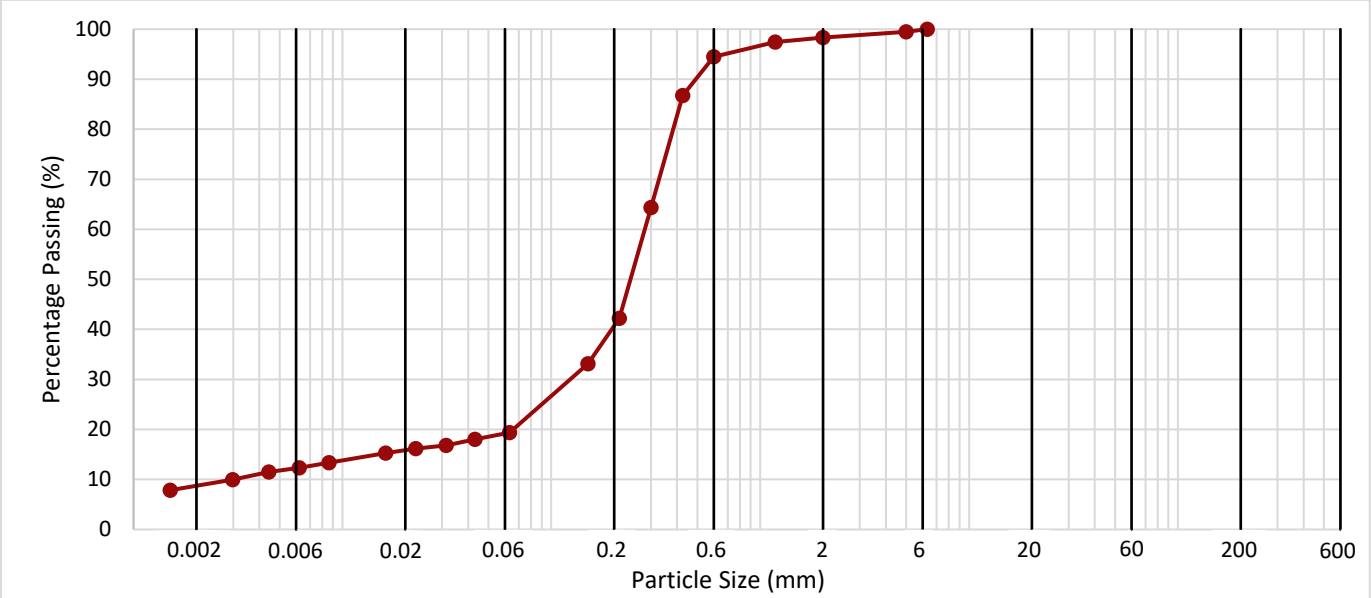
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	30.40 - 30.90	B	62	Dark grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0432	18	10
0.0313	17	
0.0224	16	
0.0161	15	Clay by Dry Mass (%)
0.0086	13	
0.0062	12	
0.0044	11	9
0.0030	10	
0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	79
1.18	97	
0.600	95	
0.425	87	
0.300	64	
0.212	42	
0.150	33	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

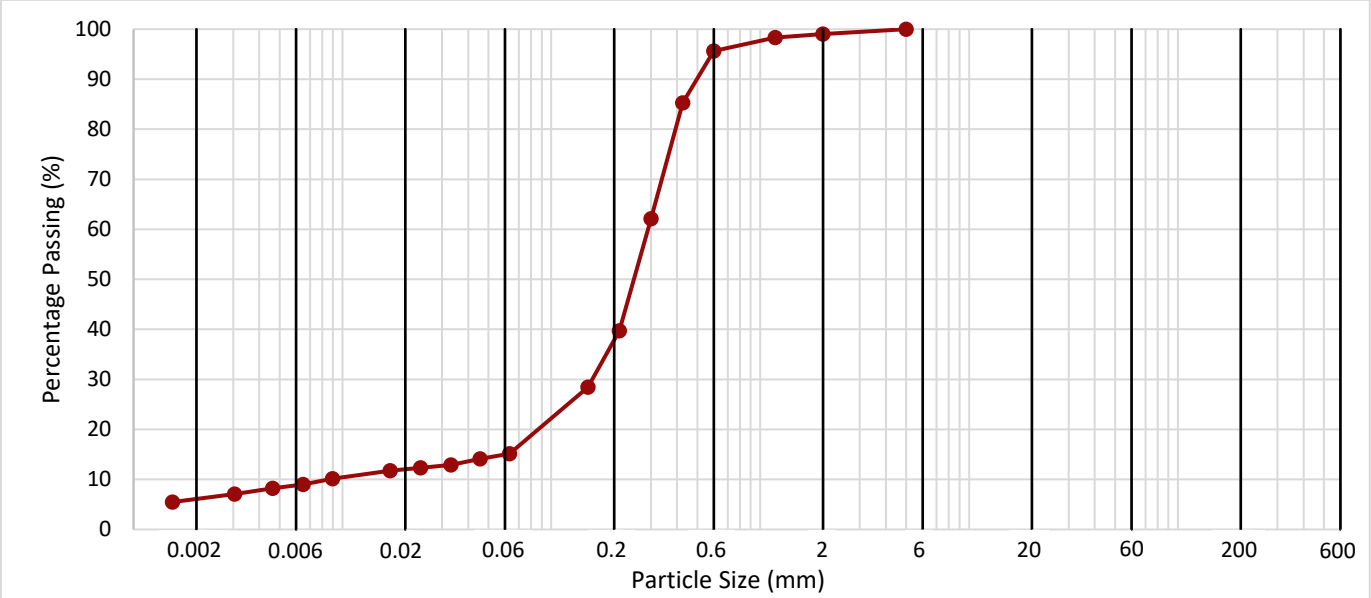
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	33.40 - 33.90	B	68	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0456	14	9	
	0.0330	13		
	0.0236	12		
	0.0169	12		
	0.0090	10		
	0.0065	9		
	0.0046	8		6
	0.0030	7		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	98	
0.600	96	
0.425	85	
0.300	62	
0.212	40	
0.150	28	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

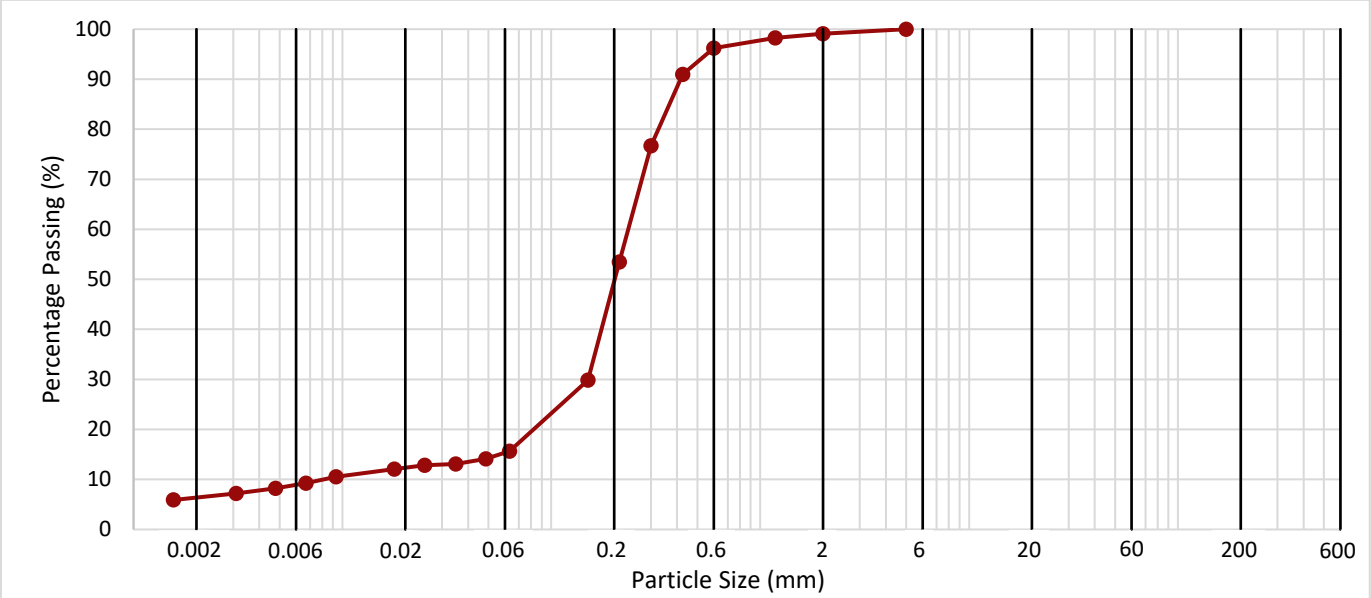
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	36.40 - 36.90	B	74	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0487	14	10
	0.0349	13	
	0.0248	13	
	0.0177	12	Clay by Dry Mass (%)
	0.0093	11	
	0.0067	9	
	0.0048	8	6
	0.0031	7	
	0.0016	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	83
1.18	98	
0.600	96	
0.425	91	
0.300	77	
0.212	53	
0.150	30	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

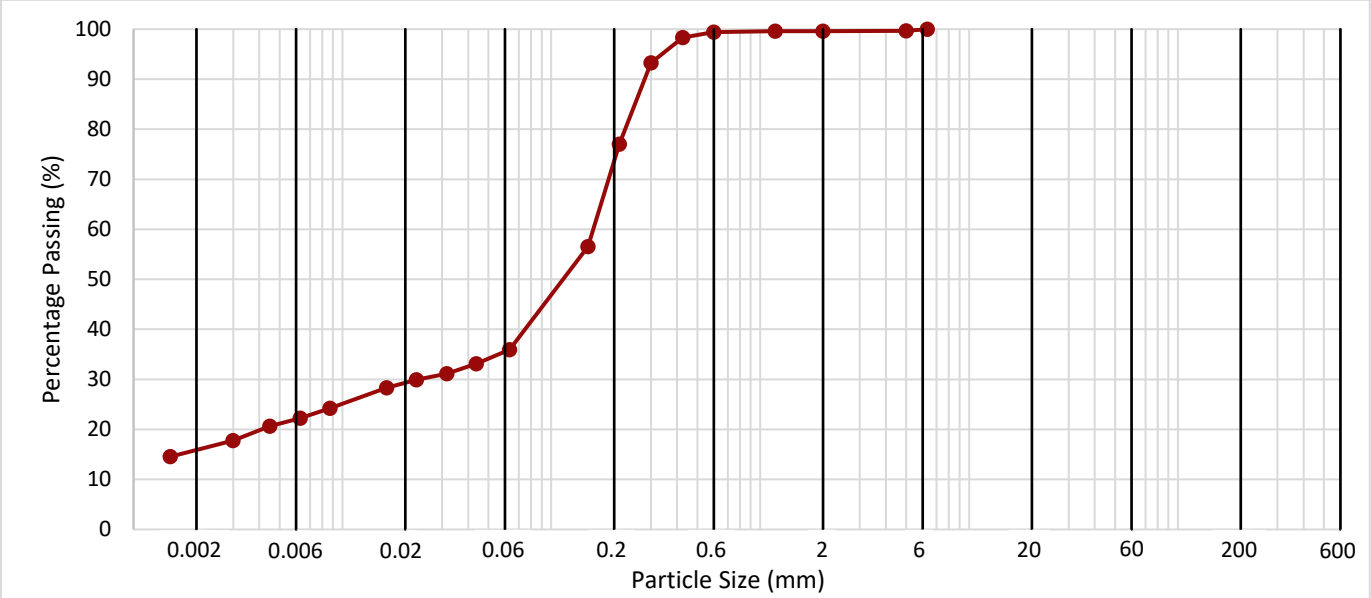
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	39.40 - 39.90	B	80	Very soft dark olive grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0437	33	**20**	
0.0316	31		
0.0226	30		
0.0163	28		
0.0087	24		
0.0063	22		
0.0045	21	**16**	
0.0030	18		
0.0015	15		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	**64**
1.18	100	
0.600	99	
0.425	98	
0.300	93	
0.212	77	
0.150	57	
0.063	36	

Fines By Dry Mass (%)	
<0.063mm	**36**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

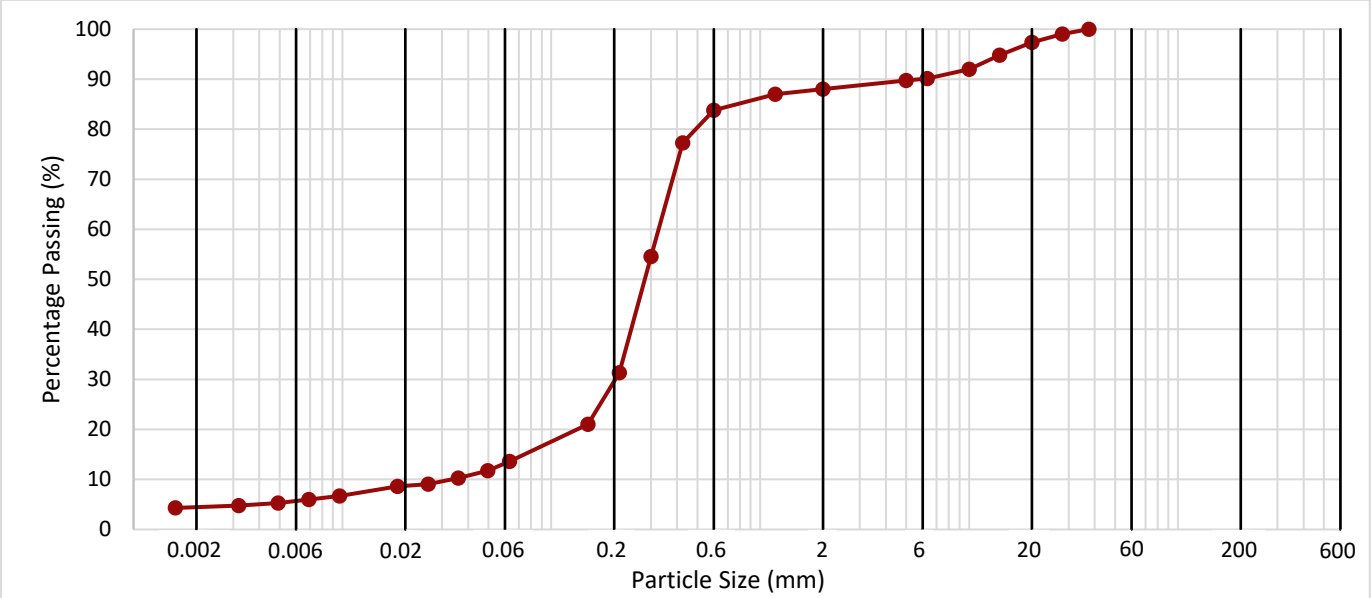
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	0.70 - 1.00	B	2	Dark brown gravelly silty slightly clayey SAND with rare concrete and brick fragments. Gravel is brown, black and white angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0497	12	10	
	0.0359	10		
	0.0258	9		
	0.0183	9		4
	0.0097	7		
	0.0069	6		
	0.0049	5		
	0.0032	5		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	88	74
1.18	87	
0.600	84	
0.425	77	
0.300	55	
0.212	31	
0.150	21	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		12
125		
90		
63		
50		
37.5	100	
28	99	
20	97	
14	95	
10	92	
6.3	90	
5	90	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

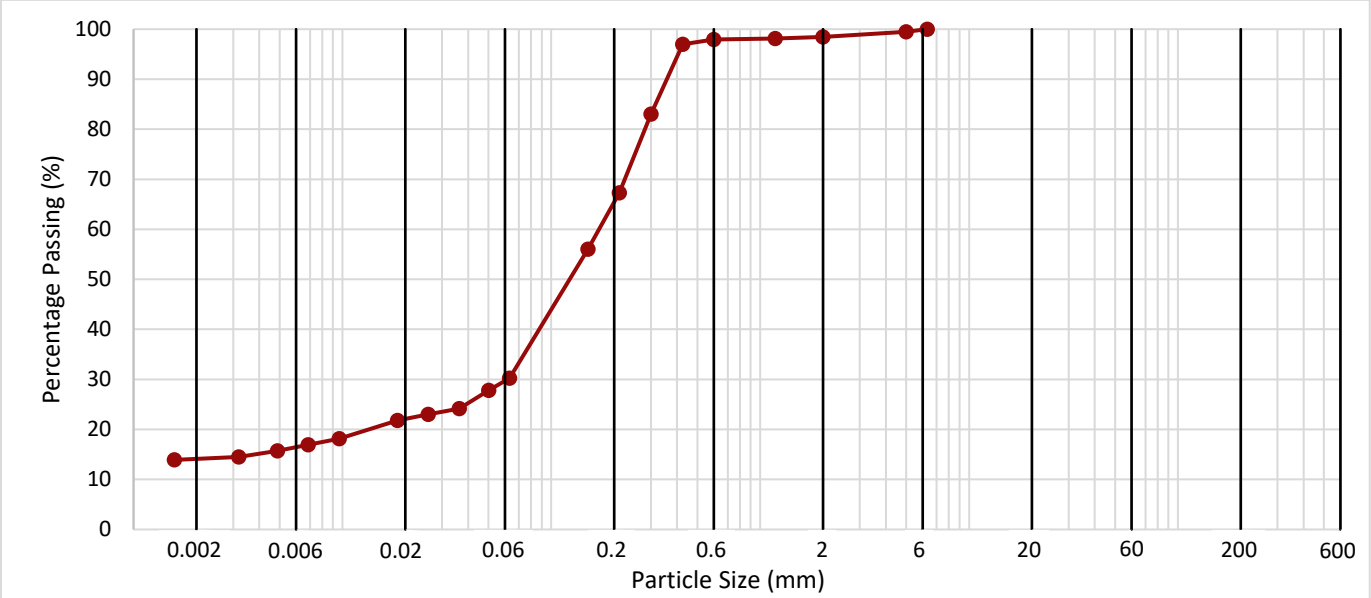
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	2.00 - 2.50	B	6	Soft brownish yellow slightly gravelly very sandy silty CLAY with rare light bluish grey mottling.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0502	28	16
0.0362	24	
0.0258	23	
0.0183	22	Clay by Dry Mass (%)
0.0096	18	
0.0069	17	
0.0049	16	14
0.0032	15	
0.0016	14	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	68
1.18	98	
0.600	98	
0.425	97	
0.300	83	
0.212	67	
0.150	56	
0.063	30	

Fines By Dry Mass (%)	
<0.063mm	30

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

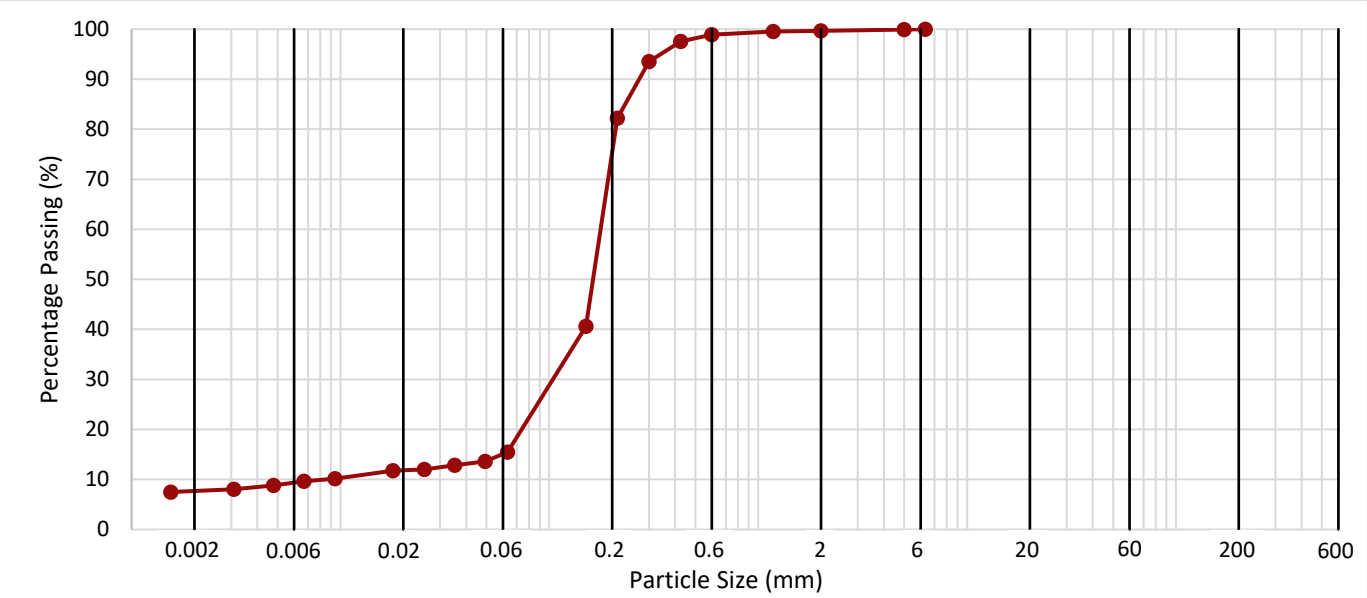
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	5.00 - 5.50	B	12	Yellow silty clayey SAND with rare light bluish grey pockets.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0494	14	7
	0.0353	13	
	0.0252	12	
	0.0179	12	Clay by Dry Mass (%)
	0.0094	10	
	0.0067	10	
	0.0048	9	8
	0.0031	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	85
1.18	100	
0.600	99	
0.425	98	
0.300	94	
0.212	82	
0.150	41	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

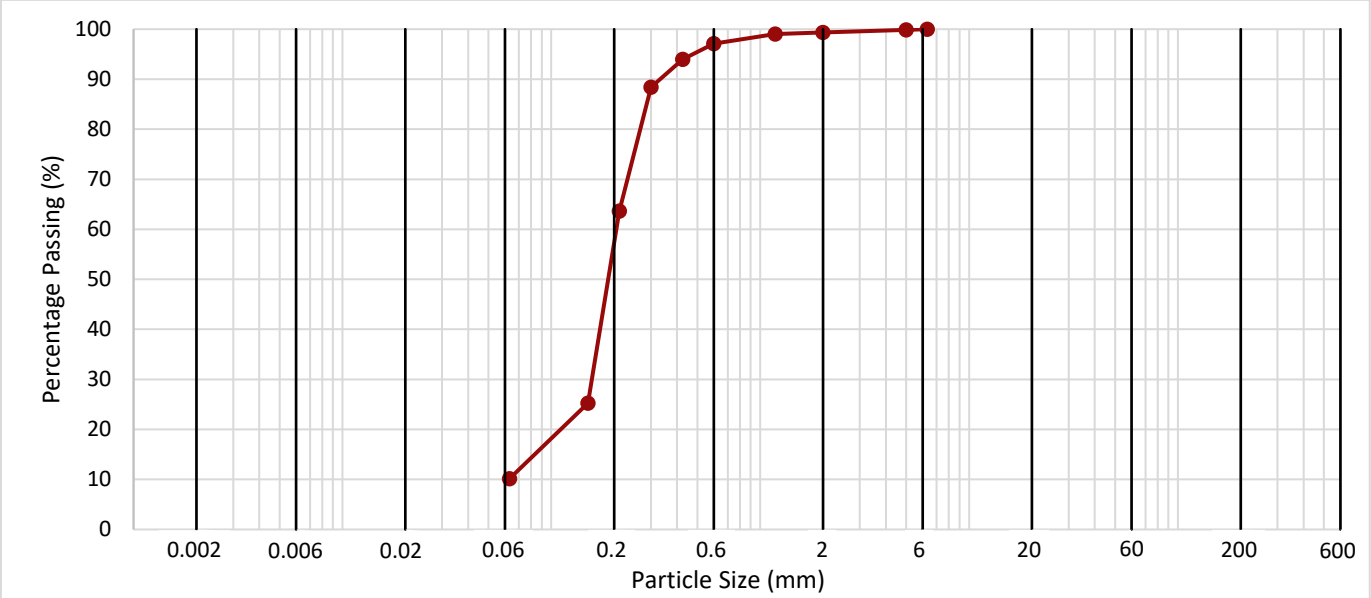
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	7.00 - 7.50	B	15	Pale olive yellow silty clayey SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	89
1.18	99	
0.600	97	
0.425	94	
0.300	88	
0.212	64	
0.150	25	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

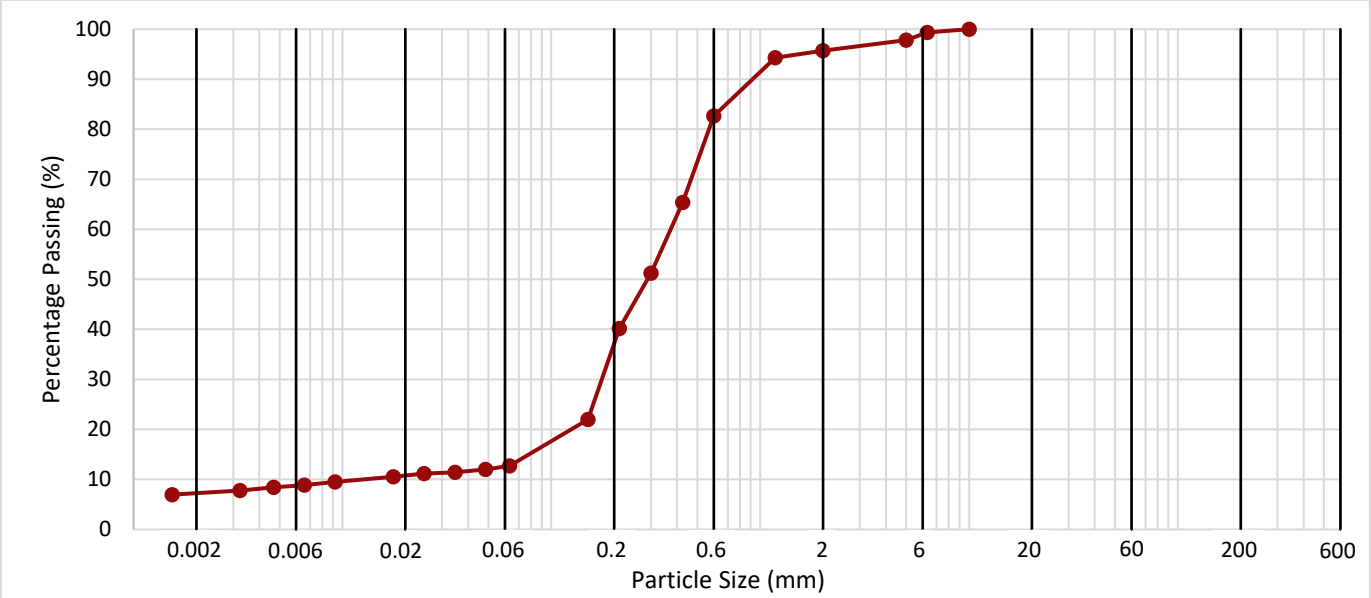
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	10.00 - 10.50	B	22	Olive slightly gravelly silty clayey SAND with rare bluish grey mottling. Gravel is fine flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0485	12	6	
	0.0347	11		
	0.0246	11		
	0.0176	11		7
	0.0092	9		
	0.0066	9		
	0.0047	8		
	0.0032	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	83
1.18	94	
0.600	83	
0.425	65	
0.300	51	
0.212	40	
0.150	22	
0.063	13	

Fines By Dry Mass (%)	
<0.063mm	13

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	98	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

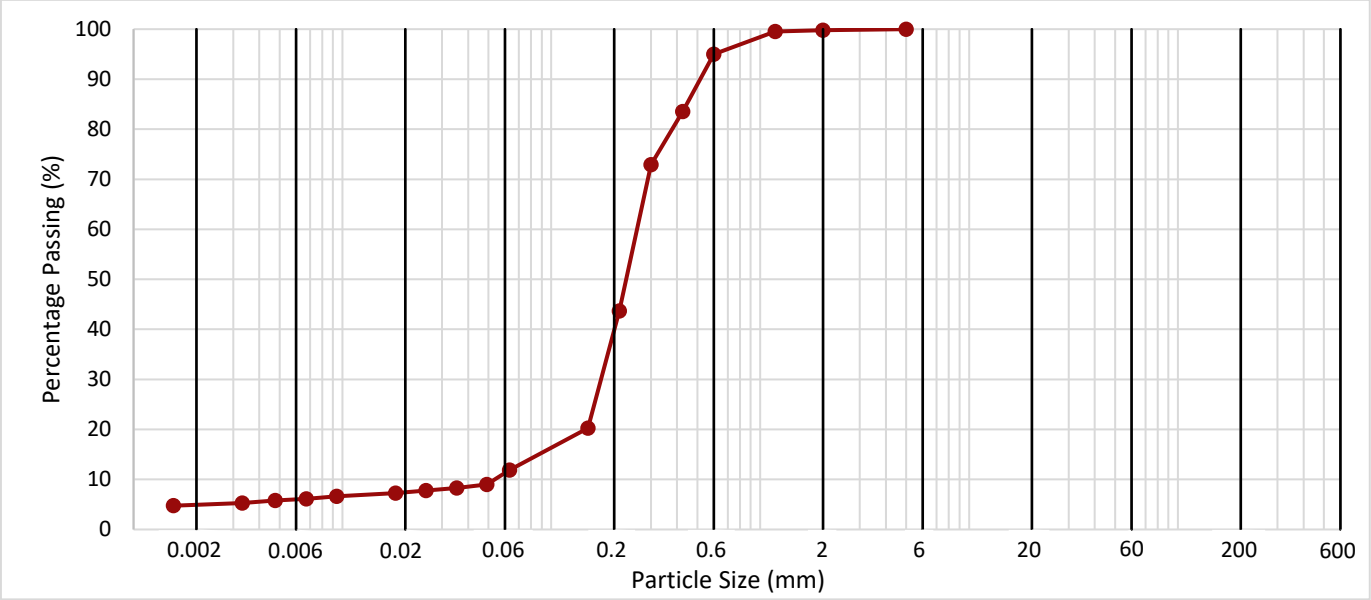
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	14.00 - 14.50	B	31	Olive silty clayey SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0491	9	7	
	0.0352	8		
	0.0252	8		
	0.0180	7		5
	0.0094	7		
	0.0067	6		
	0.0048	6		
	0.0033	5		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	100	
0.600	95	
0.425	84	
0.300	73	
0.212	44	
0.150	20	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

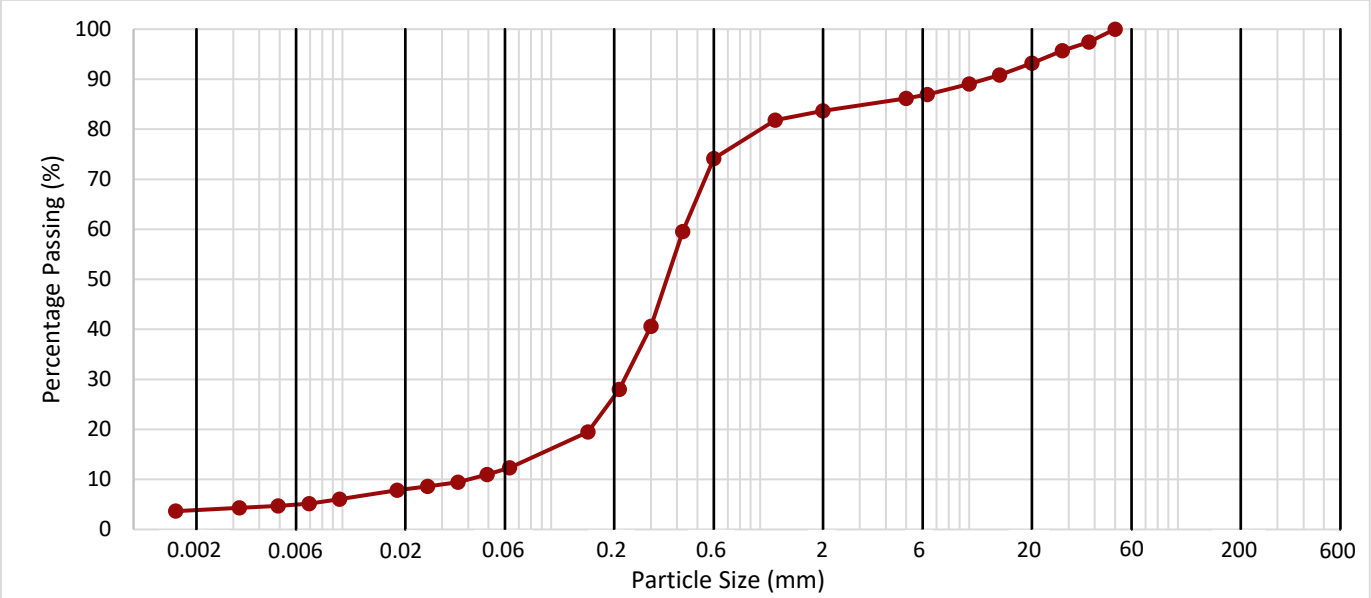
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	0.60 - 1.00	B	1	Black gravelly silty slightly clayey SAND with occasional concrete fragments. Gravel is brown, white and black angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0494	11	8	
	0.0357	9		
	0.0256	9		
	0.0183	8		4
	0.0097	6		
	0.0069	5		
	0.0049	5		
	0.0032	4		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	84	72
1.18	82	
0.600	74	
0.425	60	
0.300	41	
0.212	28	
0.150	20	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		16
125		
90		
63		
50	100	
37.5	97	
28	96	
20	93	
14	91	
10	89	
6.3	87	
5	86	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

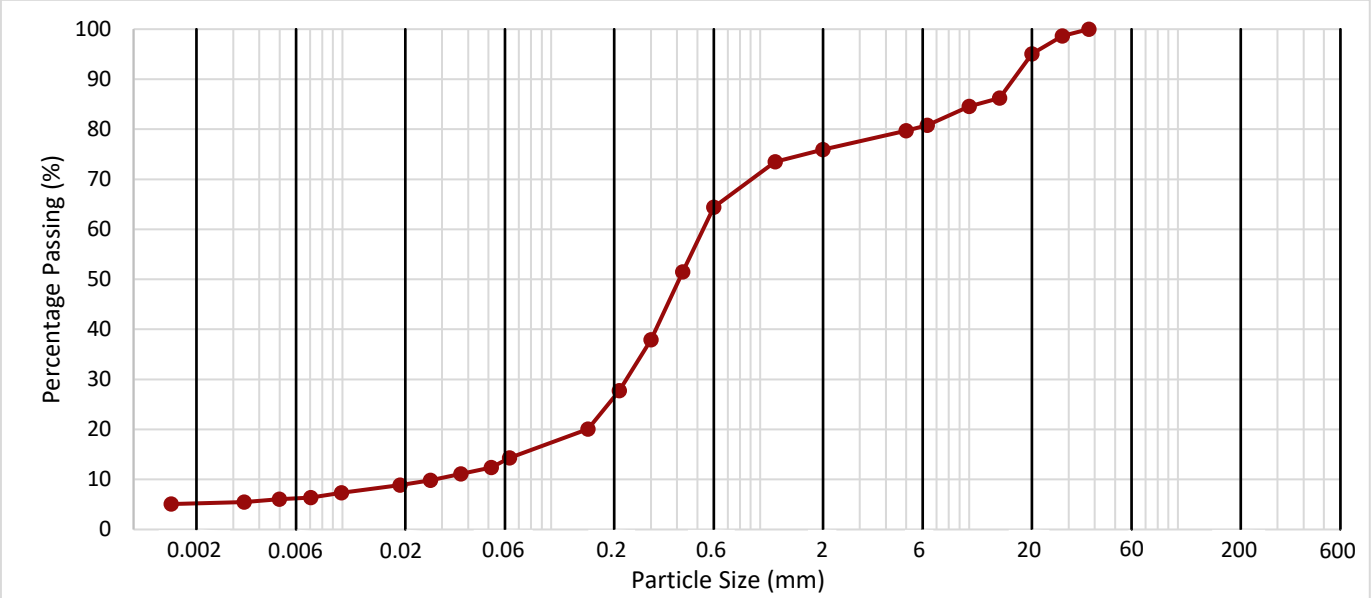
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	1.50 - 1.90	B	4	Dark greyish brown very gravelly silty clayey SAND with occasional black pockets, and brick fragments. Gravel is black, brown and white angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0515	12	9	
	0.0369	11		
	0.0264	10		
	0.0189	9		
	0.0099	7		
	0.0070	6		
	0.0050	6		5
	0.0034	5		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	76	62
1.18	74	
0.600	64	
0.425	51	
0.300	38	
0.212	28	
0.150	20	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		24
125		
90		
63		
50		
37.5	100	
28	99	
20	95	
14	86	
10	85	
6.3	81	
5	80	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

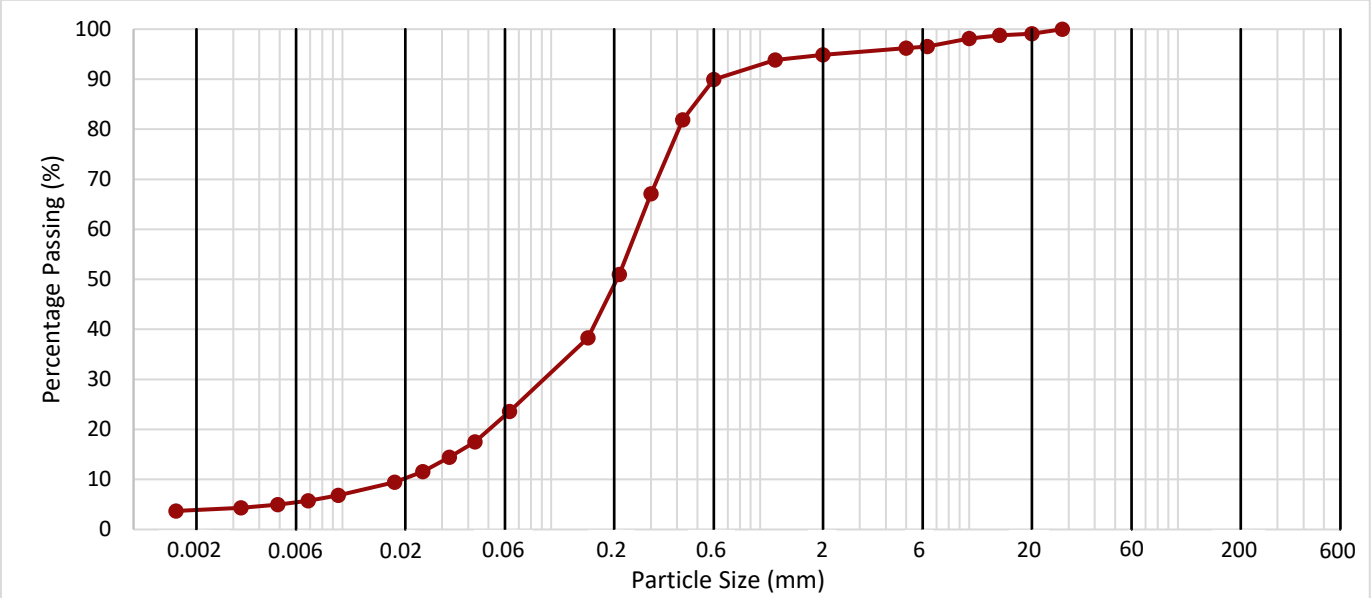
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	2.10 - 2.30	B	6	Brown gravelly very silty slightly clayey SAND. Gravel is brown, white and black angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0432	17	20	
	0.0325	14		
	0.0242	12		
	0.0177	9		4
	0.0096	7		
	0.0069	6		
	0.0049	5		
	0.0033	4		
	0.0016	4		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	95	71
1.18	94	
0.600	90	
0.425	82	
0.300	67	
0.212	51	
0.150	38	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		5
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	99	
10	98	
6.3	97	
5	96	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

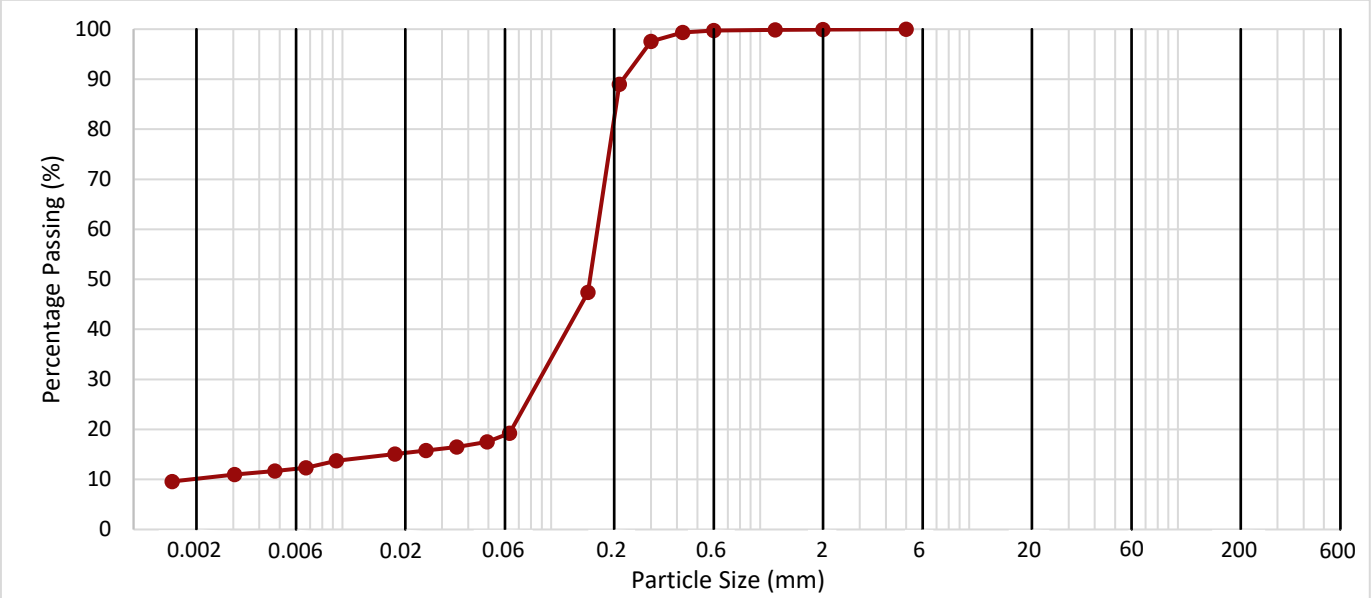
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	4.50 - 5.00	B	12	Pale olive silty clayey SAND with occasional light bluish grey mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0494	17	9
0.0353	16	
0.0251	16	
0.0179	15	Clay by Dry Mass (%)
0.0093	14	
0.0067	12	
0.0048	12	10
0.0030	11	
0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	81
1.18	100	
0.600	100	
0.425	99	
0.300	98	
0.212	89	
0.150	47	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

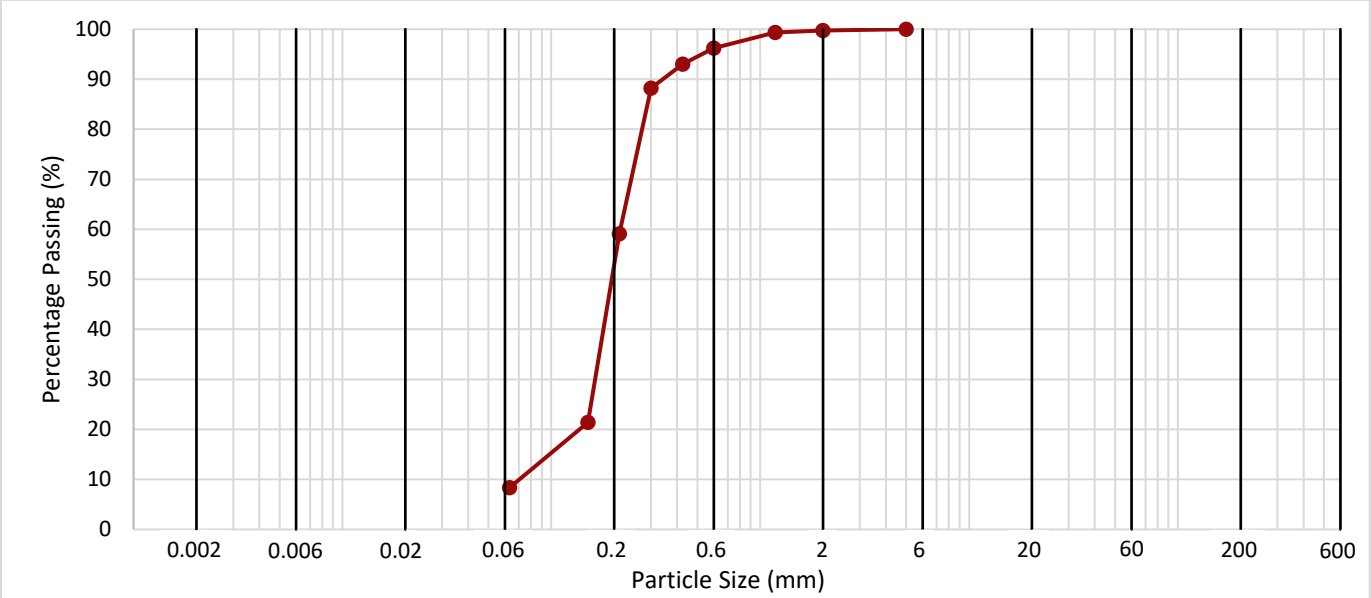
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	7.50 - 8.00	B	18	Pale olive slightly silty slightly clayey slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	92
1.18	99	
0.600	96	
0.425	93	
0.300	88	
0.212	59	
0.150	21	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	8

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

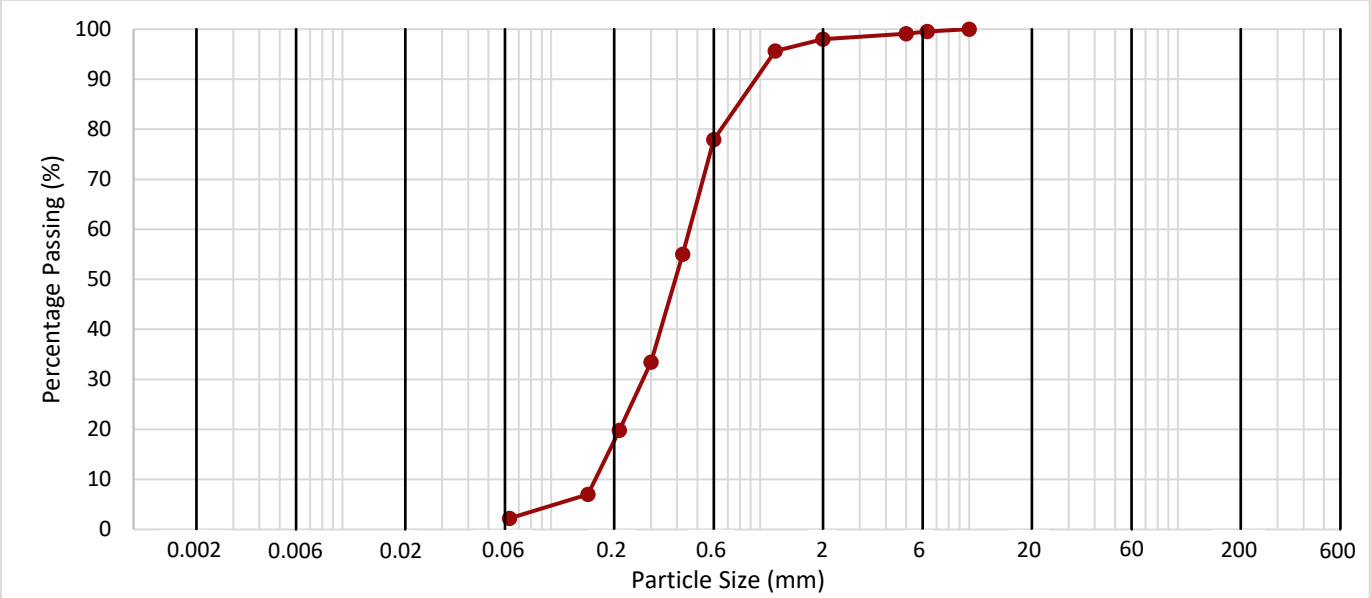
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	10.50 - 11.00	B	24	Pale brown slightly gravelly slightly silty SAND with occasional grey pockets. Gravel is black, white and brown angular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	96
1.18	96	
0.600	78	
0.425	55	
0.300	33	
0.212	20	
0.150	7	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

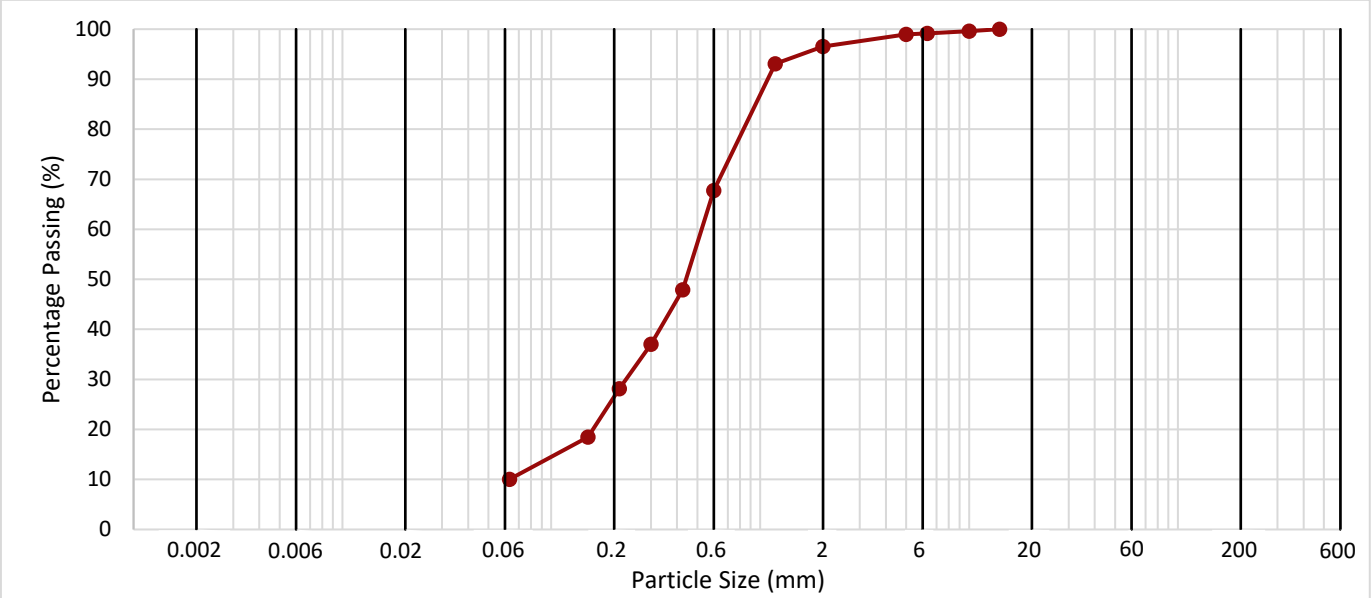
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	13.50 - 14.00	B	31	Olive slightly gravelly silty clayey SAND. Gravel is brown, black and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	97	87
1.18	93	
0.600	68	
0.425	48	
0.300	37	
0.212	28	
0.150	18	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		3
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

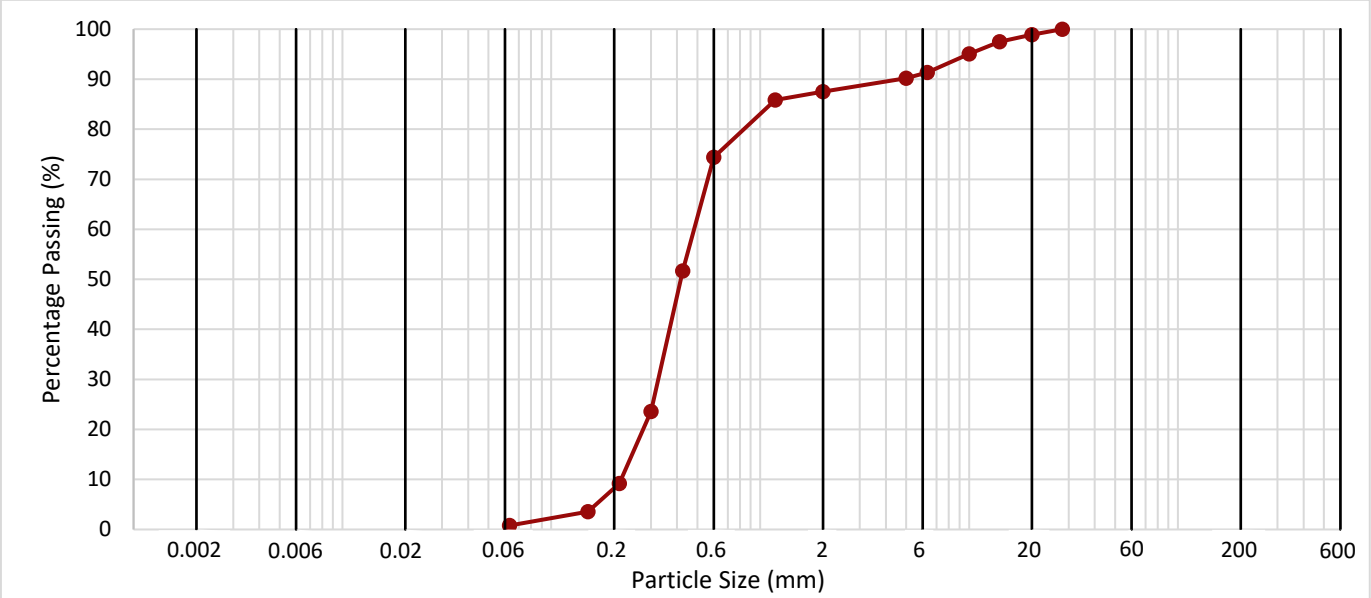
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC26	0.70 - 1.00	B	2	Black and dark orangish brown gravelly slightly silty SAND with occasional brick and asphalt fragments. Gravel is brown, black and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	87	86
1.18	86	
0.600	74	
0.425	52	
0.300	24	
0.212	9	
0.150	4	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		13
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	98	
10	95	
6.3	91	
5	90	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

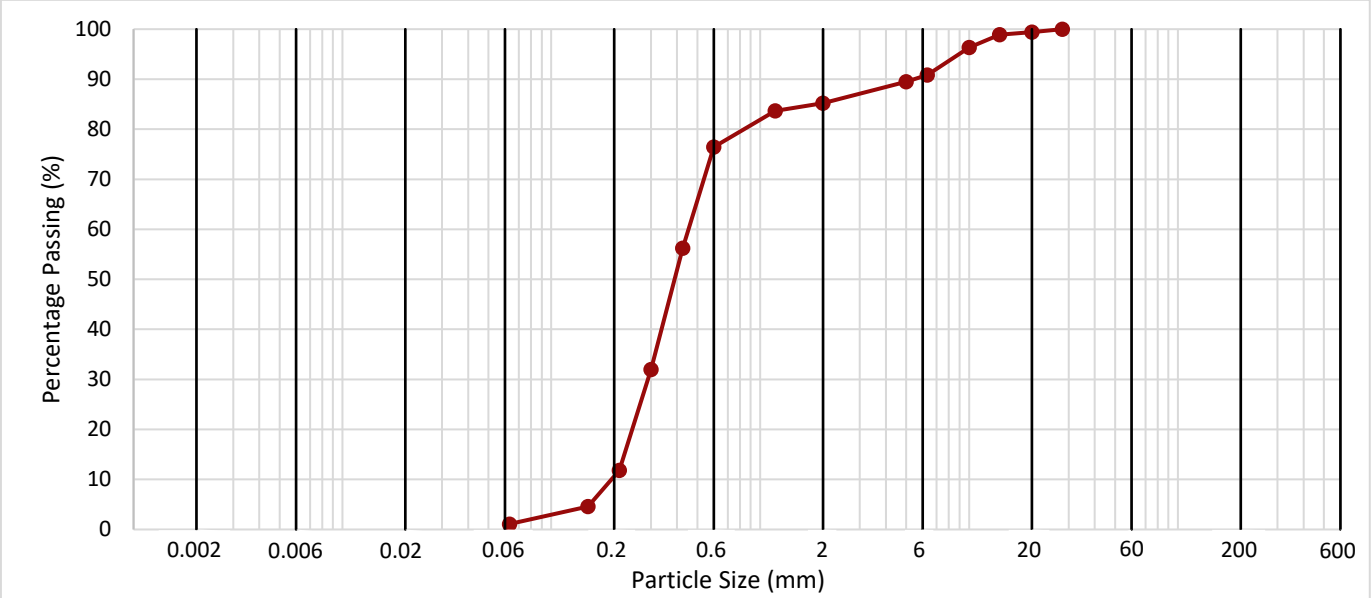
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC26	2.00 - 2.25	B	6	Light brown gravelly slightly silty SAND. Gravel is black, white and brown subangular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	85	84
1.18	84	
0.600	76	
0.425	56	
0.300	32	
0.212	12	
0.150	5	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		15
125		
90		
63		
50		
37.5		
28	100	
20	99	
14	99	
10	96	
6.3	91	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

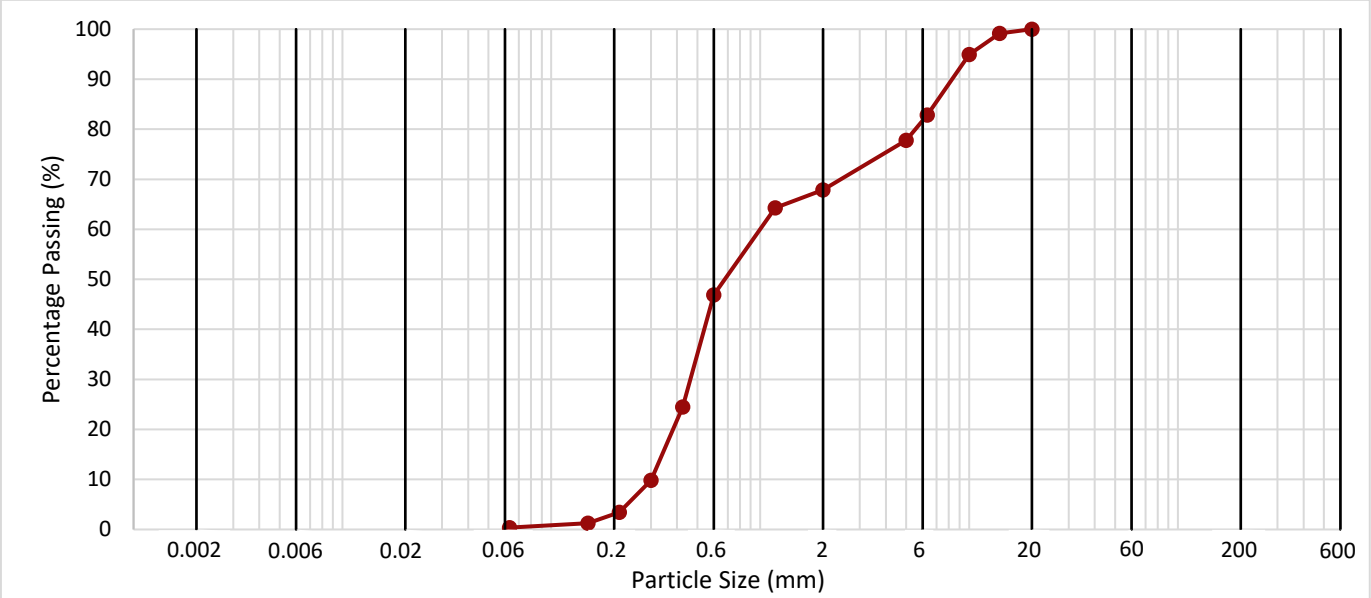
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC26	6.00 - 6.50	B	11	Yellowish brown very gravelly SAND with occasional grey pockets. Gravel is black, brown and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	68	68
1.18	64	
0.600	47	
0.425	24	
0.300	10	
0.212	3	
0.150	1	
0.063	0	

Fines By Dry Mass (%)	
<0.063mm	0

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		32
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	95	
6.3	83	
5	78	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

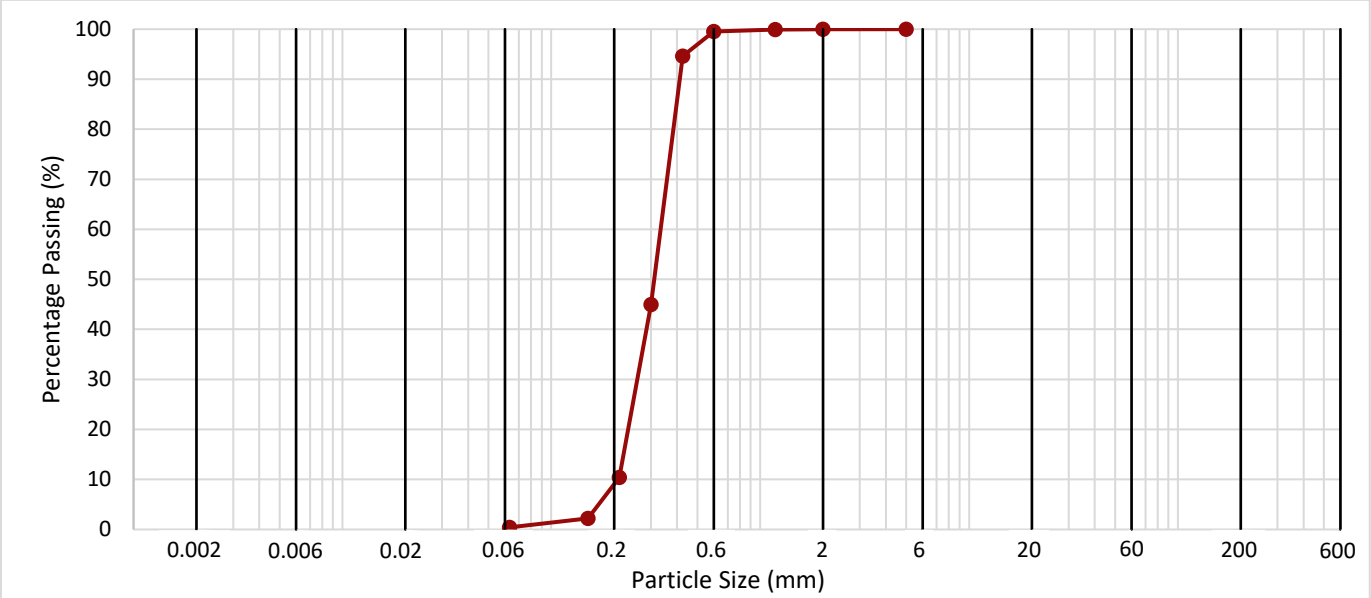
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC26	10.00 - 10.50	B	15	Yellowish brown SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	100
1.18	100	
0.600	100	
0.425	95	
0.300	45	
0.212	10	
0.150	2	
0.063	0	

Fines By Dry Mass (%)	
<0.063mm	0

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

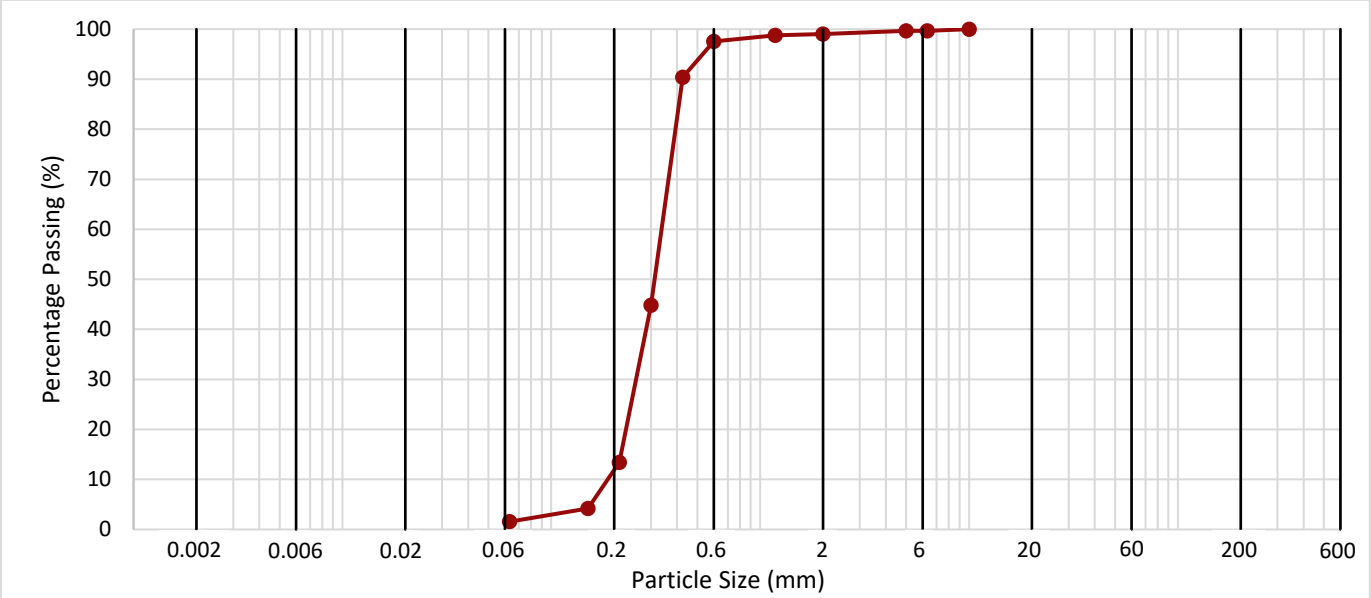
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC26	14.00 - 14.50	B	20	Light yellowish brown slightly gravelly slightly silty SAND. Gravel is black, white and brown angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**97**
1.18	99	
0.600	98	
0.425	90	
0.300	45	
0.212	13	
0.150	4	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	**2**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

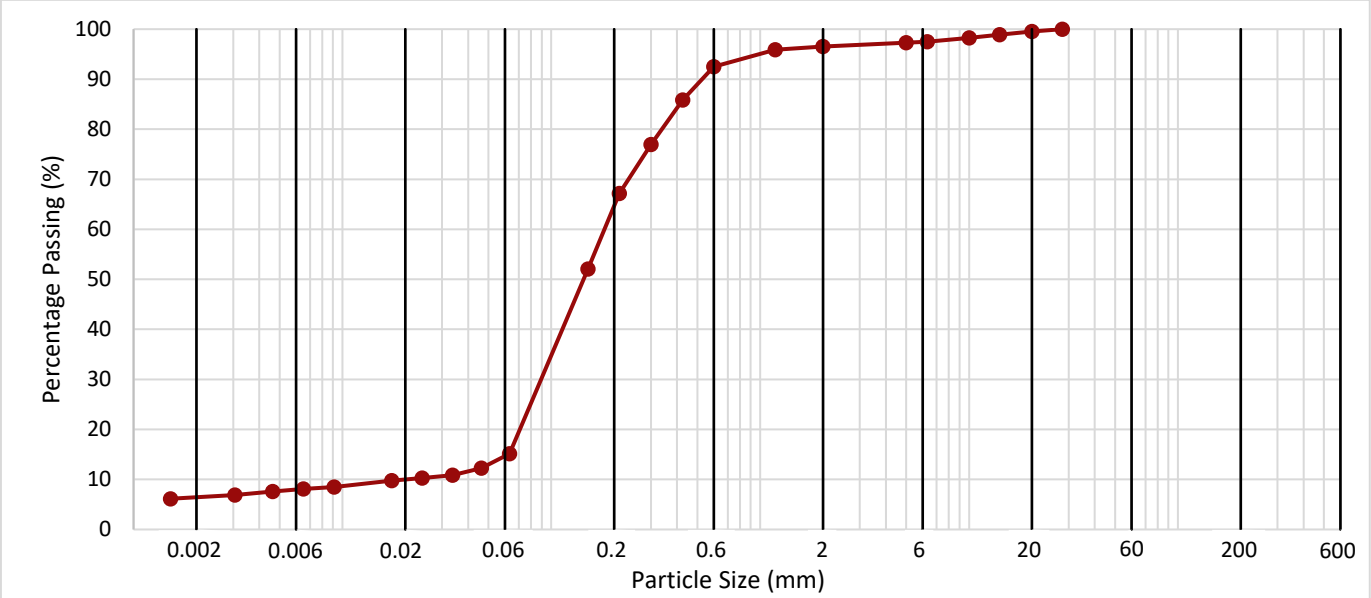
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	1.10 - 1.30	B	3	Yellowish brown slightly gravelly silty SAND with frequent brown very clayey lumps. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0463	12	9
	0.0337	11	
	0.0241	10	
	0.0172	10	Clay by Dry Mass (%)
	0.0091	8	
	0.0065	8	
	0.0046	8	6
	0.0031	7	
	0.0015	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	81
1.18	96	
0.600	93	
0.425	86	
0.300	77	
0.212	67	
0.150	52	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28	100	
20	100	
14	99	
10	98	
6.3	98	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

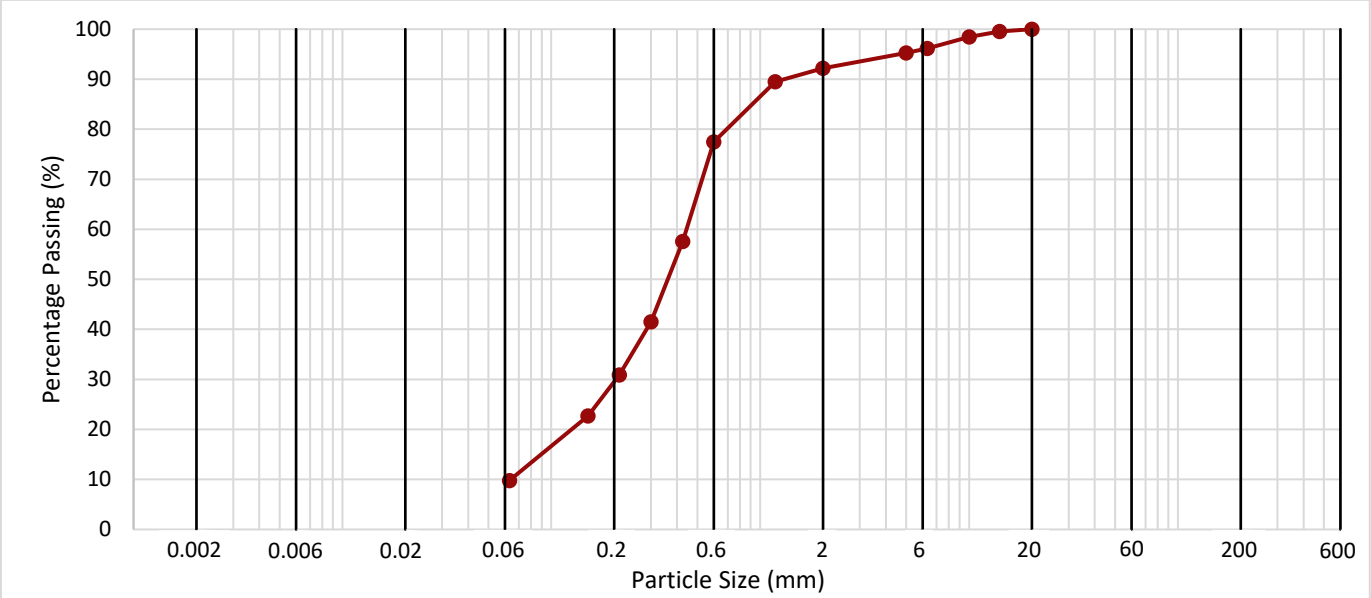
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	1.70 - 2.15	B	6	Olive brown gravelly silty clayey SAND. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	92	82
1.18	89	
0.600	77	
0.425	58	
0.300	42	
0.212	31	
0.150	23	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		8
125		
90		
63		
50		
37.5		
28		
20	100	
14	100	
10	98	
6.3	96	
5	95	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

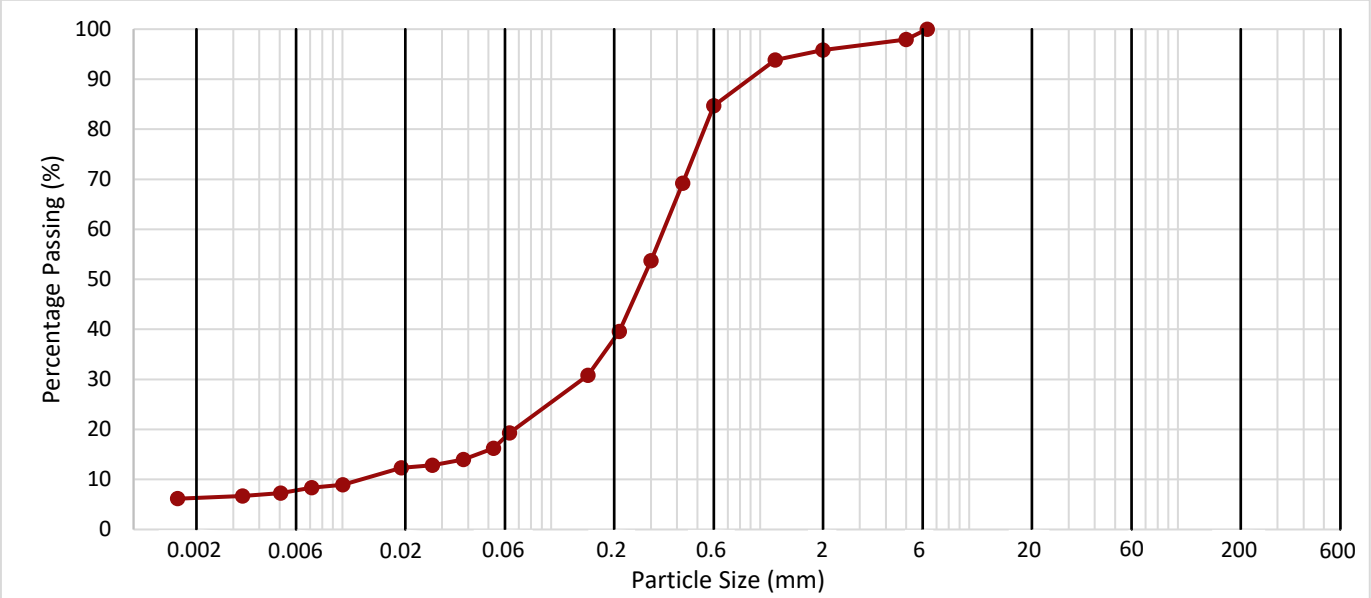
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	4.50 - 5.00	B	13	Very dark grey slightly gravelly silty clayey organic SAND locally oxidised to brown. Gravel is fine angular to subangular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0530	16	13	
	0.0379	14		
	0.0270	13		
	0.0191	12		6
	0.0100	9		
	0.0071	8		
	0.0051	7		
	0.0033	7		
	0.0016	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	77
1.18	94	
0.600	85	
0.425	69	
0.300	54	
0.212	40	
0.150	31	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	98	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

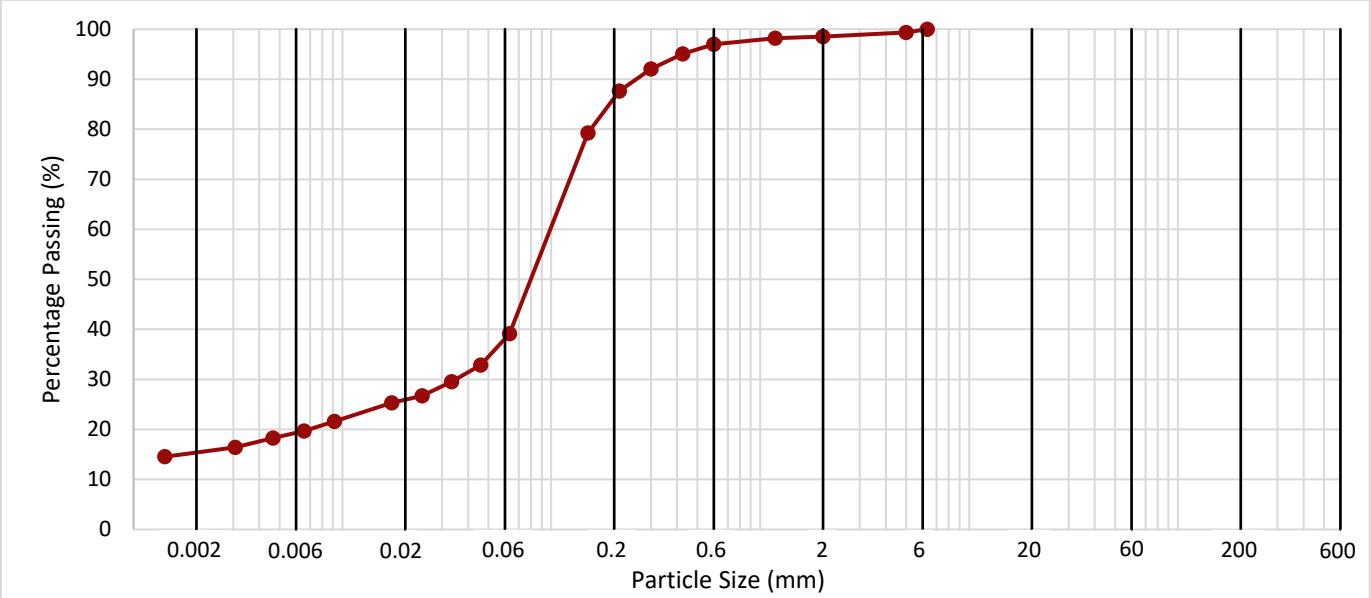
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	6.00 - 6.50	B	17	Very soft olive sandy silty slightly organic CLAY with occasional dark olive grey mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0459	33	24
0.0333	30	
0.0241	27	
0.0172	25	Clay by Dry Mass (%)
0.0091	22	
0.0065	20	
0.0047	18	15
0.0031	16	
0.0014	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	59
1.18	98	
0.600	97	
0.425	95	
0.300	92	
0.212	88	
0.150	79	
0.063	39	

Fines By Dry Mass (%)	
<0.063mm	39

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

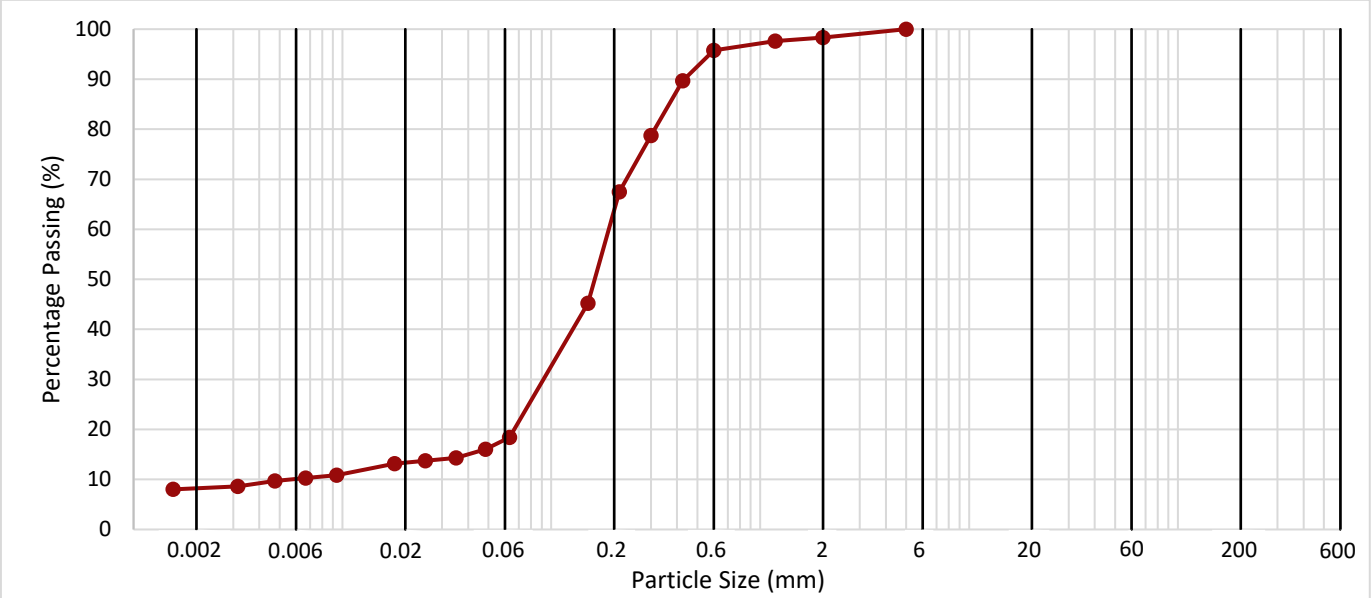
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	7.00 - 7.50	B	20	Olive brown silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0485	16	10
	0.0350	14	
	0.0249	14	
	0.0177	13	Clay by Dry Mass (%)
	0.0094	11	
	0.0067	10	
	0.0047	10	8
	0.0032	9	
	0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	80
1.18	98	
0.600	96	
0.425	90	
0.300	79	
0.212	67	
0.150	45	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

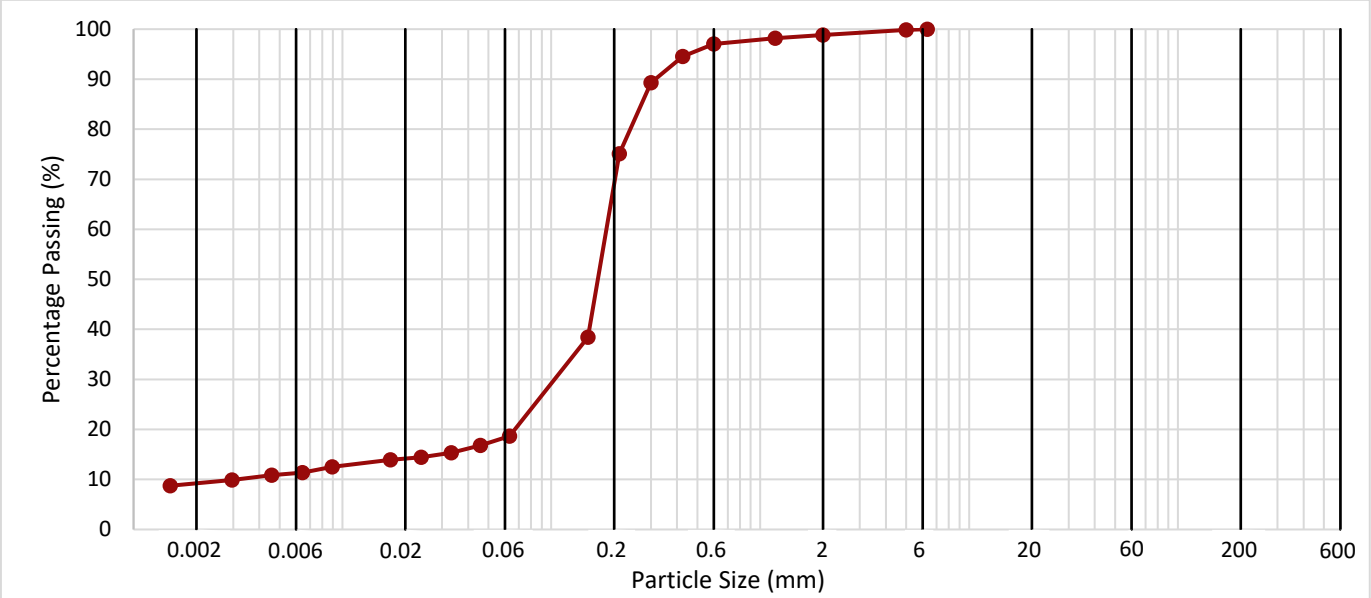
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	9.00 - 9.50	B	25	Greyish brown and brown slightly gravelly silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0458	17	10
	0.0332	15	
	0.0238	14	
	0.0170	14	Clay by Dry Mass (%)
	0.0089	13	
	0.0064	11	
	0.0046	11	9
	0.0030	10	
	0.0015	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	97	
0.425	95	
0.300	89	
0.212	75	
0.150	38	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

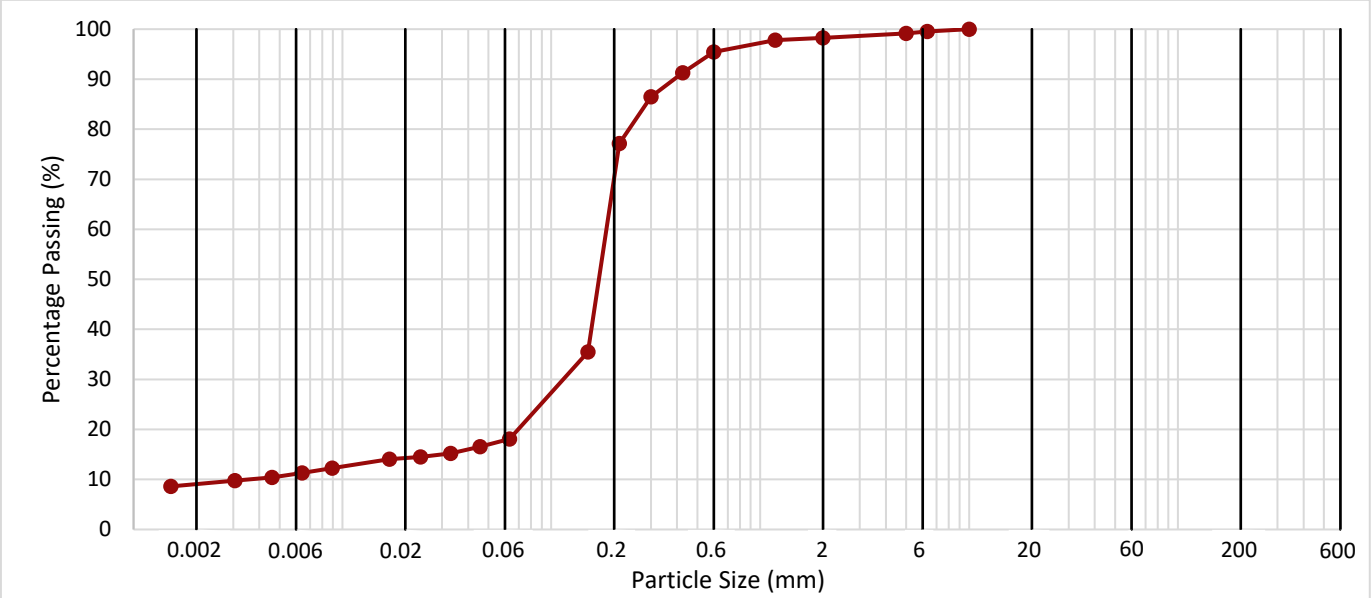
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	10.10 - 10.60	B	28	Pale olive slightly gravelly silty clayey SAND. Gravel is fine angular to subangular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0455	17	9	
	0.0330	15		
	0.0236	14		
	0.0168	14		9
	0.0089	12		
	0.0064	11		
	0.0046	10		
	0.0031	10		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	80
1.18	98	
0.600	95	
0.425	91	
0.300	86	
0.212	77	
0.150	35	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

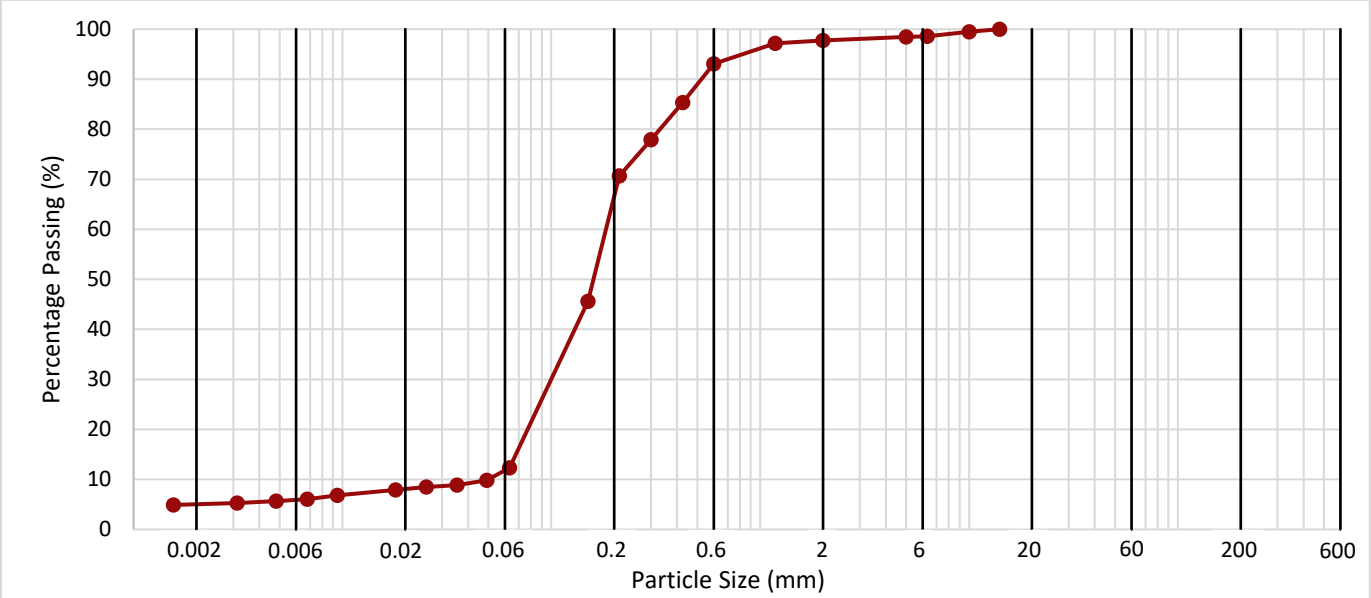
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	14.00 - 14.50	B	36	Dark bluish grey and brown slightly gravelly silty clayey SAND. Gravel is fine angular to subangular flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0492	10	7	
	0.0354	9		
	0.0252	8		
	0.0180	8		5
	0.0095	7		
	0.0068	6		
	0.0048	6		
	0.0031	5		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	86
1.18	97	
0.600	93	
0.425	85	
0.300	78	
0.212	71	
0.150	46	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	99	
6.3	99	
5	98	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

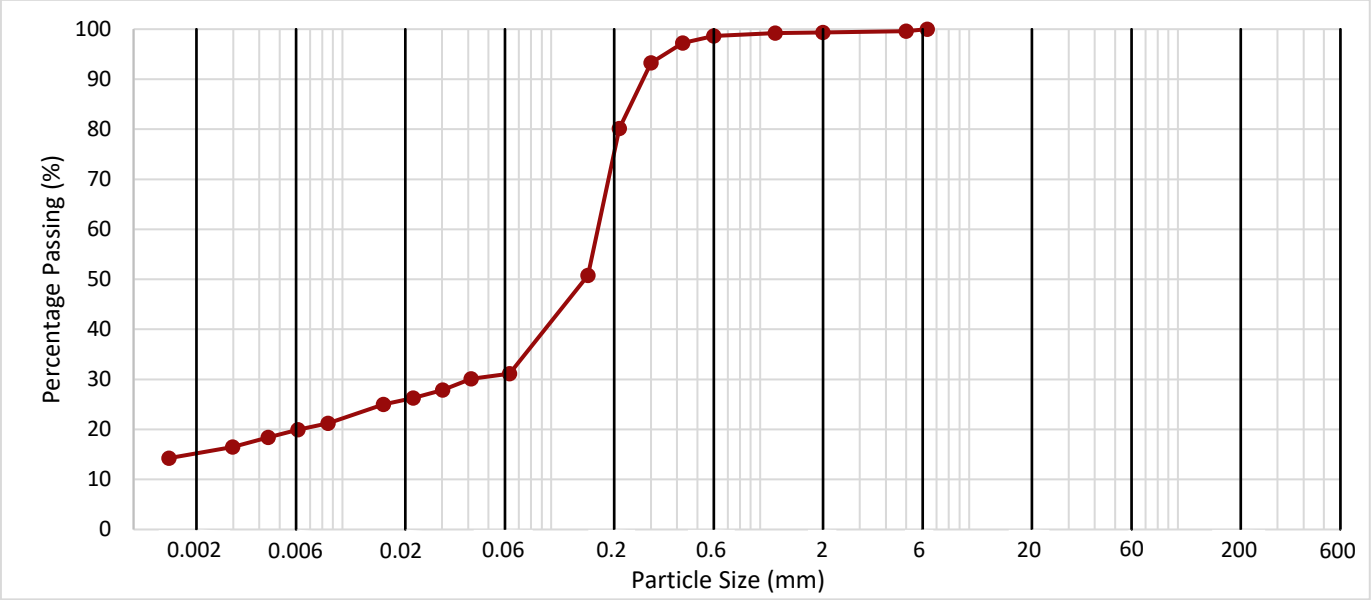
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	18.00 - 18.50	B	43	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0413	30	16	
	0.0302	28		
	0.0218	26		
	0.0157	25		15
	0.0085	21		
	0.0061	20		
	0.0044	18		
	0.0030	16		
	0.0015	14		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	68
1.18	99	
0.600	99	
0.425	97	
0.300	93	
0.212	80	
0.150	51	
0.063	31	

Fines By Dry Mass (%)	
<0.063mm	31

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

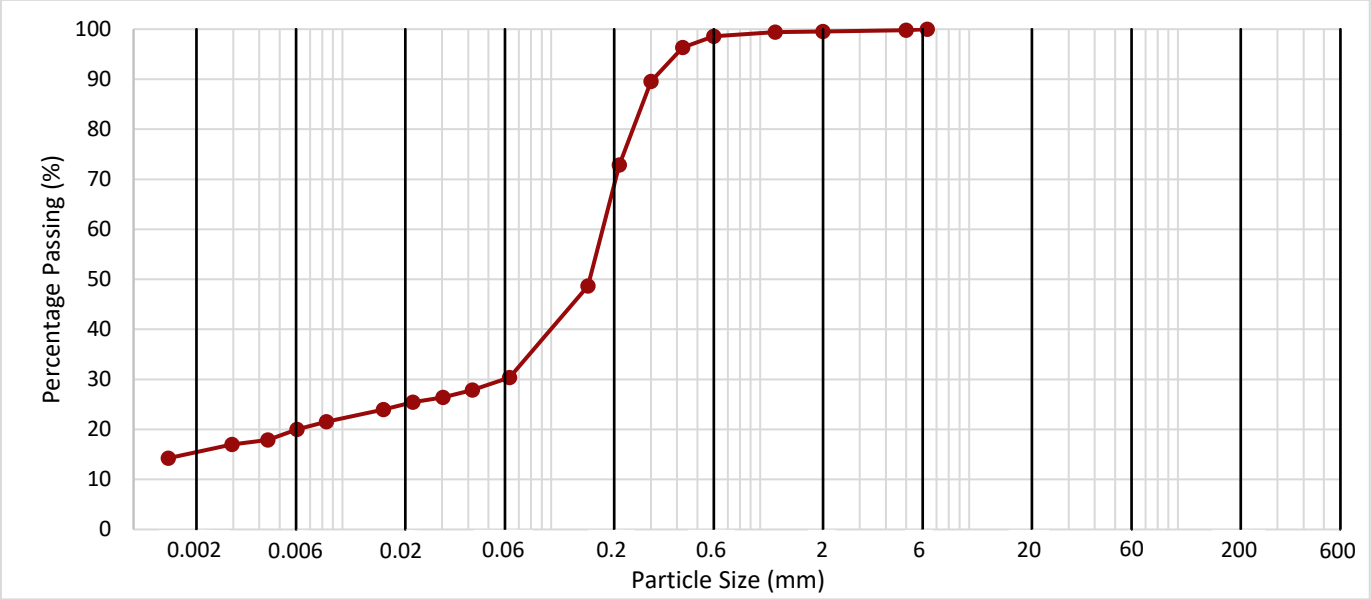
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	19.00 - 19.50	B	46	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0419	28	15	
0.0303	26		
0.0217	25		
0.0157	24		15
0.0084	22		
0.0061	20		
0.0044	18		
0.0030	17		
0.0015	14		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	70
1.18	99	
0.600	99	
0.425	96	
0.300	90	
0.212	73	
0.150	49	
0.063	30	

Fines By Dry Mass (%)	
<0.063mm	30

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

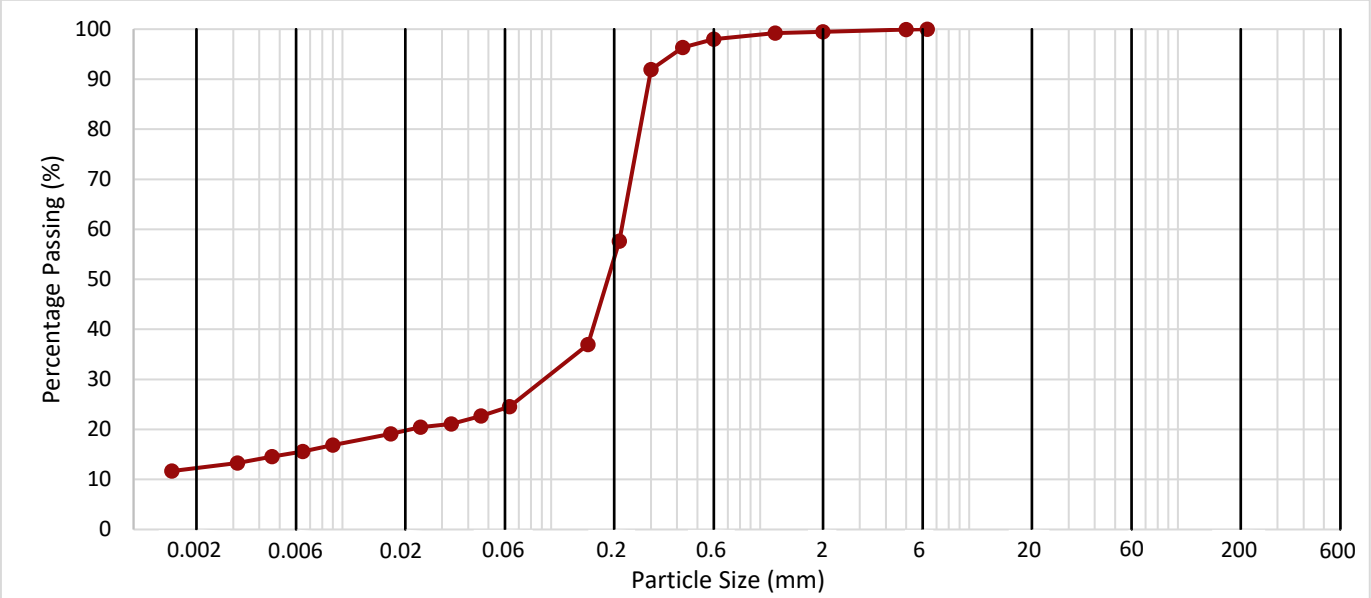
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	21.00 - 21.50	B	49	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0461	23	13
	0.0332	21	
	0.0237	20	
	0.0170	19	Clay by Dry Mass (%)
	0.0090	17	
	0.0065	16	
	0.0046	15	12
	0.0031	13	
	0.0015	12	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	75
1.18	99	
0.600	98	
0.425	96	
0.300	92	
0.212	58	
0.150	37	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	25

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

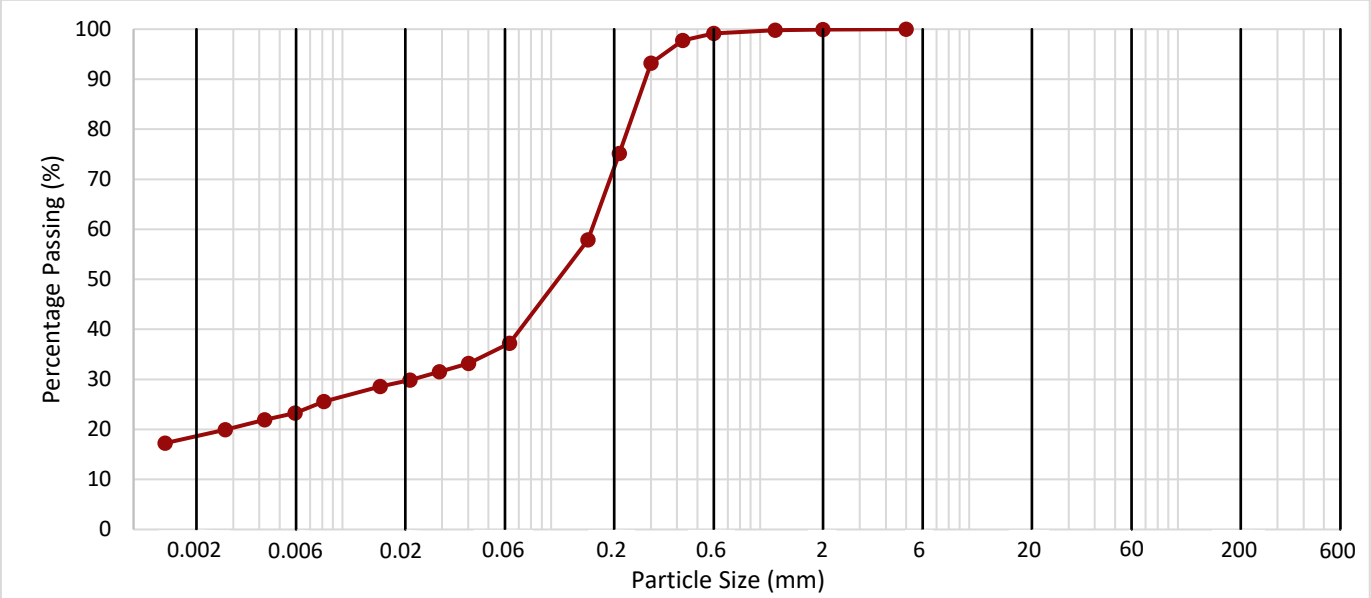
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	24.00 - 24.50	B	55	Very soft dark grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0401	33	19
	0.0291	32	
	0.0211	30	
	0.0152	29	Clay by Dry Mass (%)
	0.0082	26	
	0.0059	23	
	0.0042	22	18
	0.0027	20	
	0.0014	17	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	63
1.18	100	
0.600	99	
0.425	98	
0.300	93	
0.212	75	
0.150	58	
0.063	37	

Fines By Dry Mass (%)	
<0.063mm	37

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

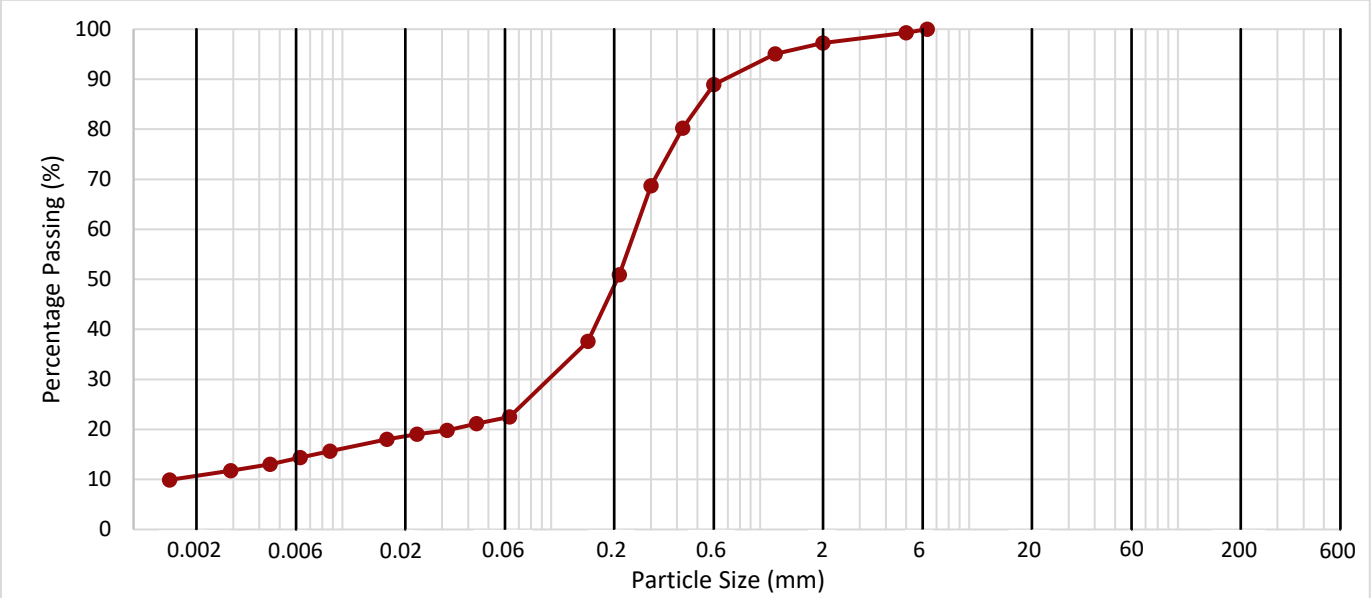
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	25.00 - 25.50	B	60	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0439	21	12
	0.0317	20	
	0.0227	19	
	0.0163	18	Clay by Dry Mass (%)
	0.0087	16	
	0.0063	14	
	0.0045	13	11
	0.0029	12	
	0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	97	74
1.18	95	
0.600	89	
0.425	80	
0.300	69	
0.212	51	
0.150	38	
0.063	23	

Fines By Dry Mass (%)	
<0.063mm	23

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		3
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

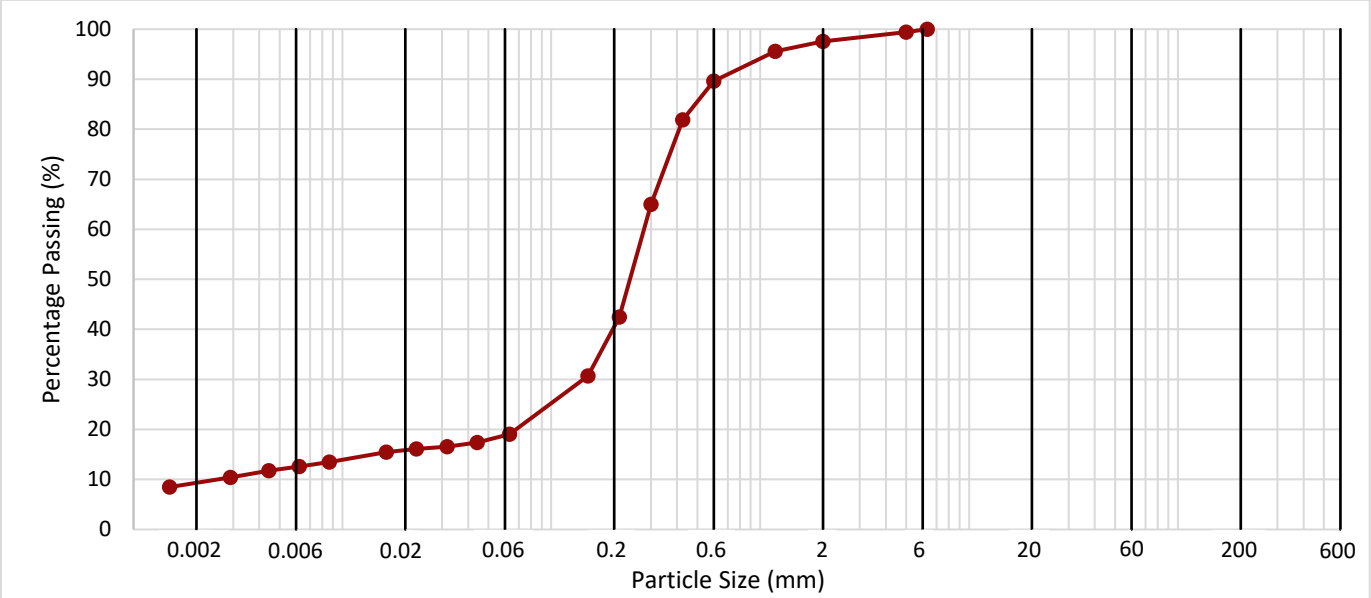
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	28.00 - 28.50	B	66	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0441	17	10
0.0317	17	
0.0226	16	
0.0162	15	Clay by Dry Mass (%)
0.0087	13	
0.0062	13	
0.0044	12	9
0.0029	10	
0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	79
1.18	96	
0.600	90	
0.425	82	
0.300	65	
0.212	42	
0.150	31	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

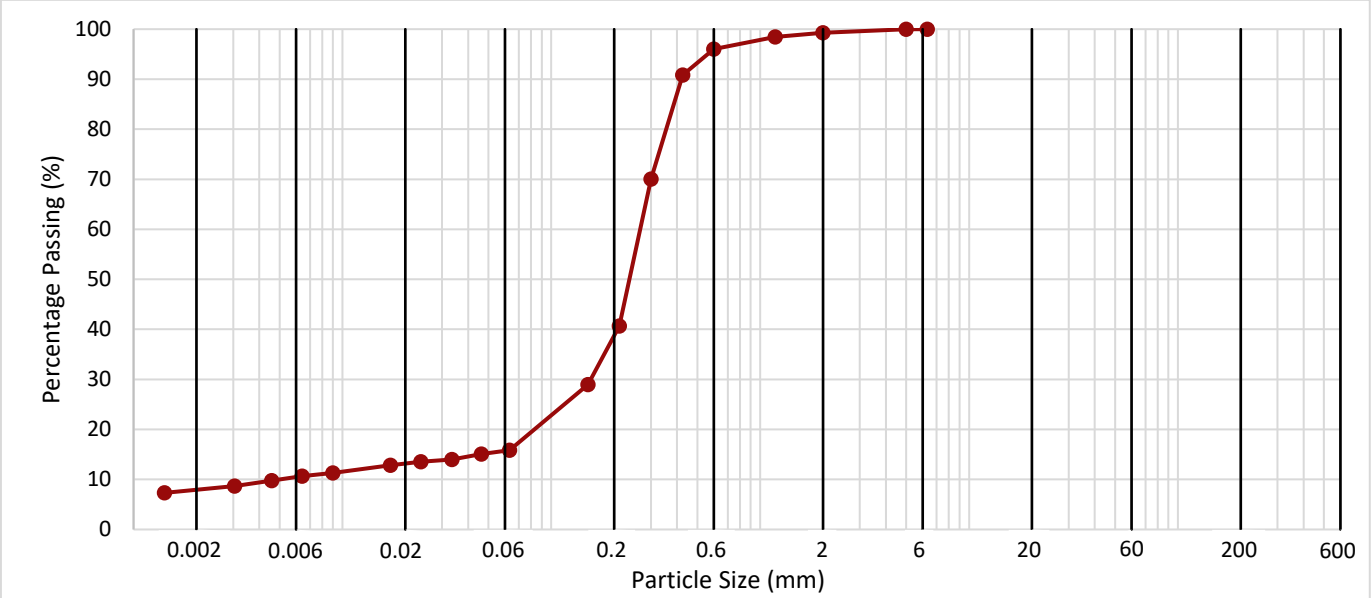
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	31.00 - 31.50	B	72	Dark grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0463	15	8
	0.0334	14	
	0.0238	14	
	0.0170	13	Clay by Dry Mass (%)
	0.0090	11	
	0.0064	11	
	0.0046	10	8
	0.0030	9	
	0.0014	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	83
1.18	98	
0.600	96	
0.425	91	
0.300	70	
0.212	41	
0.150	29	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

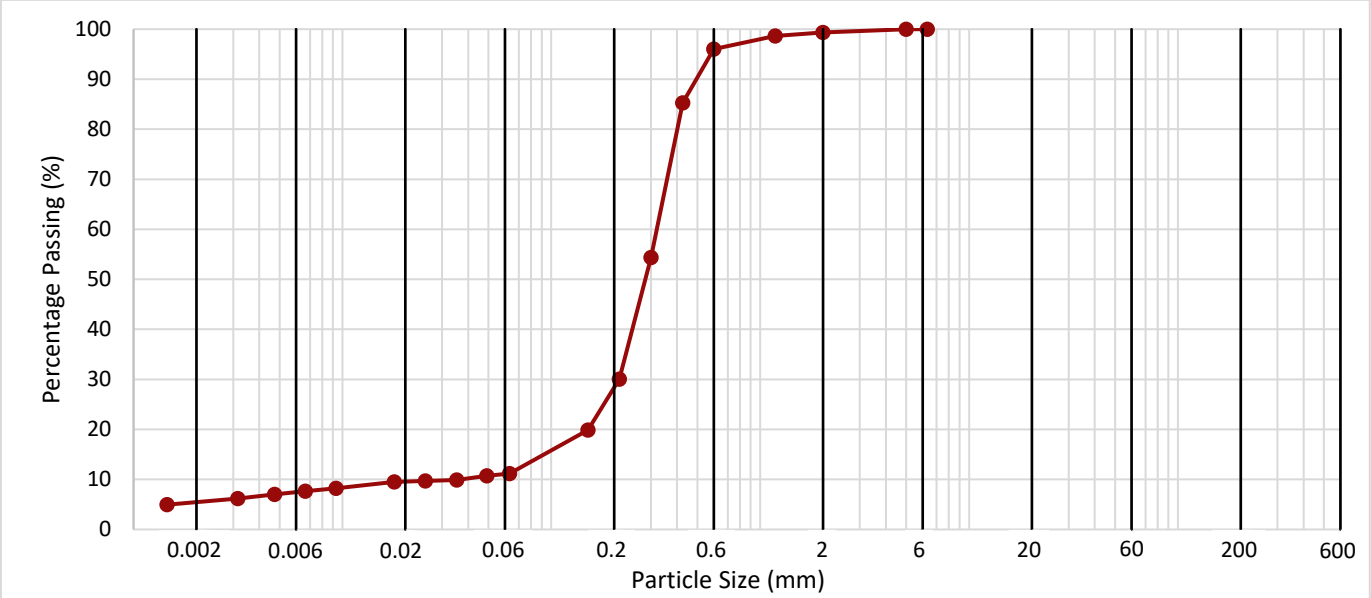
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	34.00 - 34.50	B	78	Dark olive grey silty clayey slightly organic SAND with frequent shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0491	11	6	
	0.0352	10		
	0.0250	10		
	0.0177	9		
	0.0093	8		
	0.0066	8		5
	0.0047	7		
	0.0032	6		
	0.0014	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	88
1.18	99	
0.600	96	
0.425	85	
0.300	54	
0.212	30	
0.150	20	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

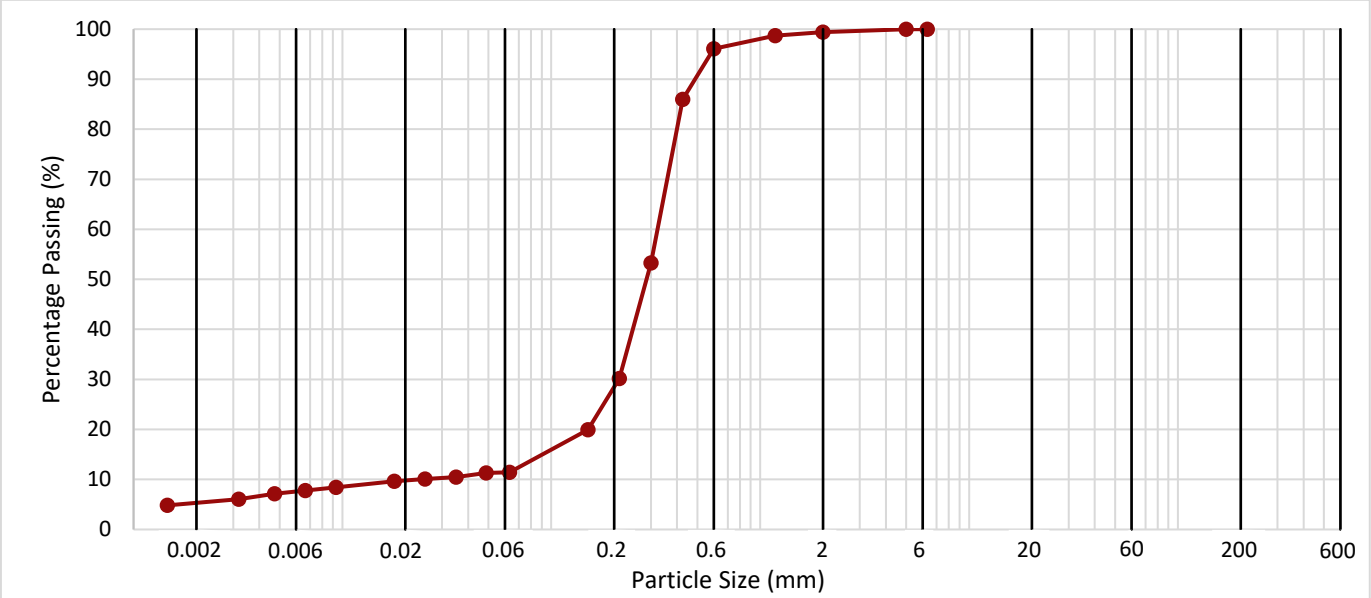
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	36.00 - 36.50	B	81	Dark olive grey silty clayey slightly organic SAND with frequent shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0488	11	6
	0.0350	10	
	0.0249	10	
	0.0177	10	Clay by Dry Mass (%)
	0.0093	8	
	0.0066	8	
	0.0047	7	5
	0.0032	6	
	0.0015	5	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	88
1.18	99	
0.600	96	
0.425	86	
0.300	53	
0.212	30	
0.150	20	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

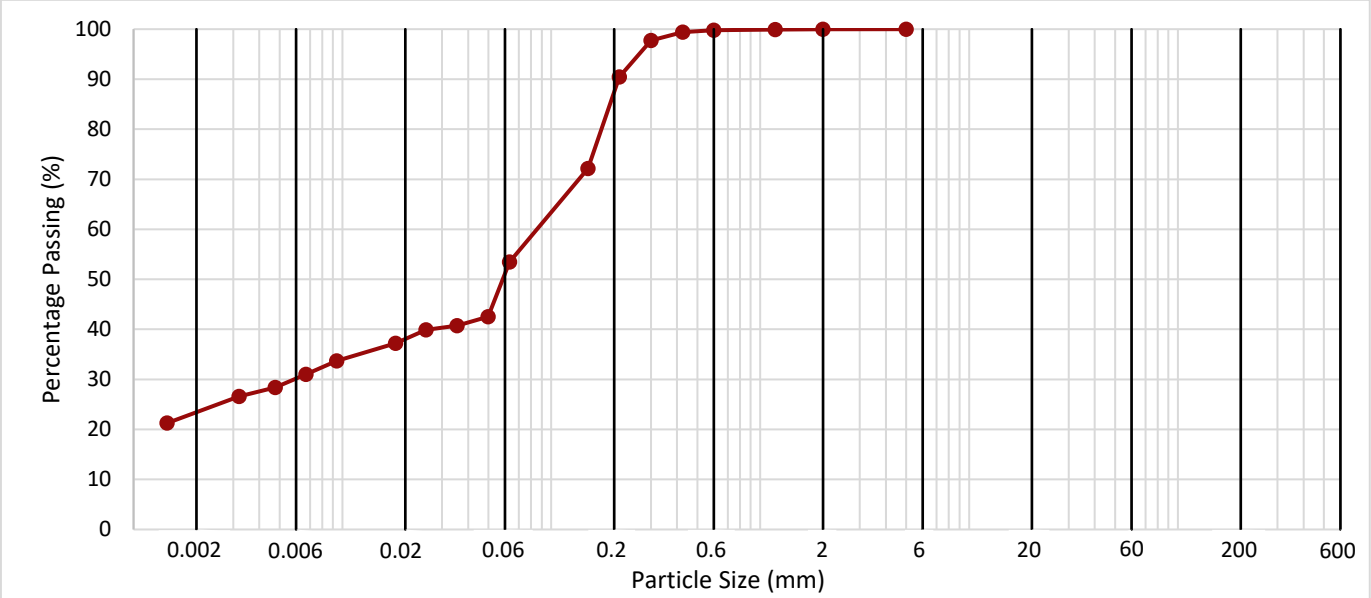
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC32	39.00 - 39.50	B	87	Very soft dark olive grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0498	43	30
0.0354	41	
0.0251	40	
0.0179	37	Clay by Dry Mass (%)
0.0094	34	
0.0067	31	
0.0048	28	23
0.0032	27	
0.0014	21	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	47
1.18	100	
0.600	100	
0.425	99	
0.300	98	
0.212	90	
0.150	72	
0.063	53	

Fines By Dry Mass (%)	
<0.063mm	53

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC08	23.00 - 23.45	UT	47	32.1	1.93	1.46	400	142	71			Firm (Medium strength) dark grey slightly organic CLAY with occasional find sand/silt pockets.
BHC08	23.00 - 23.45	UT	47	29.6	1.92	1.48	798	156	78			Stiff (High strength) dark grey slightly organic CLAY with occasional olive grey mottling, and grey fine sand/silt pockets.
BHC08	25.00 - 25.45	UT	51	30.5	1.95	1.49	498	54	27			Soft (Low strength) dark grey slightly organic CLAY with occasional fine sand pockets.
BHC08	25.00 - 25.45	UT	51	32.7	1.99	1.50	750	76	38			Soft (Low strength) dark grey slightly organic CLAY with occasional fine sand pockets.
BHC32	4.00 - 4.38	UT	10	15.5	2.16	1.87	99	149	75			Black slightly peaty fine to medium SAND with rare decayed plant material.
BHC32	5.00 - 5.34	UT	14	24.7	2.20	1.76	101	83	42			Firm (Medium strength) light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey organic pockets. Sand is fine.
BHC32	5.00 - 5.34	UT	14	25.7	2.22	1.77	202	155	78			Stiff (High strength) light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey slightly organic pockets. Sand is fine.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC32	9.00 - 9.41	UT	23	19.4	2.14	1.79	199	354	177			Light grey very sandy silty CLAY with orange mottling. Sand is fine to medium.
BHC32	17.00 - 17.45	UT	41	20.7	2.19	1.81	396	198	99			Mottled grey and dark grey sandy silty slightly organic CLAY. Sand is fine to medium.
BHC32	17.00 - 17.45	UT	41	19.8	2.31	1.93	598	501	251			Mottled grey and dark grey silty clayey slightly organic fine to medium SAND with occasional clay pockets.
BHC32	19.00 - 19.45	UT	44	16.2	2.29	1.97	401	192	96			Stiff (High strength) mottled grey and dark grey very sandy silty slightly organic CLAY locally oxidised to light olive brown. Sand is fine to medium.
BHC32	19.00 - 19.45	UT	44	15.5	2.24	1.94	600	370	185			Very stiff (High strength) mottled grey and dark grey sandy silty slightly organic CLAY locally oxidised to light olive brown with occasional very sandy pockets.
BHC32	23.00 - 23.45	UT	52	32.1	1.86	1.41	500	130	65			Soft (Medium strength) slightly fissured dark grey CLAY with occasional silty pockets.
BHC32	23.00 - 23.45	UT	52	31.3	1.88	1.43	750	101	51			Soft (Medium strength) slightly fissured dark grey CLAY with occasional silty pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

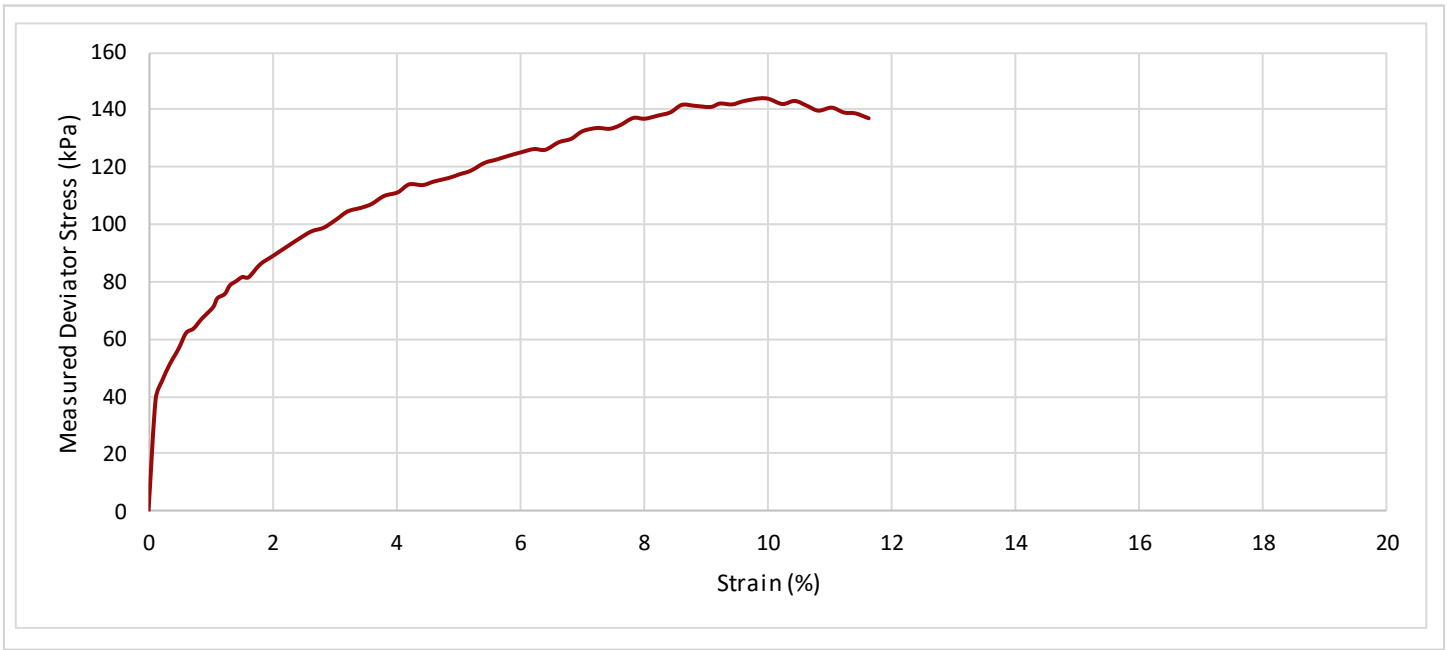
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

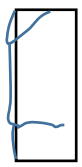
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC08	23.00 - 23.45	UT	47	Firm (Medium strength) dark grey slightly organic CLAY with occasional find sand/silt pockets.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.04	76.7	37.7	165	32.1	1.93	1.46

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	400	9.9	1.8	\	142	71		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

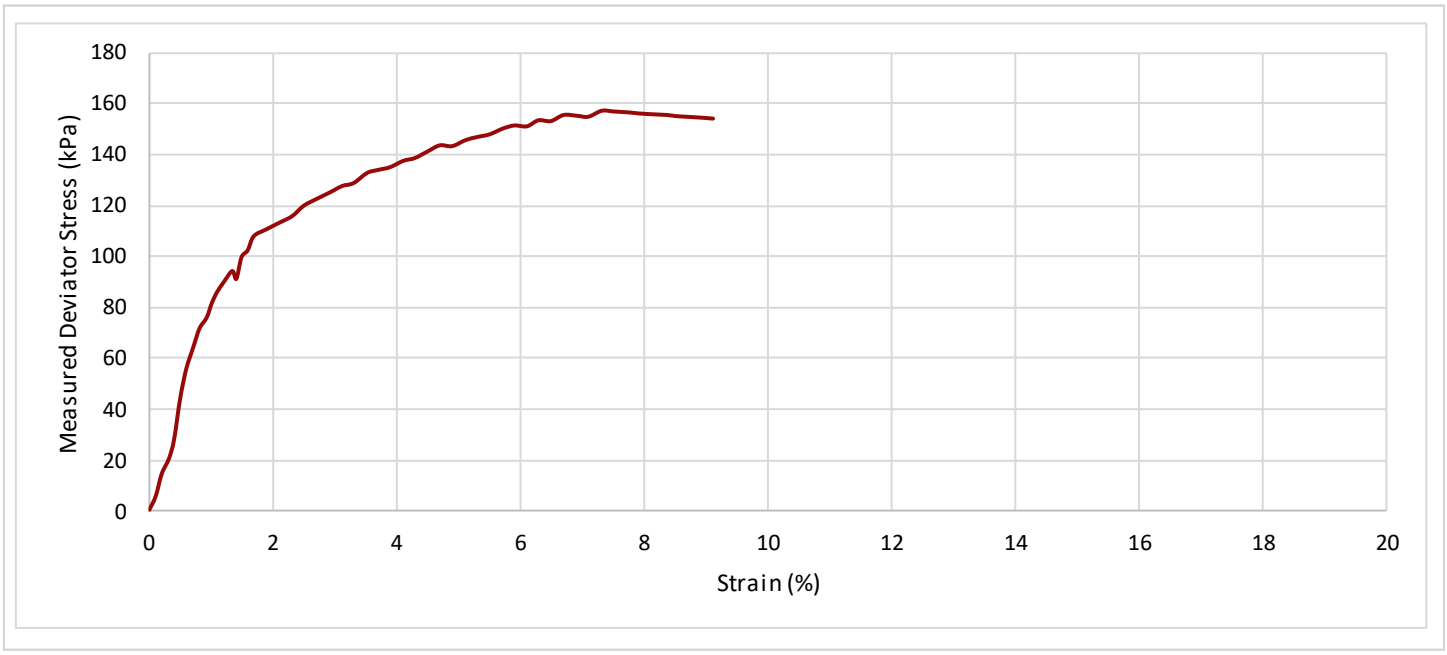
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

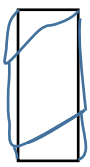
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC08	23.00 - 23.45	UT	47	Stiff (High strength) dark grey slightly organic CLAY with occasional olive grey mottling, and grey fine sand/silt pockets.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.04	76.8	38.5	171	29.6	1.92	1.48

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	798	7.3	1.4	\	156	78		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

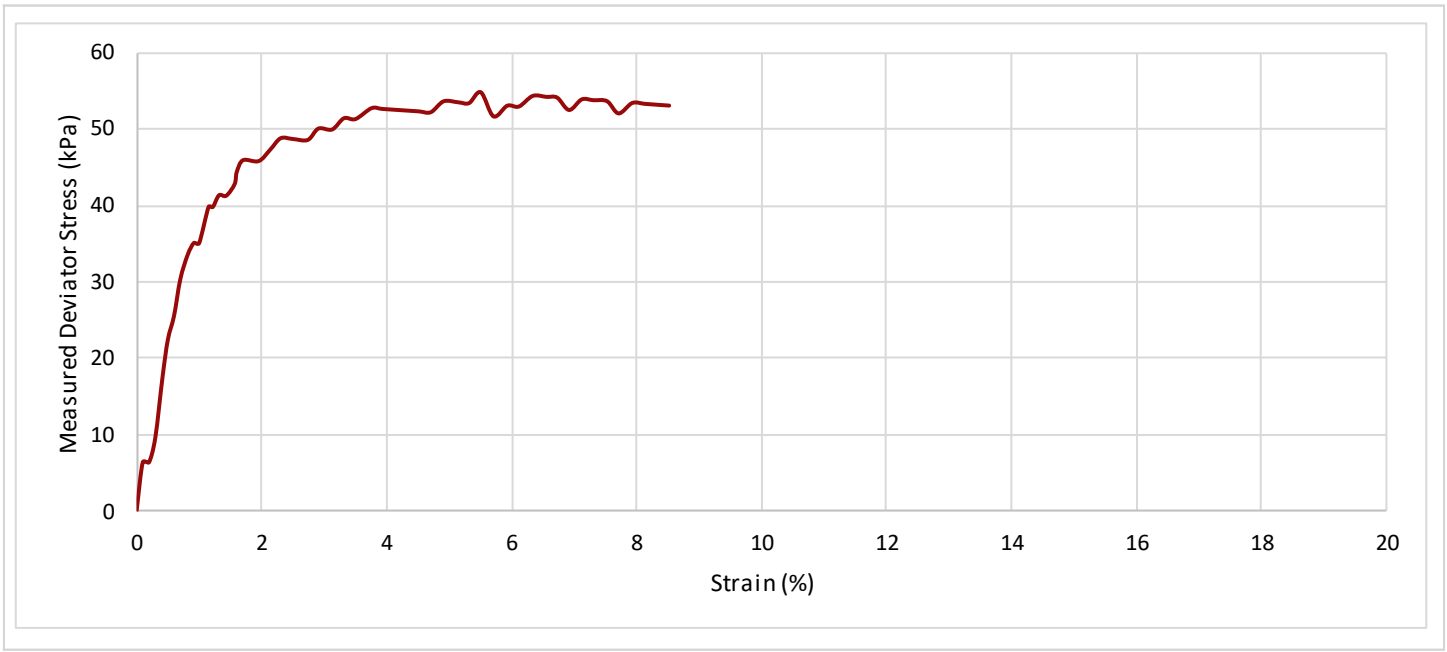
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC08	25.00 - 25.45	UT	51	Soft (Low strength) dark grey slightly organic CLAY with occasional fine sand pockets.	Premature failure at 5.5% strain.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 25.05	76.0	37.2	161	30.5	1.95	1.49

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	498	5.5	1.2	\	54	27		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

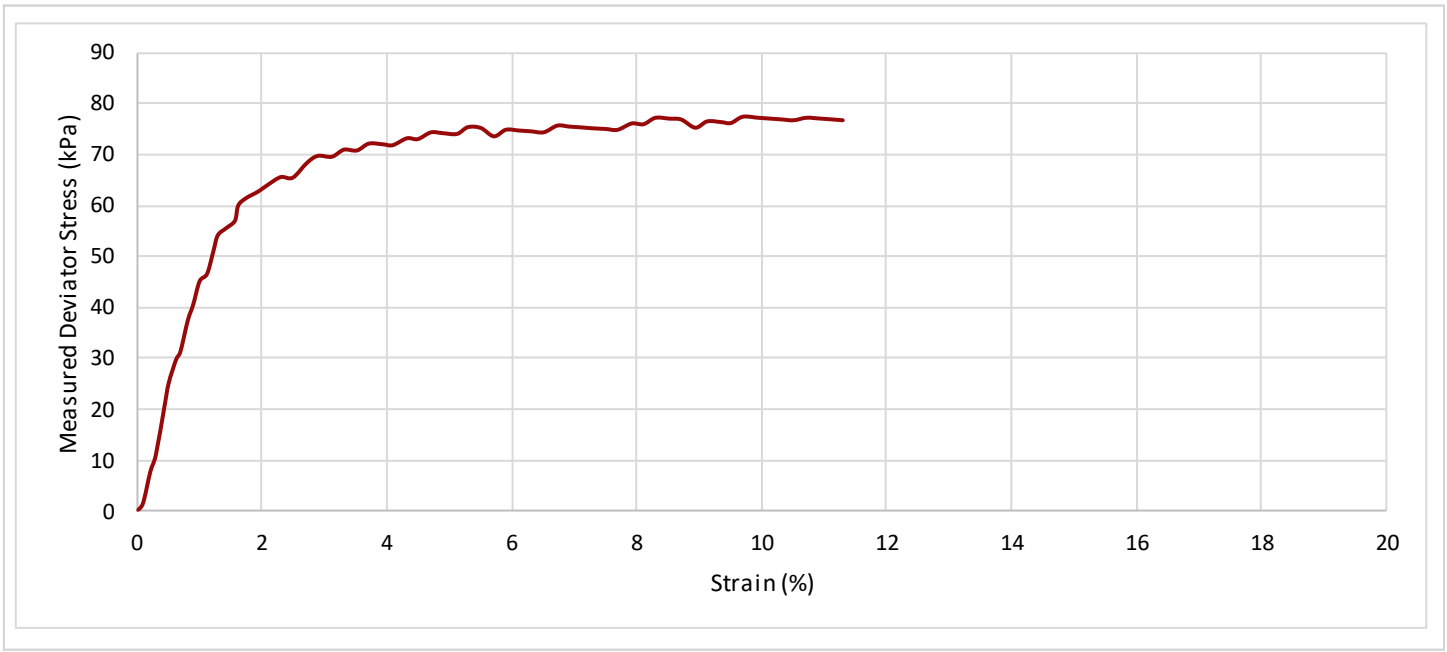
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

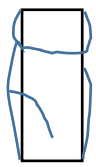
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC08	25.00 - 25.45	UT	51	Soft (Low strength) dark grey slightly organic CLAY with occasional fine sand pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 25.05	74.1	37.4	162	32.7	1.99	1.50

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	750	9.7	1.8	\	76	38		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

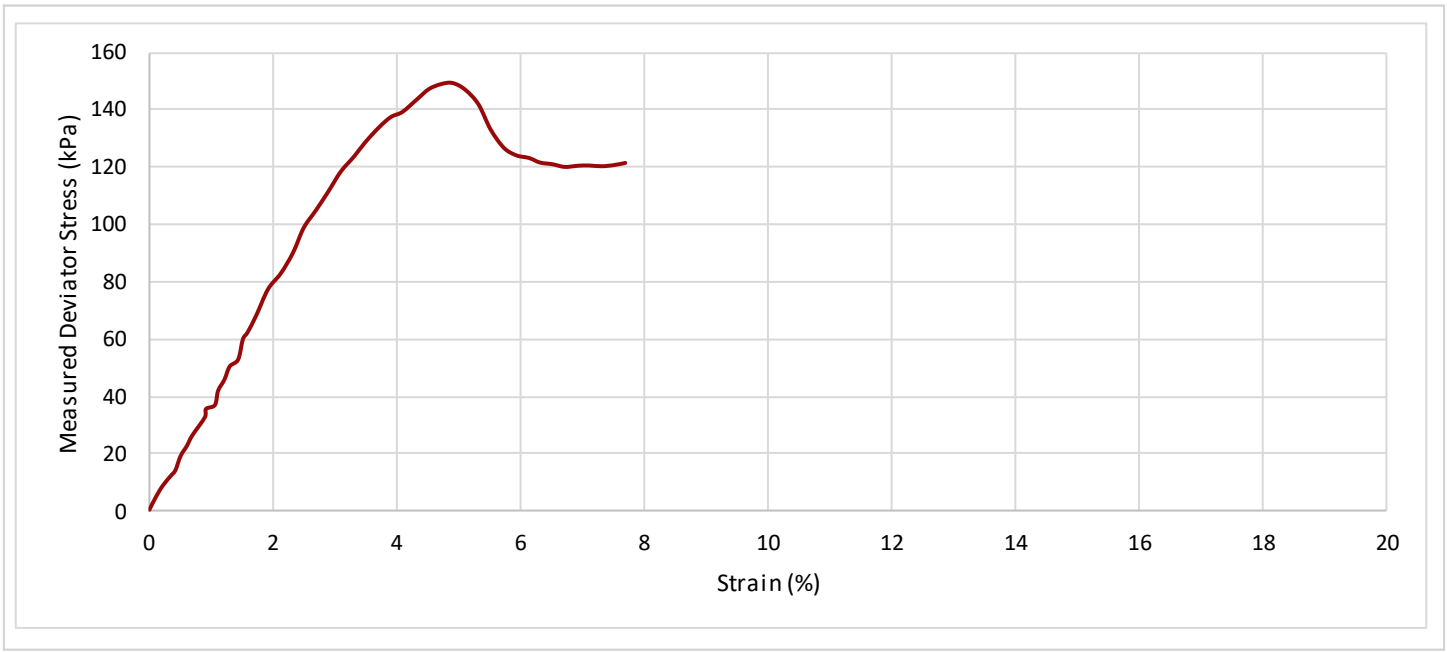
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	4.00 - 4.38	UT	10	Black slightly peaty fine to medium SAND with rare decayed plant material.	Premature failure at 4.9% strain.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 4.08	153.7	102.4	2739	15.5	2.16	1.87

TEST INFORMATION — Rate of Strain 2.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	99	4.9	0.4	\	149	75		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

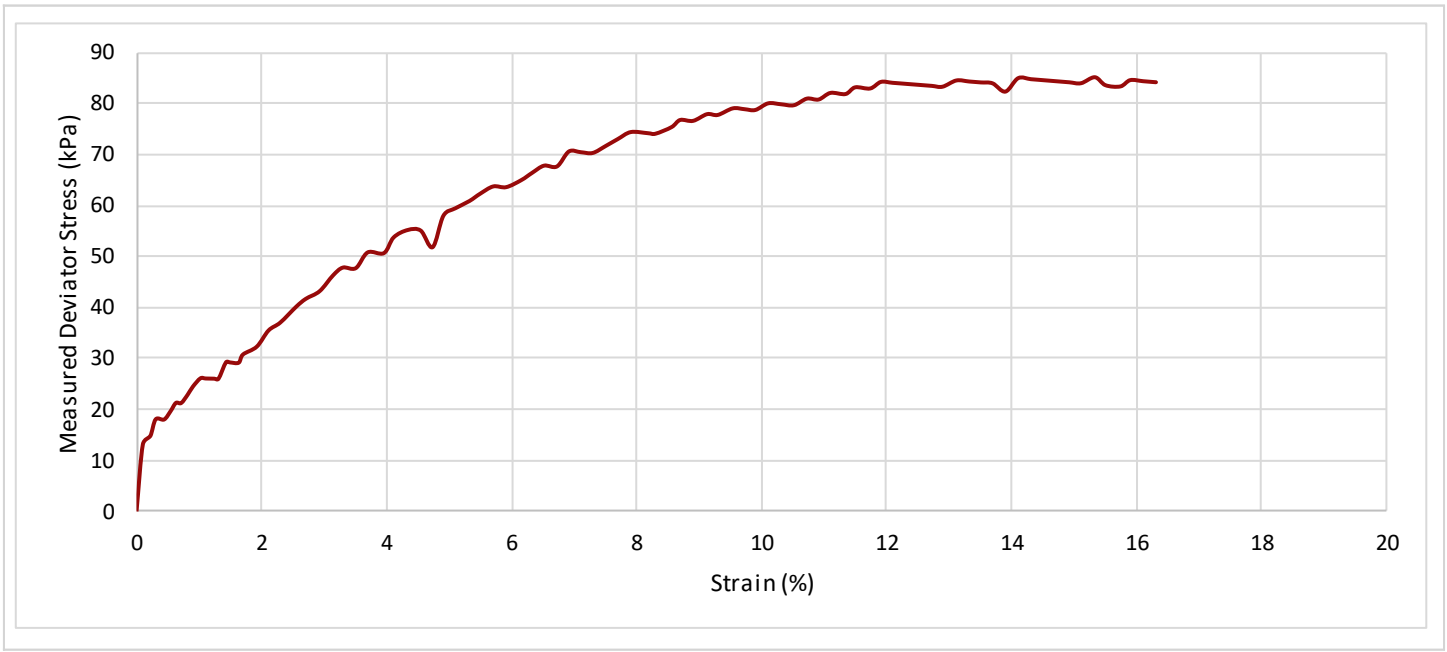
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	5.00 - 5.34	UT	14	Firm (Medium strength) light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey organic pockets. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 5.05	74.5	36.7	173	24.7	2.20	1.76

TEST INFORMATION	Rate of Strain	1.5	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	101	15.3	2.5	\	83	42		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

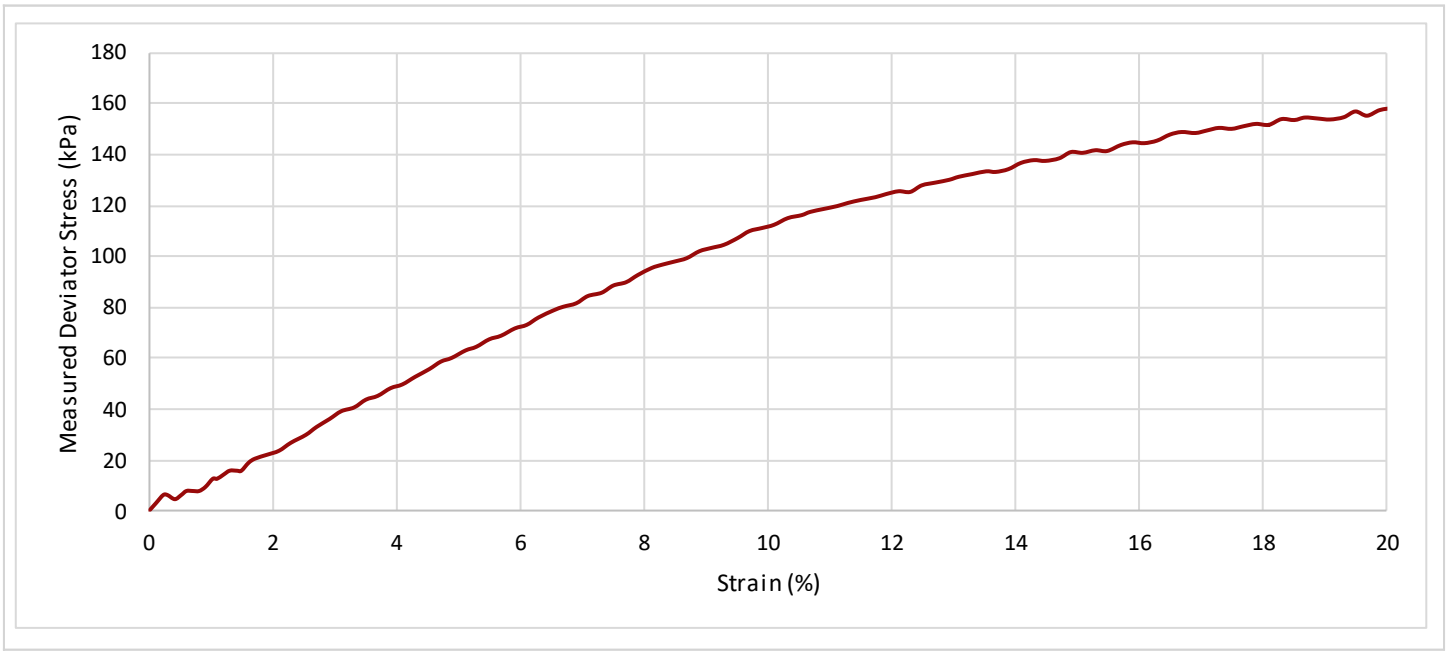
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	5.00 - 5.34	UT	14	Stiff (High strength) light olive brown slightly sandy silty CLAY with occasional bluish grey mottling, and rare dark grey slightly organic pockets. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 5.05	74.4	37.1	178	25.7	2.22	1.77

TEST INFORMATION — Rate of Strain 1.5 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	202	20.1	3.1	\	155	78		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

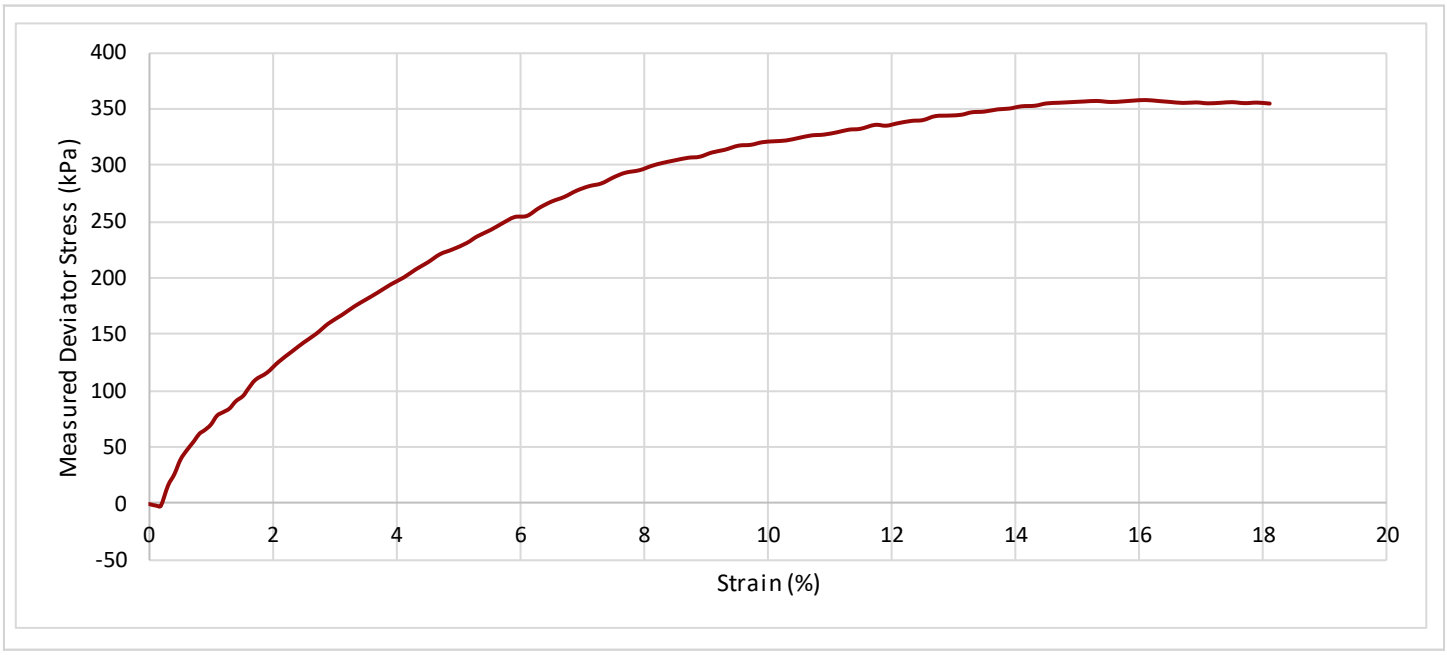
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	9.00 - 9.41	UT	23	Mottled grey and dark grey sandy silty slightly organic CLAY. Sand is fine to medium.	Sample recovery short - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 9.05	76.0	36.8	173	19.4	2.14	1.79

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	199	16.1	2.6	\	354	177		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

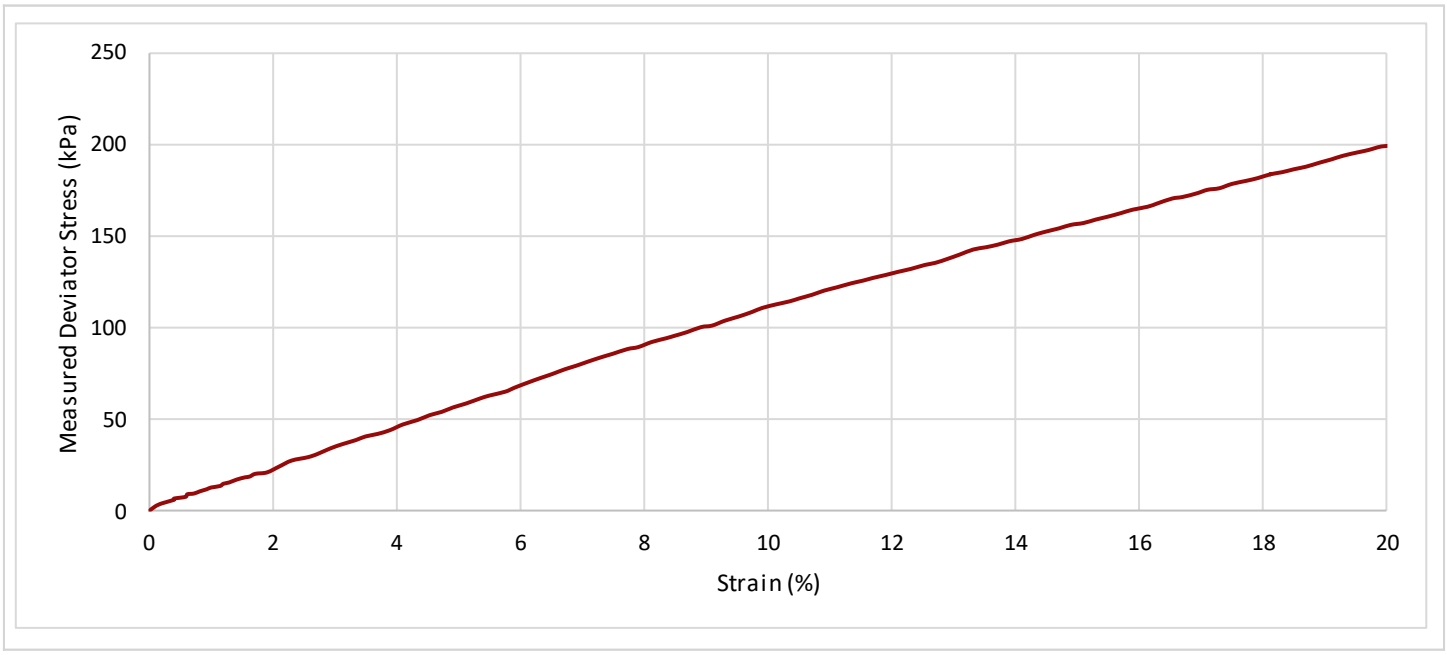
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	17.00 - 17.45	UT	41	Mottled grey and dark grey silty clayey slightly organic fine to medium SAND with occasional clay pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 17.01	148.4	102.4	2674	20.7	2.19	1.81

TEST INFORMATION	Rate of Strain	2.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	396	20.1	1.1	\	198	99		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

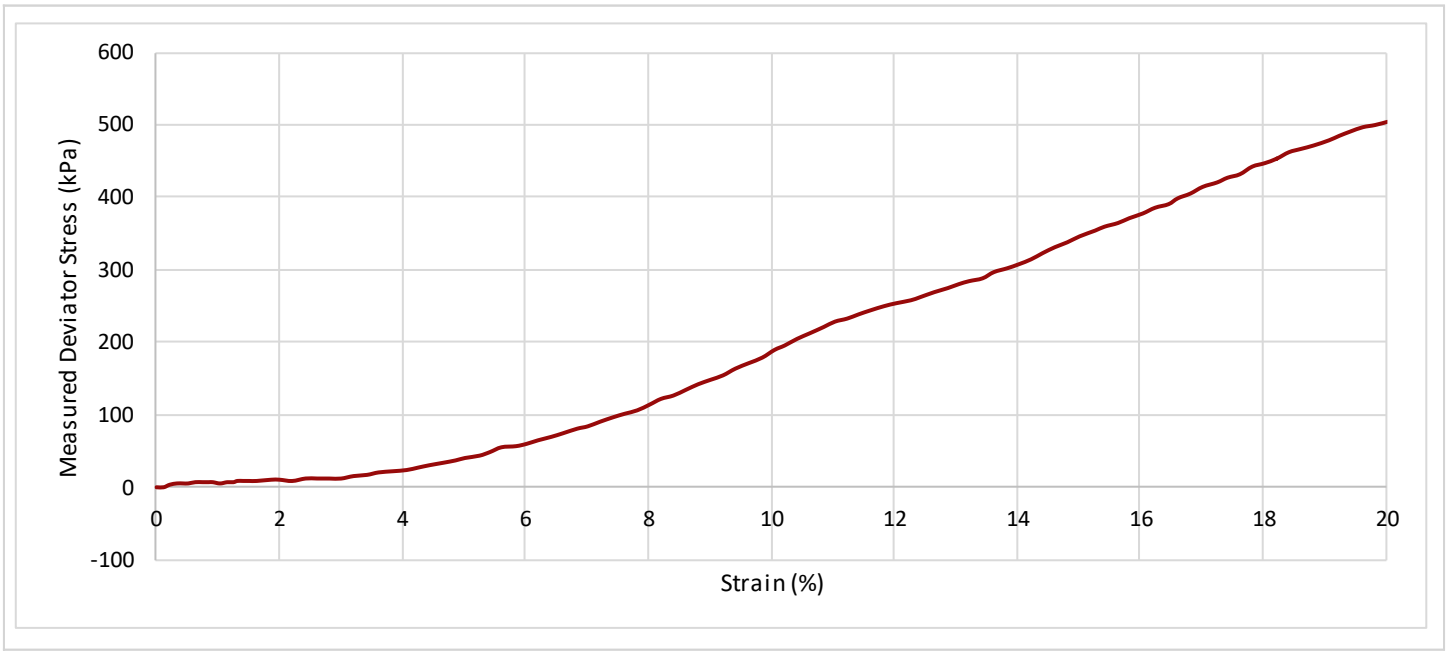
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	17.00 - 17.45	UT	41	Mottled grey and dark grey silty clayey slightly organic fine to medium SAND with occasional clay pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 17.17	76.2	35.4	174	19.8	2.31	1.93

TEST INFORMATION — Rate of Strain 1.9 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	20.0	3.3	\	501	251		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

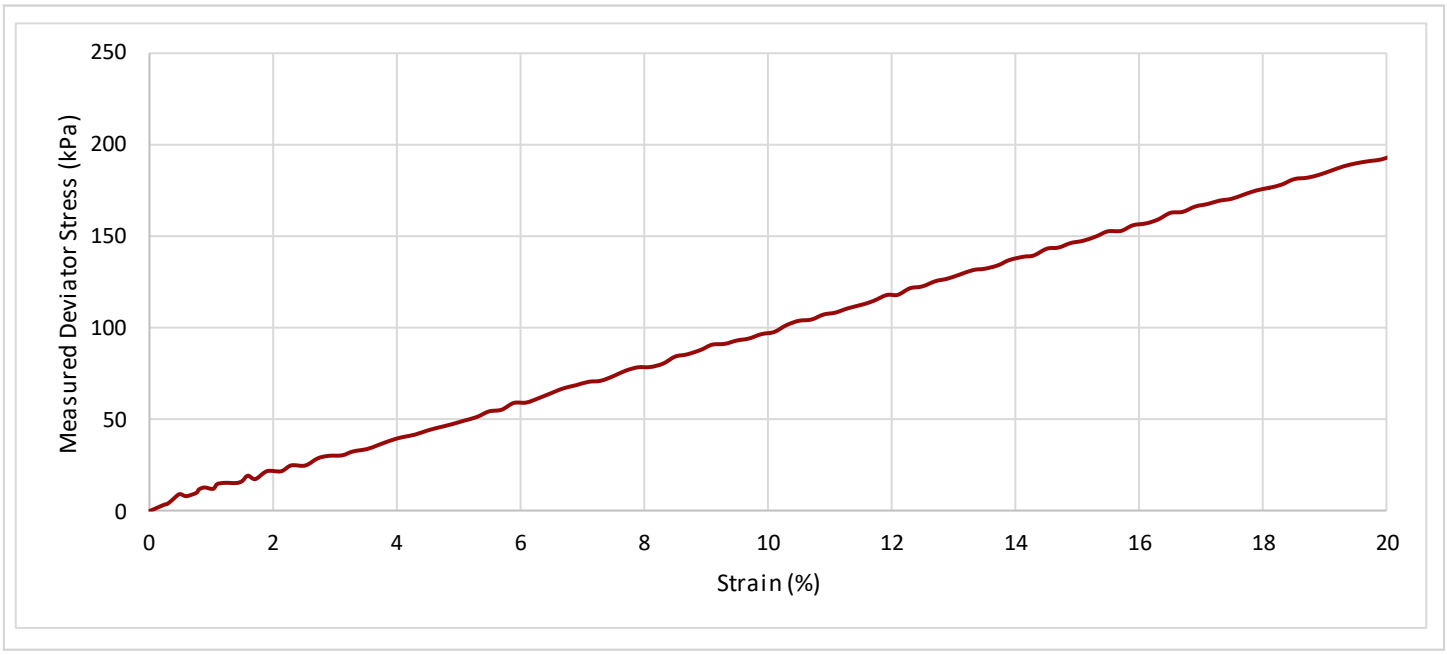
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

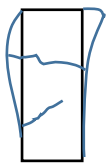
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	19.00 - 19.45	UT	44	Stiff (High strength) mottled grey and dark grey very sandy silty slightly organic CLAY locally oxidised to light olive brown. Sand is fine to medium.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 19.05	160.8	101.4	2971	16.2	2.29	1.97

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	401	20.1	1.1	\	192	96		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

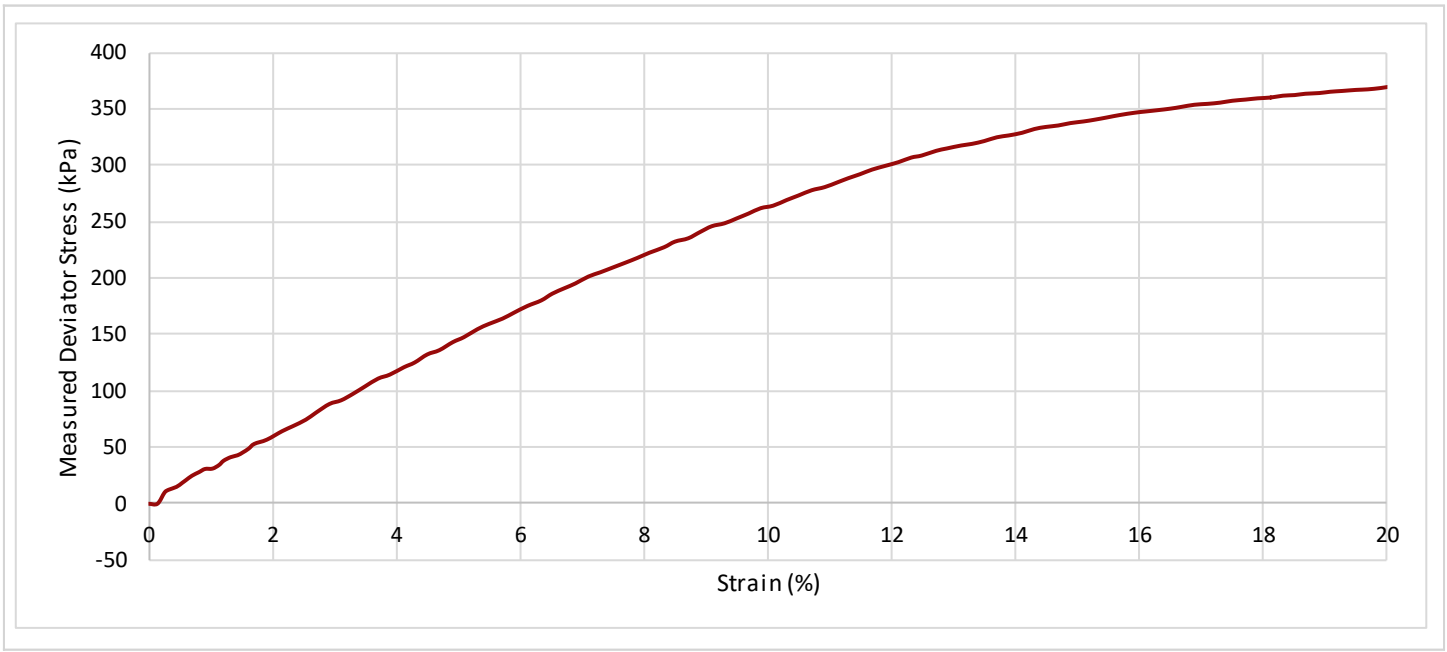
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	19.00 - 19.45	UT	44	Very stiff (High strength) mottled grey and dark grey sandy silty slightly organic CLAY locally oxidised to light olive brown with occasional very sandy pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 19.24	174.4	102.7	3233	15.5	2.24	1.94

TEST INFORMATION — Rate of Strain 1.9 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	600	20.1	1.1	\	370	185		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

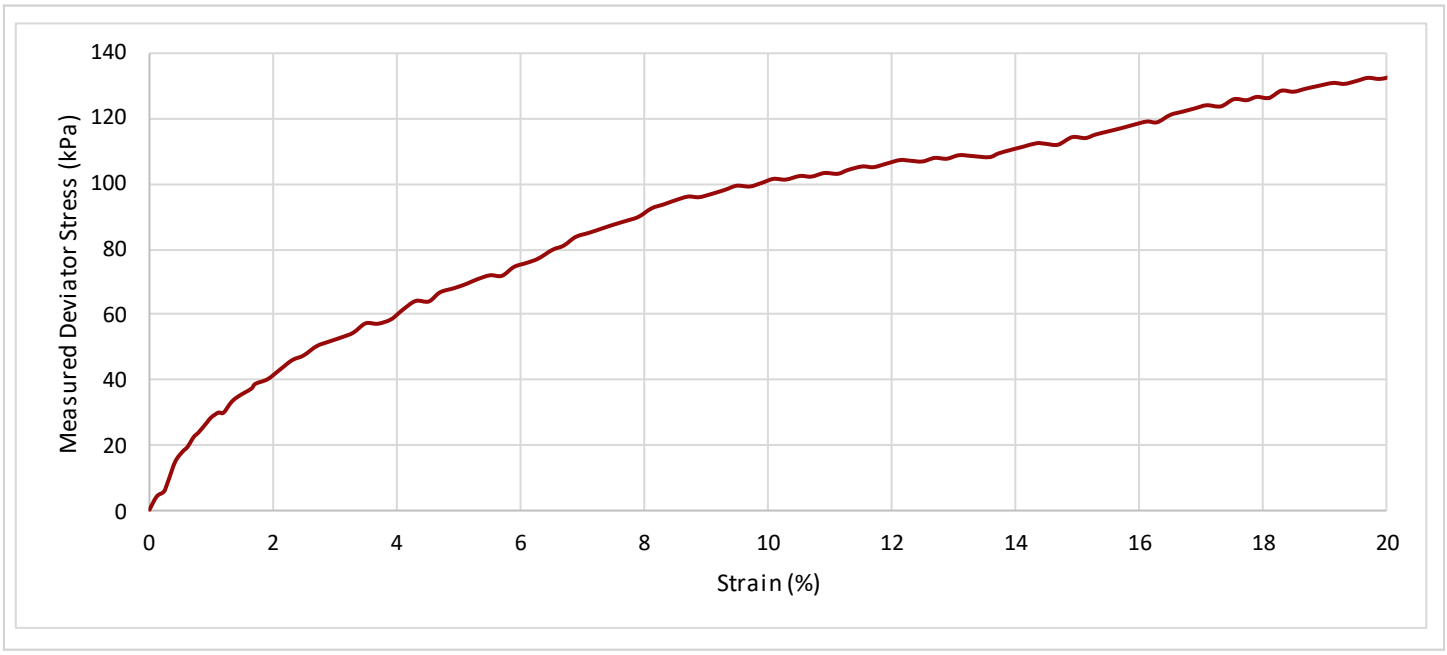
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

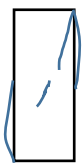
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	23.00 - 23.45	UT	52	Soft (Medium strength) slightly fissured dark grey CLAY with occasional silty pockets.	Short sample recovery - U38 specimen prepared

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.15	77.7	38.2	166	32.1	1.86	1.41

TEST INFORMATION — Rate of Strain 1.4 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	500	20.1	3.0	\	130	65		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

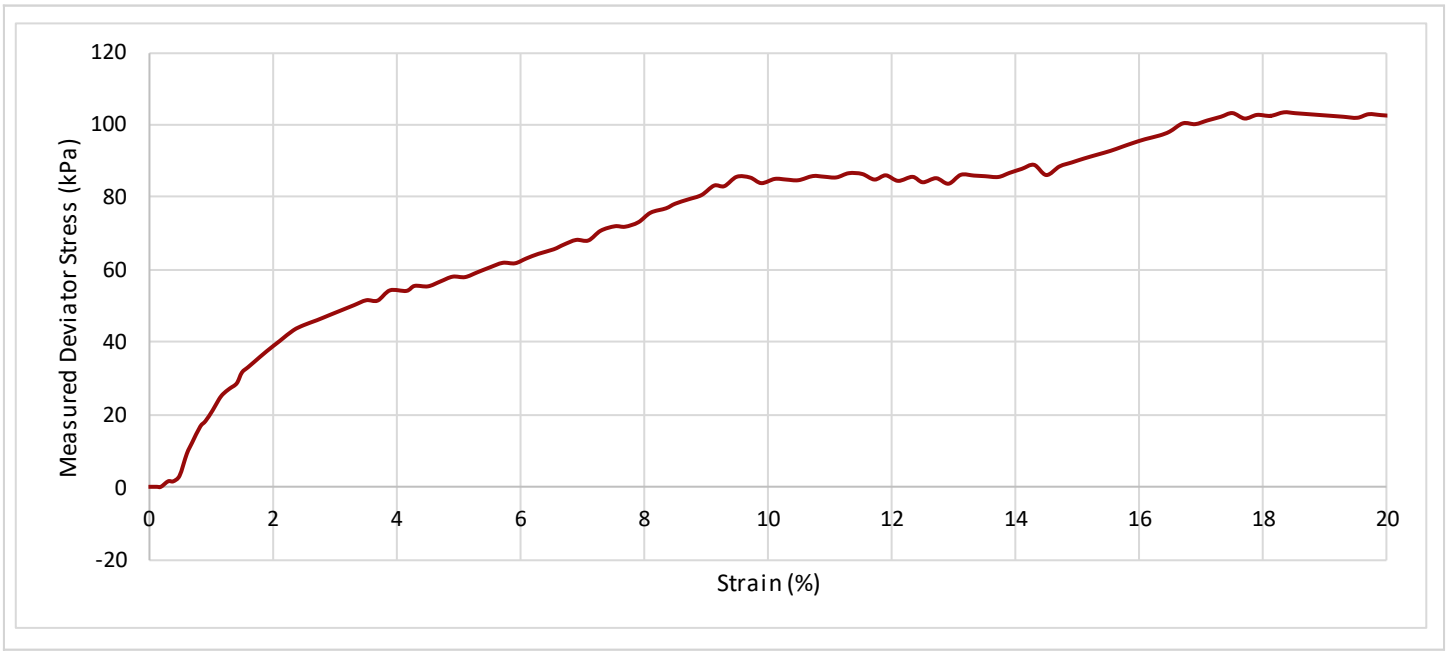
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

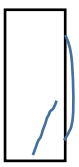
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC32	23.00 - 23.45	UT	52	Soft (Medium strength) slightly fissured dark grey CLAY with occasional silty pockets.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.15	77.1	38.2	166	31.3	1.88	1.43

TEST INFORMATION — Rate of Strain 1.5 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	750	18.3	2.8	\	101	51		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

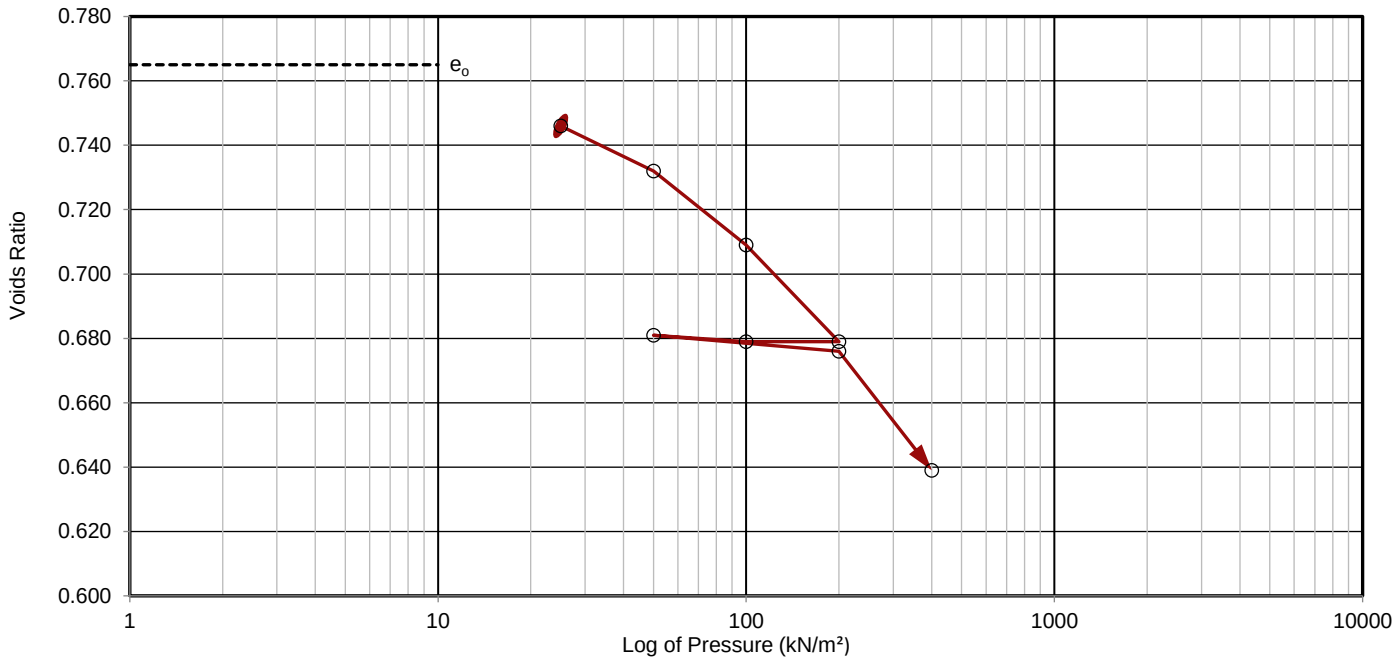
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC32	4.00 - 4.38	UT	10	4.04 Horizontal	29.9	Black slightly peaty fine to medium SAND with rare decayed plant material.	

Initial Conditions			Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
Height	mm	18.63	1	25	0.204	0.746	1.34	0.44	21	1.30
Diameter	mm	75.00	2	50	0.350	0.732	0.86	0.32	21	0.83
Wet Weight	g	155.03	3	100	0.588	0.709	0.32	0.26	21	0.31
Water Content	%	29.9	4	200	0.912	0.679	0.45	0.18	20	0.45
Bulk Density	Mg/m³	1.88	5	100	0.903	0.679		0.01	20	
Particle Density		Assumed 2.56	6	50	0.890	0.681		0.02	21	
Voids Ratio		0.765	7	200	0.936	0.676	0.09	0.02	21	0.08
Degree of Saturation	%	100	8	400	1.335	0.639	0.98	0.11	21	0.95
Swelling Pressure	kN/m²									
Dry Density	Mg/m³	1.45								



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

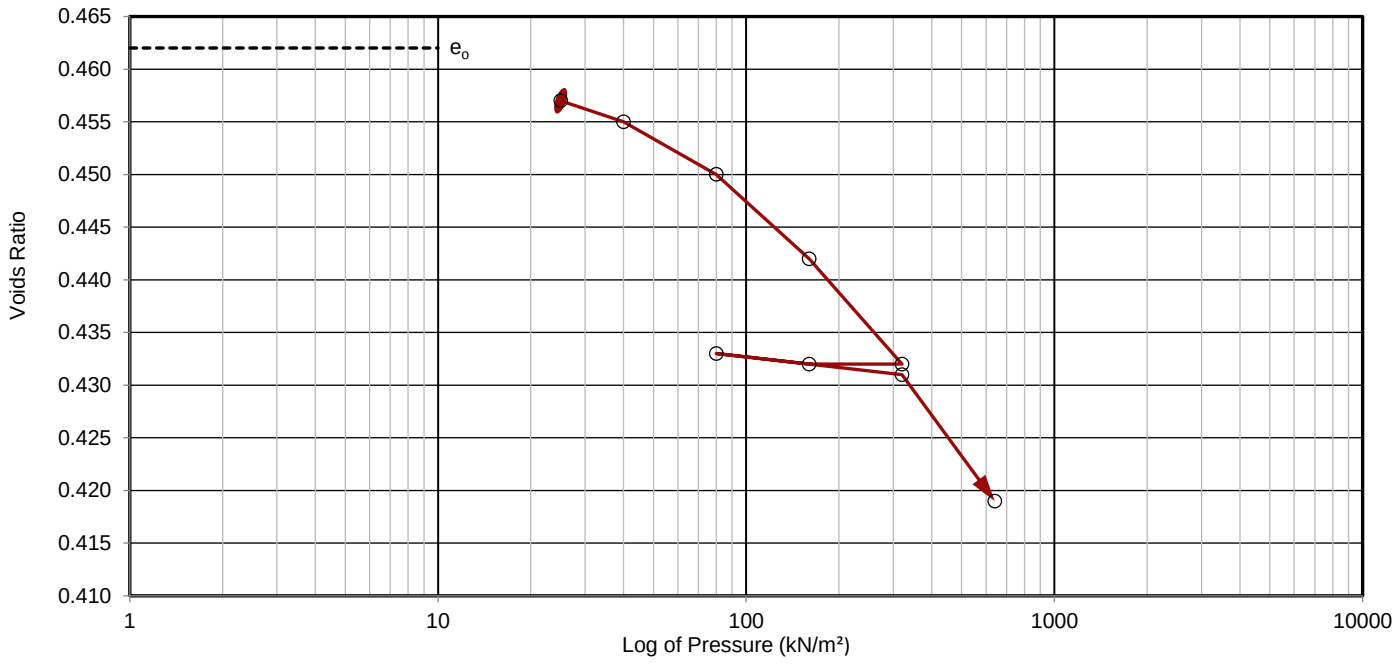
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC32	9.00 - 9.41	UT	23	9.13 Horizontal	18.6	Light grey very sandy silty CLAY with orange mottling. Sand is fine to medium.	

Initial Conditions			Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
Height	mm	18.73	1	25	0.060	0.457	0.99	0.13	21	0.96
Diameter	mm	75.02	2	40	0.092	0.455	0.98	0.11	21	0.95
Wet Weight	g	167.84	3	80	0.159	0.450	1.65	0.09	21	1.60
Water Content	%	18.6	4	160	0.255	0.442	2.50	0.07	20	2.50
Bulk Density	Mg/m³	2.03	5	320	0.384	0.432	13.00	0.04	20	13.00
Particle Density		Assumed 2.50	6	160	0.380	0.432		0.00	21	
Voids Ratio		0.462	7	80	0.373	0.433		0.00	21	
Degree of Saturation	%	100	8	320	0.400	0.431	1.55	0.01	21	1.50
Swelling Pressure	kN/m²		9	640	0.557	0.419	4.96	0.03	21	4.80
Dry Density	Mg/m³	1.71								



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

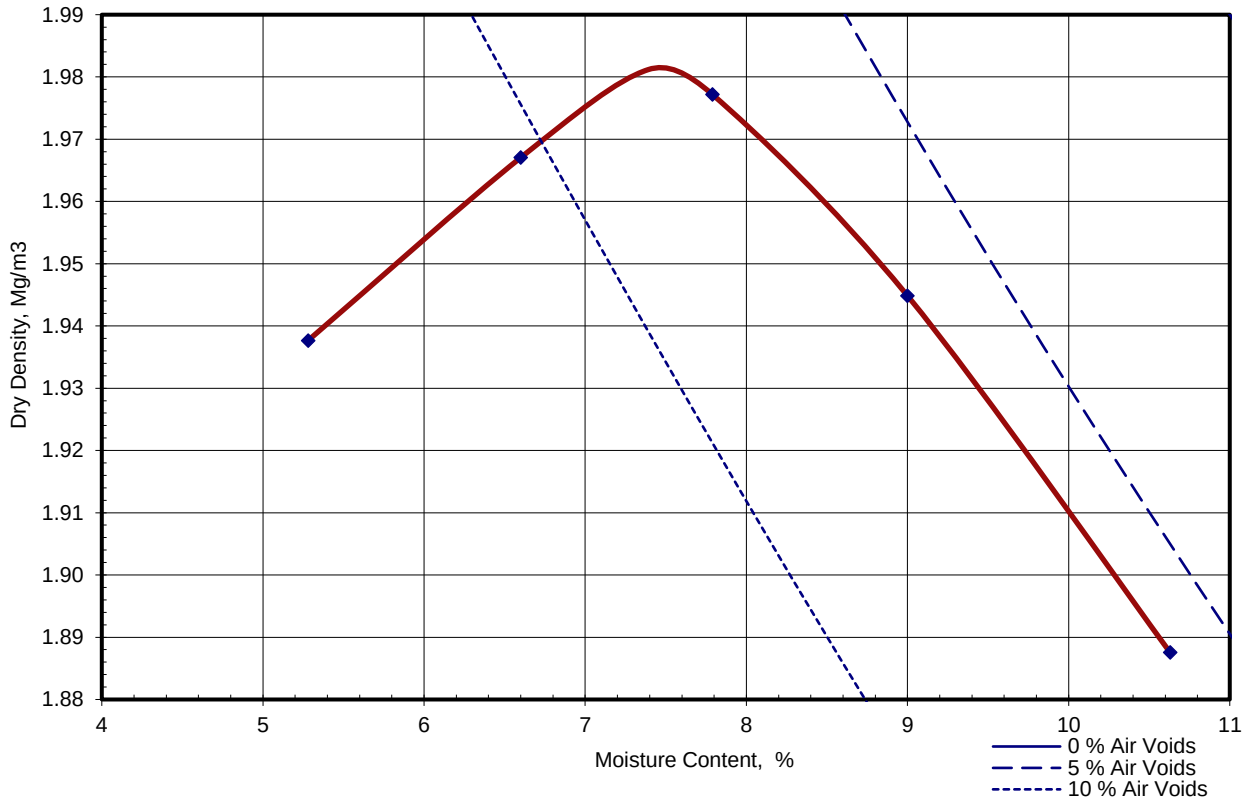
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC08	0.60 - 1.10	B	2	5.3	Dark greyish brown very gravelly silty SAND, with occasional black organic pockets, and brick, cinder and metal fragments. Gravel is brown, white and black angular to subrounded flint.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	4.4 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	6.1 %	Single or Separate Samples	Single
Grading Zone	4	Particle Density (Assumed)	2.55
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**1.98 Mg/m³**	**Optimum Water Content**	**7.4 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

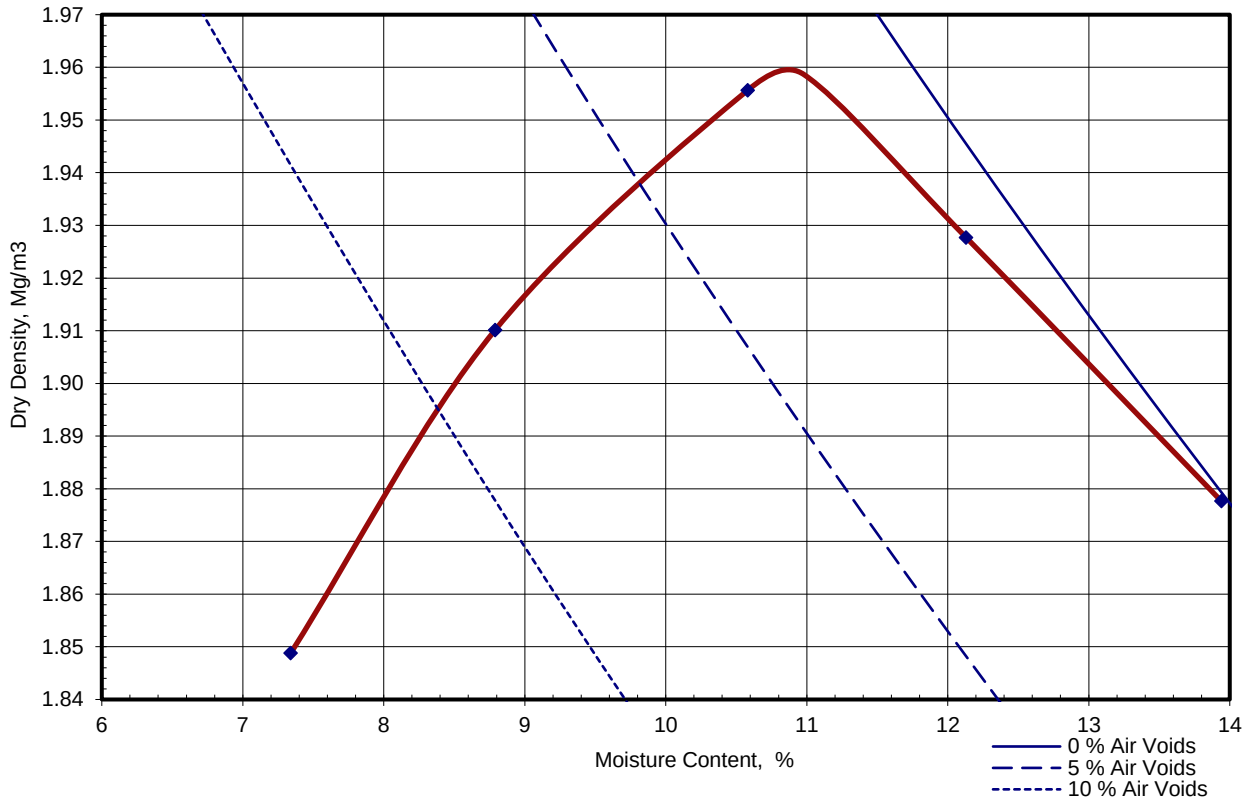
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC23	0.70 - 1.00	B	2	10.6	Dark brown gravelly silty slightly clayey SAND with rare concrete and brick fragments. Gravel is brown, black and white angular to subrounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	2.6 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density (Assumed)	2.55
Mould Type	1 Litre	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.96 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

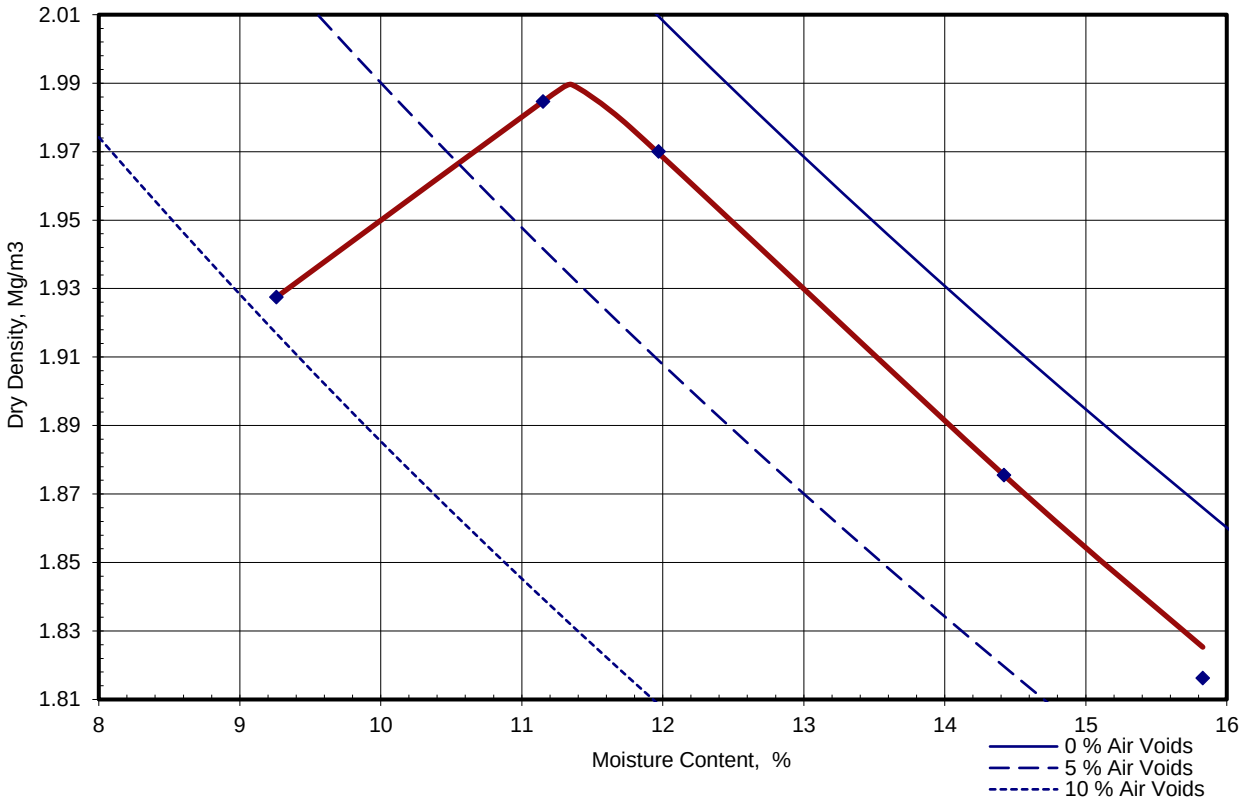
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC24	0.60 - 1.00	B	1	14.4	Black gravelly silty slightly clayey SAND with occasional concrete fragments. Gravel is brown, white and black angular to rounded flint.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	2.6 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	6.8 %	Single or Separate Samples	Separate
Grading Zone	4	Particle Density (Assumed)	2.65
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**1.99 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

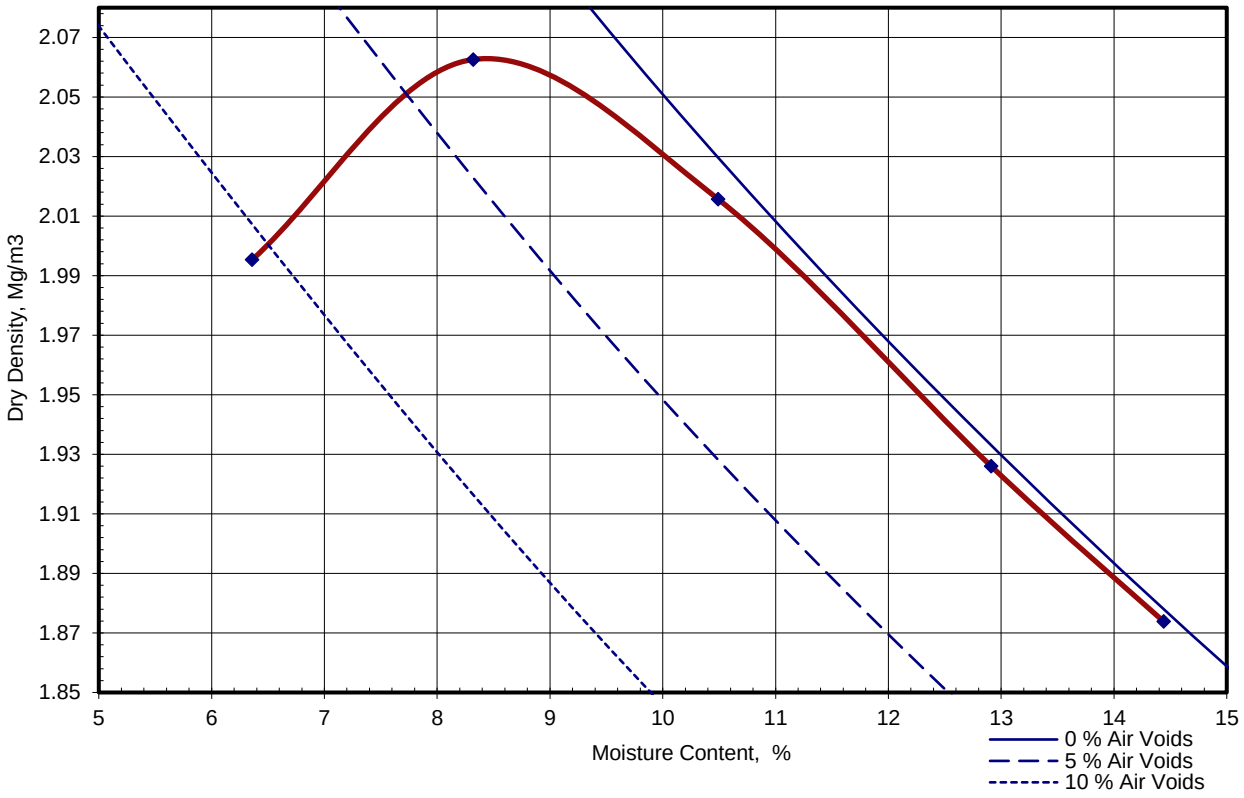
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC24	1.50 - 1.90	B	4	14.4	Dark greyish brown very gravelly silty clayey SAND with occasional black pockets, and brick fragments. Gravel is black, brown and white angular to rounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	4.9 %	Single or Separate Samples	Separate
Grading Zone	2	Particle Density (Assumed)	2.58
Mould Type	1 Litre	Method of Compaction	BS 4.5kg rammer Method (BS1377 Part 4: 1990: 3.5)
Maximum Dry Density	**2.06 Mg/m³**	**Optimum Water Content**	**8.4 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

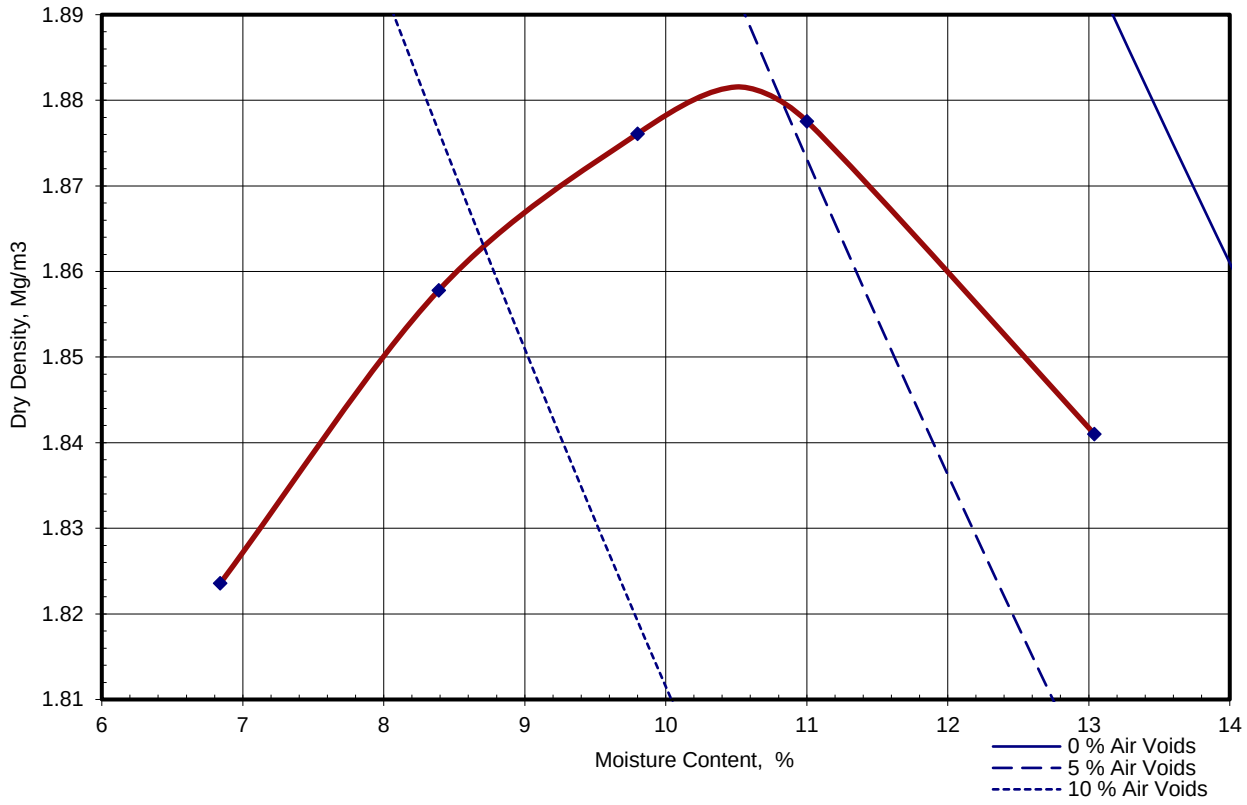
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC26	0.70 - 1.00	B	2	6.8	Black and dark orangish brown gravelly slightly silty SAND with occasional brick and asphalt fragments. Gravel is brown, black and white angular to subrounded flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	1.1 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density (Assumed)	2.52
Mould Type	1 Litre	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.88 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC08	0.60 - 1.10	B	2	Dark greyish brown very gravelly silty SAND, with occasional black organic pockets, and brick, cinder and metal fragments. Gravel is brown, white and black angular to subrounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		6.1	%
Intitial Specimen Details:	Bulk Density	1.91	Mg/m³
	Dry Density	1.78	Mg/m³

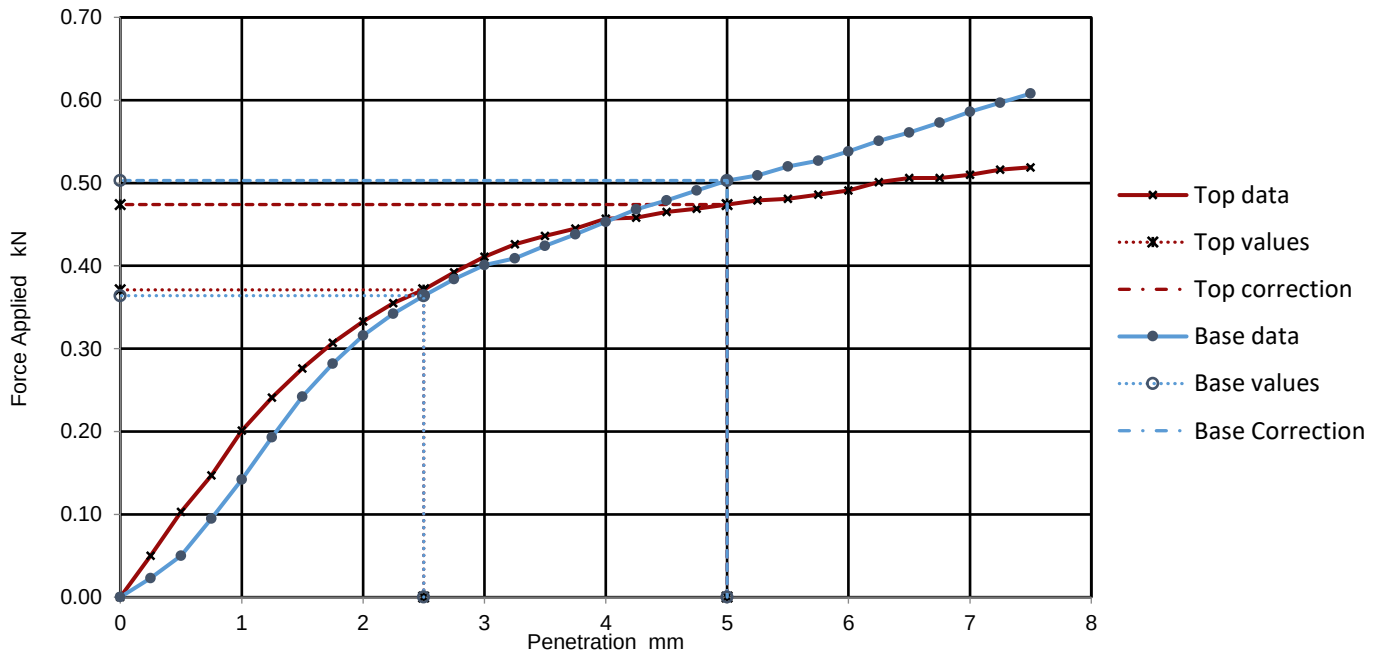
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	11	mins
Amount of Swell Recorded	0.012	mm
Initial Water Content	7.1	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	2.8	2.4	2.8	2.8	15.2
BASE	No	2.8	2.5	2.8		14.9

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC23	0.70 - 1.00	B	2	Dark brown gravelly silty slightly clayey SAND with rare concrete and brick fragments. Gravel is brown, black and white angular to subrounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		2.6	%
Intitial Specimen Details:	Bulk Density	1.96	Mg/m³
	Dry Density	1.77	Mg/m³

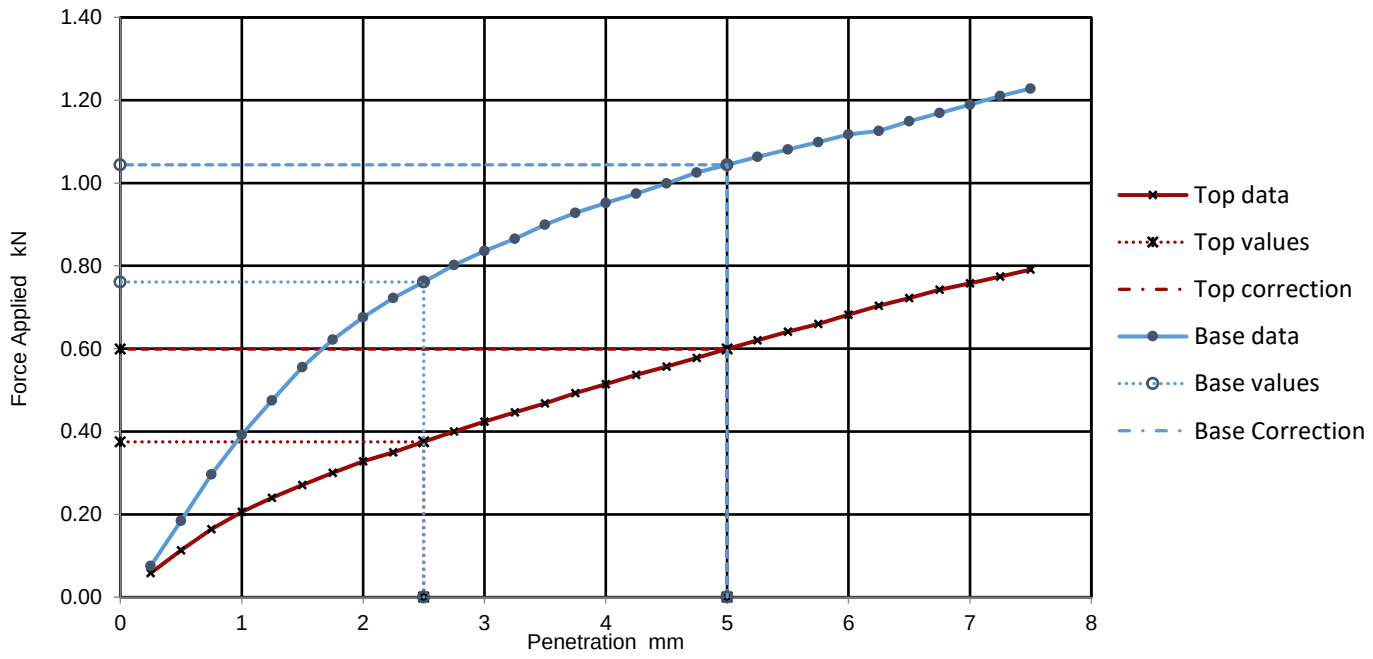
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	7	mins
Amount of Swell Recorded	0.012	mm
Initial Water Content	10.7	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	2.8	3.0	3.0		15.3
BASE	No	5.8	5.2	5.8		15.0

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC24	0.60 - 1.00	B	1	Black gravelly silty slightly clayey SAND with occasional concrete fragments. Gravel is brown, white and black angular to rounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		6.8	%
Intitial Specimen Details:	Bulk Density	2.06	Mg/m³
	Dry Density	1.83	Mg/m³

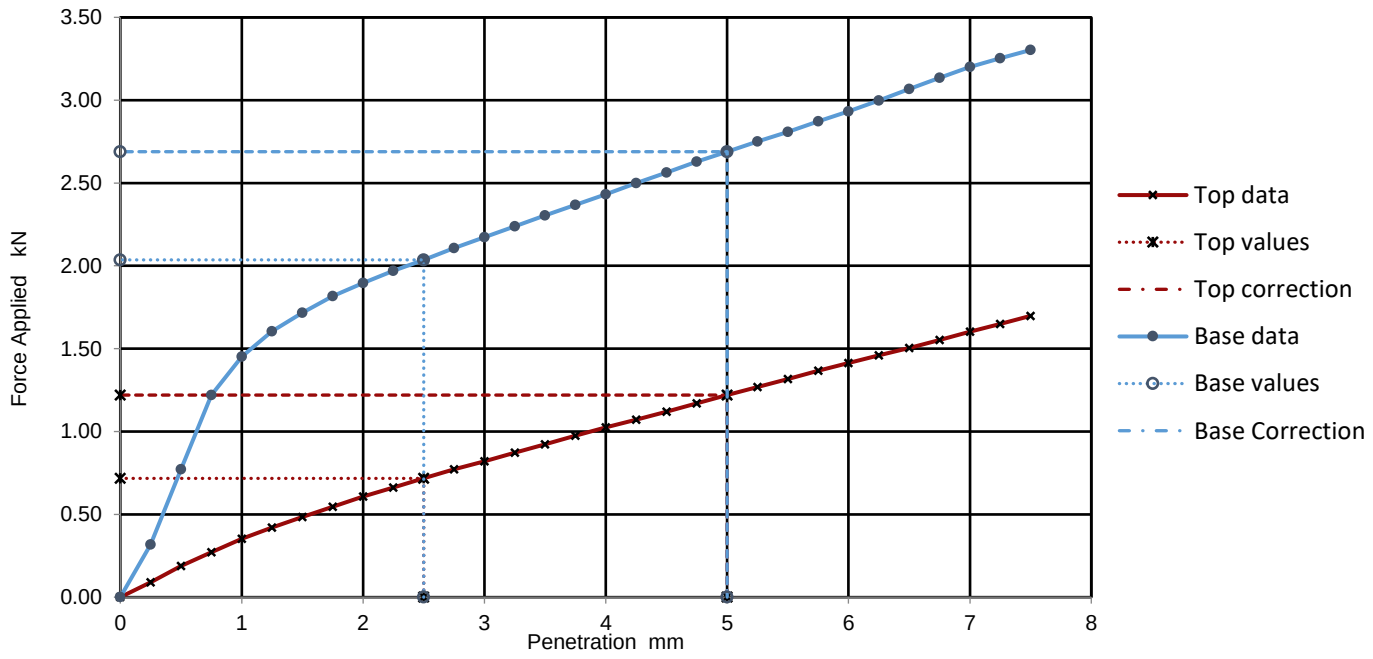
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	20	mins
Amount of Swell Recorded	-0.076	mm
Initial Water Content	12.4	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	5.4	6.1	6.1		14.2
BASE	No	15	13	15		14.1

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC26	0.70 - 1.00	B	2	Black and dark orangish brown gravelly slightly silty SAND with occasional brick and asphalt fragments. Gravel is brown, black and white angular to subrounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maxium Dry Density

Material Retained on 20mm Sieve Removed		1.1	%
Intitial Specimen Details:	Bulk Density	1.87	Mg/m³
	Dry Density	1.70	Mg/m³

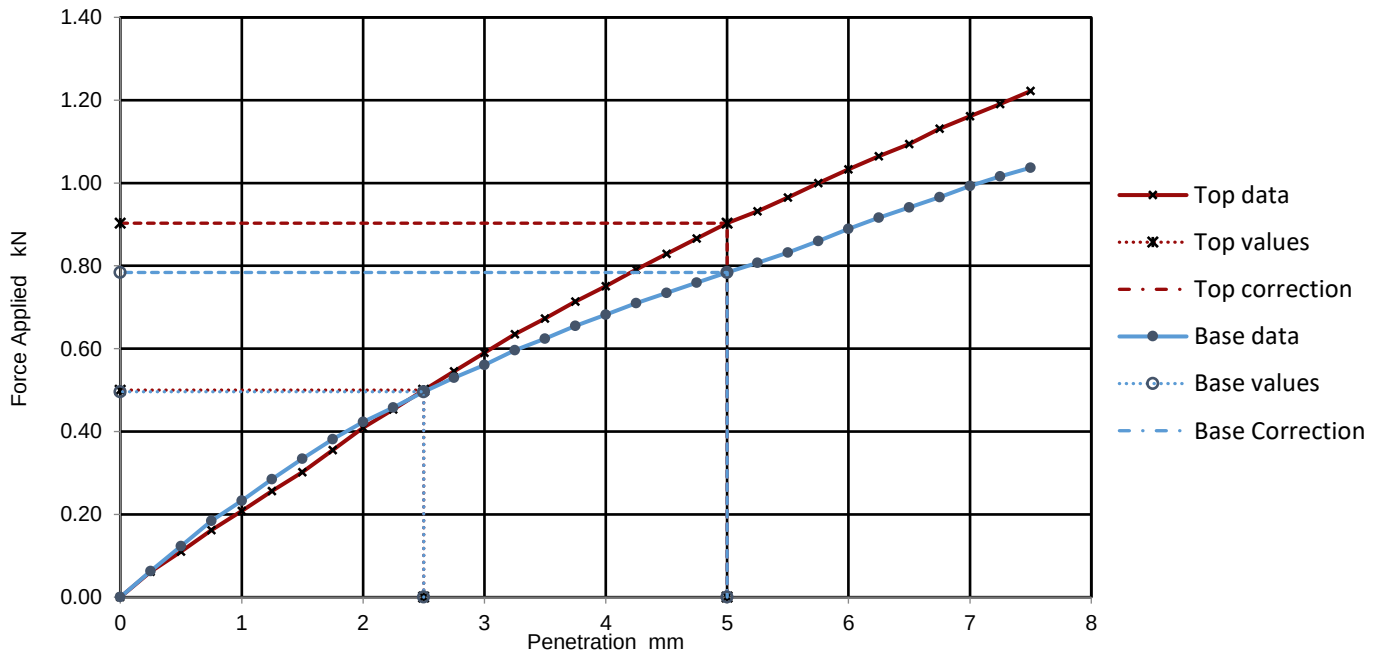
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	8	mins
Amount of Swell Recorded	0	mm
Initial Water Content	9.8	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	3.8	4.5	4.5	4.2	15.9
BASE	No	3.8	3.9	3.9		16.7

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

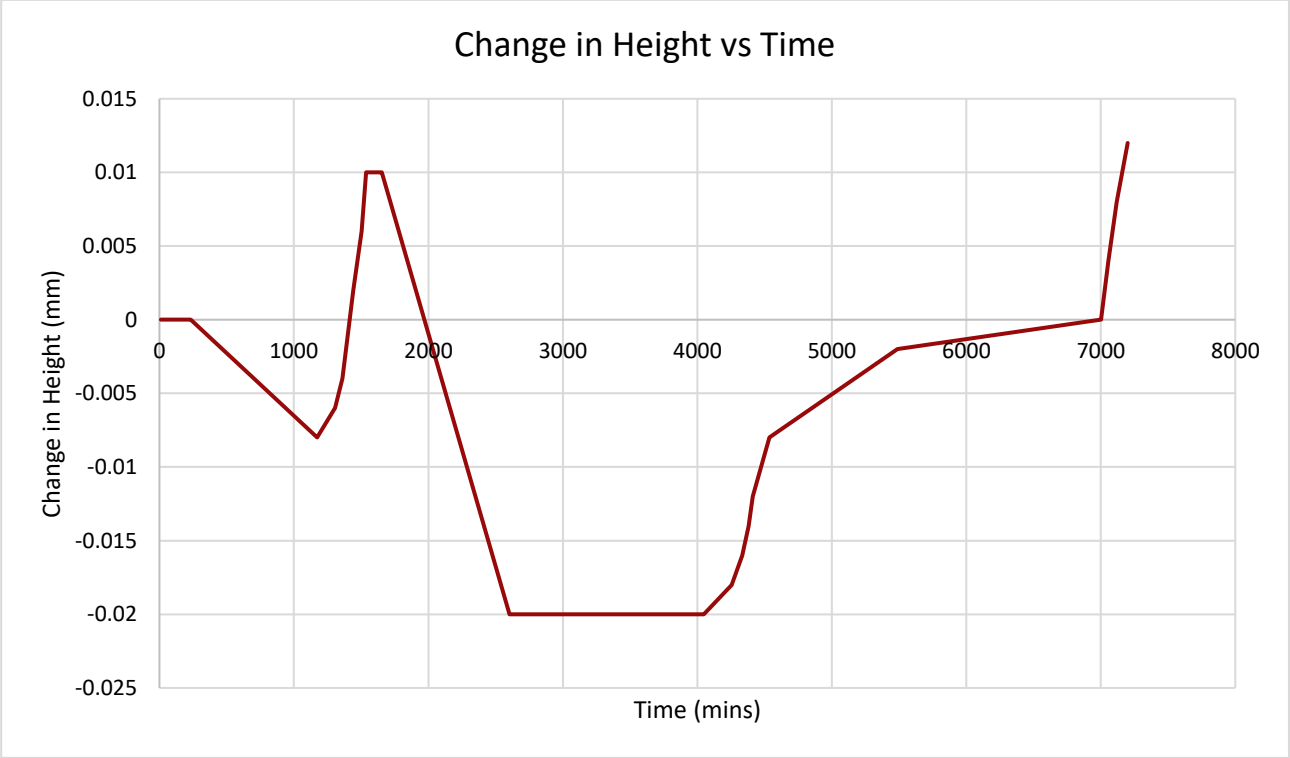
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC08	0.60 - 1.10	B	2	Dark greyish brown very gravelly silty SAND, with occasional black organic pockets, and brick, cinder and metal fragments. Gravel is brown, white and black angular to subrounded flint.	

After Soaking

Water Contents	Top (%)	15.2	Bulk Density	1.93	Dry Density	1.78
	Bottom (%)	14.9				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**0.012**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

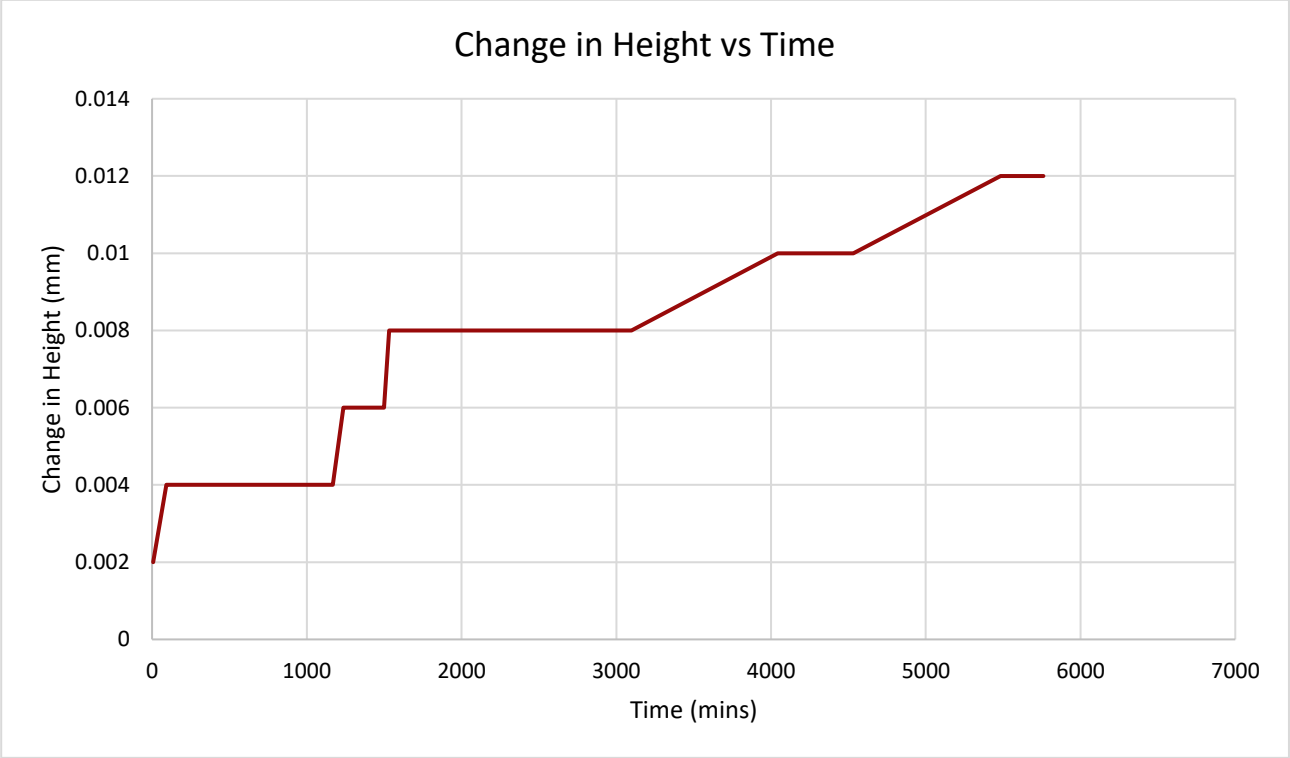
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC23	0.70 - 1.00	B	2	Dark brown gravelly silty slightly clayey SAND with rare concrete and brick fragments. Gravel is brown, black and white angular to subrounded flint.	

After Soaking

Water Contents	Top (%)	15.3	Bulk Density	1.93	Dry Density	1.77
	Bottom (%)	15.0				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**0.012**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

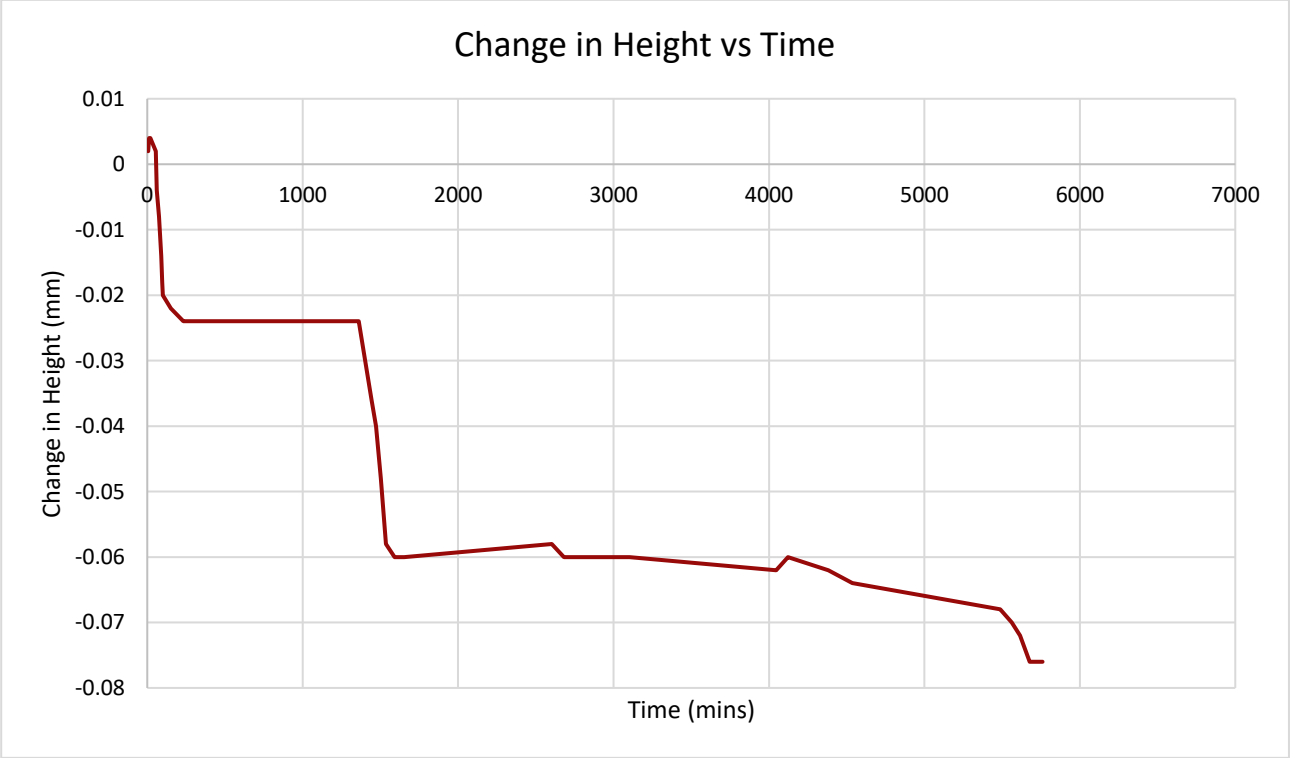
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC24	0.60 - 1.00	B	1	Black gravelly silty slightly clayey SAND with occasional concrete fragments. Gravel is brown, white and black angular to rounded flint.	

After Soaking

Water Contents	Top (%)	14.2	Bulk Density	1.93	Dry Density	1.83
	Bottom (%)	14.1				

Surcharge Weights	(kg)	18	**Total Change in Height**	**(mm)**	**-0.076**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 05/06/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-9**

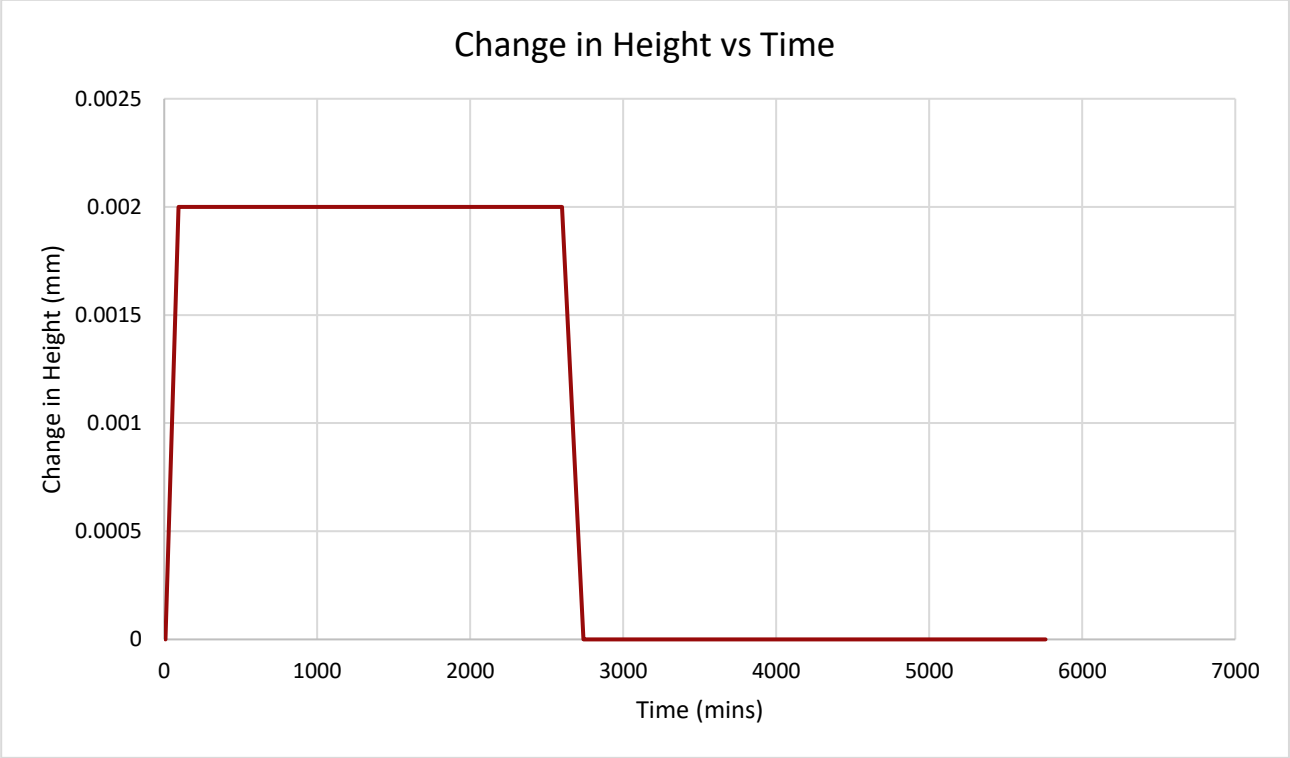
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC26	0.70 - 1.00	B	2	Black and dark orangish brown gravelly slightly silty SAND with occasional brick and asphalt fragments. Gravel is brown, black and white angular to subrounded flint.	

After Soaking

Water Contents	Top (%)	15.9	Bulk Density	1.93	Dry Density	1.70
	Bottom (%)	16.7				

Surcharge Weights	(kg)	18	**Total Change in Height**	**(mm)**	**0.000**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-13820-1		
Initial Date of Issue:	24-May-2018		
Client	Soil Property Testing		
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG		
Contact(s):	Jon Garner		
Project	S31644-9 Lake Lothing, Lowestoft		
Quotation No.:	Q17-10468	**Date Received:**	17-May-2018
Order No.:	S31644-9	**Date Instructed:**	17-May-2018
No. of Samples:	15		
Turnaround (Wkdays):	5	**Results Due:**	23-May-2018
Date Approved:	24-May-2018		
Approved By:			
Details:	Robert Monk, Technical Manager		

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-9 Lake Lothing, Lowestoft

Client: Soil Property Testing				**Chemtest Job No.:**	18-13820	18-13820	18-13820	18-13820	18-13820	18-13820	18-13820	18-13820	18-13820	18-13820	18-13820
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	624155	624156	624157	624158	624159	624160	624161	624162	624163	624164	624165
Order No.: S31644-9				Client Sample Ref.:	BHC08	BHC08	BHC08	BHC08	BHC08	BHC23	BHC24	BHC24	BHC24	BHC26	BHC32
				Client Sample ID.:	B2	B8	B28	B48	B56	D3	D2	D5	B31	B2	B3
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.60	3.60	13.40	23.60	27.40	1.20	1.20	2.00	13.50	0.70	1.10
				Asbestos Lab:					COVENTRY						
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020	11	31	15	34	24	4.6	12	12	14	6.2	13
pH (2.5:1)	N	2010		N/A			[A] 7.9	[A] 7.9	[A] 8.2	[A] 8.2		[A] 8.6	[A] 4.2	[A] 8.0	[A] 8.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010			0.25	0.54	0.39	< 0.010		0.042	0.43	0.021	< 0.010
Total Sulphur	U	2175	%	0.010			[A] 0.053	[A] 0.56	[A] 0.40	[A] < 0.010		[A] 0.014	[A] 0.43	[A] 0.015	[A] < 0.010
Chloride (Water Soluble)	U	2220	g/l	0.010									[A] 0.11		
Nitrate (Water Soluble)	N	2220	g/l	0.010									< 0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010			[A] 0.19	[A] 0.11	[A] 0.084	[A] < 0.010		[A] < 0.010	[A] 0.12	[A] < 0.010	[A] < 0.010
Organic Matter BS1377	N	2930	%	0.10	[A] 0.80	[A] 2.0					[A] 1.0				

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-9 Lake Lothing, Lowestoft

Client: Soil Property Testing			**Chemtest Job No.:**	18-13820	18-13820	18-13820
Quotation No.: Q17-10468			**Chemtest Sample ID.:**	624166	624167	624168
Order No.: S31644-9			Client Sample Ref.:	BHC32	BHC32	BHC32
			Client Sample ID.:	D8	D11	D57
			Sample Type:	SOIL	SOIL	SOIL
			Top Depth (m):	3.50	4.50	25.70
			Asbestos Lab:			
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	37	19	16
pH (2.5:1)	N	2010		N/A		[A] 8.1	[A] 7.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		0.47	1.1
Total Sulphur	U	2175	%	0.010		[A] 0.14	[A] 0.73
Chloride (Water Soluble)	U	2220	g/l	0.010			
Nitrate (Water Soluble)	N	2220	g/l	0.010			
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] 0.12	[A] 0.36
Organic Matter BS1377	N	2930	%	0.10	[A] 3.0		

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
624155	BHC08	B2		A	Plastic Bag
624156	BHC08	B8		A	Plastic Bag
624157	BHC08	B28		A	Plastic Bag
624158	BHC08	B48		A	Plastic Bag
624159	BHC08	B56		A	Plastic Bag
624160	BHC23	D3		A	Plastic Tub 500g
624161	BHC24	D2		A	Plastic Tub 500g
624162	BHC24	D5		A	Plastic Tub 500g
624163	BHC24	B31		A	Plastic Bag
624164	BHC26	B2		A	Plastic Bag
624165	BHC32	B3		A	Plastic Bag
624166	BHC32	D8		A	Plastic Tub 500g
624167	BHC32	D11		A	Plastic Tub 500g
624168	BHC32	D57		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2620	LOI 440	LOI 440	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** Technical Director
- ☐ **S.P. Townend FGS** Quality Manager
- ☐ **W. Johnstone** Materials Lab Manager
- ☐ **D. Sabnis** Operations Manager

[redacted]

Date Received: 01/06/2018

Samples Tested Between: 01/06/2018 **and** 31/07/2018

Remarks:

For the attention of Mr J Glenwright
Your Reference No: 2543,GI

Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2 (a) UKAS - United Kingdom Accreditation Service
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-10**	**Target Date**	29/06/2018
Scheduled By	Geosphere Environmental Ltd		

CHEDULE OF LABORATORY TEST

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	Liquid/Plastic Limits	Wet Sieve Preparation	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro inc. Pre-sieve	CBR inc. recompaction	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite Preser	Organic Content (Dichromate	Triaxial Test Single Stage	Consolidation	Loss On Ignition	Sample Remarks
BHC05	B	1	0.40	1	1	1		1		1	1	1						
BHC05	B	3	0.90	1	1	1	1						1							
BHC05	B	5	1.20	1			1													
BHC05	B	7	2.00											1						
BHC05	DS	8	2.30	1	1															
BHC05	B	9	2.30						1											
BHC05	UT	10	3.00	1	1										1	1				
BHC05	B	12	3.00						1					1			1			
BHC05	D	11	3.60										1							
BHC05	D	14	4.60	1	1				1					1						
BHC05	B	15	5.00	1	1	1			1											
BHC05	B	17	6.00	1					1											
BHC05	B	19	7.00										1							
BHC05	B	23	9.00	1					1											
BHC05	DS	28	12.00	1			1													
BHC05	UT	30	13.00	1	1										1					
BHC05	B	33	14.00	1					1				1							
BHC05	B	38	17.00	1					1											
BHC05	UT	39	18.00	1	1				1						1					
BHC05	B	43	19.00	1					1											
BHC05	UT	44	20.00	1	1				1						2					
BHC05	B	45	20.00						1											
BHC05	B	48	21.00	1					1				1							
BHC05	B	54	24.00	1			1													
BHC05	B	58	26.00	1					1											
BHC05	B	61	28.00	1			1													
BHC05	B	67	30.50				1													
BHC05	B	73	33.50	1			1													
BHC05	DS	76	35.50										1							
BHC05	B	79	36.50						1											
BHC05	B	84	39.50				1													
BHC06B	B	1	0.30	1				1												
BHC06B	B	2	1.10	1	1	1				1	1	1		1						
BHC06B	DS	3	1.20										1							
BHC06B	B	4	1.30	1	1	1		1												

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-10**	**Target Date**	29/06/2018
Scheduled By	Geosphere Environmental Ltd		

CHEDULE OF LABORATORY TEST

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	Liquid/Plastic Limits	Wet Sieve Preparation	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro inc. Pre-sieve	CBR inc. recompaction	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite Prese	Organic Content (Dichromate	Triaxial Test Single Stage	Consolidation	Loss On Ignition					Sample Remarks
BHC06B	B	6	2.00	1	1				1													
BHC06B	B	8	3.40	1	1	1							1	1								
BHC06B	B	12	5.40	1					1													
BHC06B	B	16	7.40	1	1	1			1													
BHC06B	B	20	9.40	1	1																	
BHC06B	B	25	11.00	1					1													
BHC06B	B	29	13.40	1	1																	
BHC06B	B	33	15.40	1					1													
BHC06B	B	39	18.40	1					1				1									
BHC06B	B	43	20.60	1	1				1													
BHC06B	UT	44	21.00	1	1										2							
BHC06B	B	48	22.40	1	1	1			1													
BHC06B	B	50	23.50	1	1	1																
BHC06B	B	52	24.40						1													
BHC06B	UT	55	26.00	1																		
BHC06B	B	59	27.40	1					1													
BHC06B	DS	64	30.00										1									
BHC06B	B	65	30.40						1													
BHC06B	B	71	33.40	1					1													
BHC06B	B	77	36.40						1													
BHC06B	B	83	39.40						1													
BHC07	B	1	0.30	1				1						1								
BHC07	B	2	0.60	1			1			1	1	1	1									
BHC07	B	6	2.40	1			1							1								
BHC07	B	8	3.00										1									
BHC07	B	9	3.70	1	1				1					1								
BHC07	UT	10	4.00	1	1										1	1						
BHC07	B	12	4.60	1	1	1																
BHC07	D	11	4.60											1								
BHC07	UT	15	6.00	1																		
BHC07	B	19	7.40	1					1													
BHC07	B	21	8.40	1	1																	
BHC07	DS	24	10.00										1									
BHC07	B	27	11.40	1				1														
BHC07	B	33	14.40	1	1				1													

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-10**	**Target Date**	29/06/2018
Scheduled By	Geosphere Environmental Ltd		

CHEDULE OF LABORATORY TEST

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	Liquid/Plastic Limits	Wet Sieve Preparation	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro inc. Pre-sieve	CBR inc. recompaction	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite Prese	Organic Content (Dichromate	Triaxial Test Single Stage	Consolidation	Loss On Ignition					Sample Remarks
BHC07	B	39	17.40	1					1													
BHC07	B	43	19.60	1	1				1													
BHC07	UT	44	20.00	1	1										2							
BHC07	B	50	22.40	1					1				1									
BHC07	B	54	24.40	1	1				1													
BHC07	B	60	27.40						1													
BHC07	B	66	30.40						1													
BHC07	B	72	33.40	1					1				1									
BHC07	B	78	36.40						1													
BHC07	B	84	39.40						1													
Totals				**57**	**28**	**10**	**10**	**5**	**41**	**3**	**3**	**3**	**15**	**9**	**10**	**2**	**1**					**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC05	0.40 - 0.60	B	1	**27.4**	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular lightweight, degradeable gravel sized fragments, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	
BHC05	0.90 - 1.10	B	3	**25.3**	Dark brown, yellowish brown and brown very gravelly SAND with occasional white angular lightweight gravel sized fragments. Gravel is brown, black and white angular to rounded flint.	
BHC05	1.20 - 1.70	B	5	**19.5**	Brown and olive brown gravelly silty SAND with rare white angular lightweight gravel sized fragments. Gravel is brown, black and white subangular to subrounded flint.	
BHC05	2.30 - 2.75	DS	8	**57.9**	Very soft very dark grey organic CLAY locally oxidised to brown.	Dried at 50°C due to high organic content.
BHC05	3.00 - 3.45	UT	10	**66.6**	Very soft (Very low strength) very dark grey slightly organic CLAY with black mottling, and rare decayed roots.	
BHC05	4.60	D	14	**20.1**	Soft light bluish grey sandy silty slightly organic CLAY with occasional olive mottling.	
BHC05	5.00 - 5.50	B	15	**31.6**	Very soft olive very sandy silty organic CLAY with occasional dark bluish grey mottling.	
BHC05	6.00 - 6.50	B	17	**20.9**	Light olive brown slightly gravelly silty clayey slightly organic SAND. Gravel is fine flint.	
BHC05	9.00 - 9.50	B	23	**24.4**	Olive silty clayey slightly organic SAND.	
BHC05	12.00 - 12.45	DS	28	**20.5**	Olive yellow slightly silty slightly clayey slightly organic SAND with rare light bluish grey pockets.	
BHC05	13.00 - 13.45	UT	30	**31.4**	Soft (Low strength) very dark grey silty CLAY with olive grey and dark yellowish brown mottling, and fine to medium sand pockets, and rare fine to medium flint gravel.	
BHC05	14.00 - 14.50	B	33	**20.2**	Dark olive grey silty clayey slightly organic SAND.	
BHC05	17.00 - 17.50	B	38	**23.2**	Dark olive grey silty clayey slightly organic SAND.	
BHC05	18.00 - 18.45	UT	39	**21.3**	Dark grey very sandy silty CLAY.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC05	19.00 - 19.50	B	43	**26.8**	Dark olive grey silty clayey slightly organic SAND.	
BHC05	20.00 - 20.45	UT	44	**20.7**	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	
BHC05	20.00 - 20.45	UT	44	**21.5**	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	
BHC05	21.00 - 21.50	B	48	**26.7**	Dark olive grey silty clayey slightly organic SAND locally oxidised to brown.	
BHC05	24.00 - 24.50	B	54	**24.1**	Dark olive and dark grey slightly silty clayey slightly organic SAND.	
BHC05	26.00 - 26.50	B	58	**21.8**	Dark olive and dark grey silty clayey slightly organic SAND.	
BHC05	28.00 - 28.50	B	61	**24.1**	Dark olive grey silty slightly clayey SAND with occasional shell and fossil debris.	
BHC05	33.50 - 34.00	B	73	**21.8**	Dark olive grey silty slightly clayey SAND with occasional shell and fossil debris.	
BHC06B	0.30	B	1	**19.1**	Dark greyish brown gravelly silty clayey SAND with occasional black organic pockets, and glass fragments, rare coal and ceramic fragments. Gravel is brown, black and white angular to subrounded flint.	
BHC06B	1.10	B	2	**28.8**	Very soft olive brown silty CLAY with occasional yellowish brown sand pockets, and rare fine to coarse flint gravel.	
BHC06B	1.30 - 1.90	B	4	**21.6**	Very soft slightly gravelly sandy silty CLAY with occasional black organic pockets, and rare concrete fragments. Gravel is black, white and brown angular to rounded flint, and occasional white subangular chalk.	
BHC06B	2.00 - 2.50	B	6	**72.4**	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown with rare shell debris.	
BHC06B	3.40 - 3.90	B	8	**35.2**	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown with rare decayed roots and plant material. Gravel is fine to medium flint.	Dried at 50°C due to high organic content.
BHC06B	5.40 - 5.90	B	12	**29.6**	Olive very silty clayey slightly organic SAND	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC06B	7.40 - 7.90	B	16	**26.1**	Very soft light olive brown very sandy silty slightly organic CLAY.	
BHC06B	9.40 - 9.90	B	20	**23.3**	Firm dark grey slightly sandy silty organic CLAY locally oxidised to yellowish brown.	
BHC06B	11.00 - 11.50	B	25	**24.1**	Light olive brown slightly gravelly silty clayey slightly organic SAND. Gravel is fine quartzite.	
BHC06B	13.40 - 13.90	B	29	**37.5**	Very soft yellowish brown slightly organic CLAY with bluish grey and orange mottling and rare fine sand partings.	
BHC06B	15.40 - 15.90	B	33	**31.5**	Olive grey silty clayey organic SAND locally oxidised to brown.	
BHC06B	18.40 - 18.90	B	39	**22.5**	Olive grey silty clayey slightly organic SAND.	
BHC06B	20.60 - 21.00	B	43	**24.4**	Firm dark bluish grey slightly sandy silty slightly organic CLAY locally oxidised to olive with occasional fine sand and silt partings.	
BHC06B	21.00 - 21.45	UT	44	**26.4**	Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.	
BHC06B	21.00 - 21.45	UT	44	**27.1**	Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.	
BHC06B	22.40 - 22.90	B	48	**29.9**	Dark olive grey very sandy silty organic CLAY with rare shell debris.	
BHC06B	23.50 - 23.90	B	50	**450**	Very soft dark grey sandy silty organic CLAY locally oxdisied to brown. Sand is fine to medium.	
BHC06B	26.00 - 26.45	UT	55	**18.9**	Dark grey silty slightly clayey slightly organic fine to medium SAND with frequent shell debris, and rare very soft clayey pockets.	
BHC06B	27.40 - 27.90	B	59	**21.6**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	
BHC06B	33.40 - 33.90	B	71	**37.6**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC07	0.30	B	1	**10.4**	Dark greyish brown gravelly silty clayey SAND with occasional cinder, brick and concrete fragments. Gravel is brown, white and black angular to rounded flint.	
BHC07	0.60 - 1.00	B	2	**13.6**	Yellowish brown gravelly slightly silty SAND with occasional firm greyish brown sandy clay lumps. Gravel is brown, black and white angular to subangular flint.	
BHC07	2.40 - 2.90	B	6	**11.7**	Brown very gravelly silty SAND with occasional black organic pockets. Gravel is black, white and brown subrounded to subangular flint.	
BHC07	3.70 - 4.00	B	9	**47.8**	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is quartzite.	
BHC07	4.00 - 4.45	UT	10	**59.7**	Very soft (Extremely low strength) very dark grey organic CLAY.	Dried at 50°C due to high organic content.
BHC07	4.60 - 5.00	B	12	**26.4**	Soft very dark grey sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	Dried at 50°C due to high organic content.
BHC07	6.00 - 6.45	UT	15	**16.5**	Dark grey slightly gravelly silty slightly clayey organic fine to medium SAND locally oxidised to brown. Gravel is fine to medium flint.	
BHC07	7.40 - 7.90	B	19	**21.1**	Very soft light olive brown slightly gravelly very sandy silty organic CLAY. Gravel is flint.	
BHC07	8.40 - 9.00	B	21	**24.3**	Firm dark grey silty organic CLAY locally oxidised to brown with rare find sand pockets.	
BHC07	11.40 - 11.90	B	27	**17.0**	Yellowish brown and greyish brown gravelly silty clayey SAND. Gravel is black, white and brown angular to subrounded flint.	
BHC07	14.40 - 15.00	B	33	**41.5**	Soft grey slightly sandy silty organic CLAY with occasional dark grey mottling, and rare orange staining.	
BHC07	17.40 - 17.90	B	39	**19.7**	Dark grey silty clayey slightly organic SAND with rare orange staining.	
BHC07	19.60 - 19.80	B	43	**25.6**	Firm dark bluish grey slightly sandy silty CLAY with occasional olive mottling, and rare orange staining.	
BHC07	20.00 - 20.45	UT	44	**22.7**	Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC07	20.00 - 20.45	UT	44	**22.7**	Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.	
BHC07	22.40 - 22.90	B	50	**30.3**	Very soft dark olive grey very sandy silty organic CLAY.	
BHC07	24.40 - 24.90	B	54	**44.4**	Dark olive grey very sandy silty organic CLAY.	
BHC07	33.40 - 33.90	B	72	**32.3**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

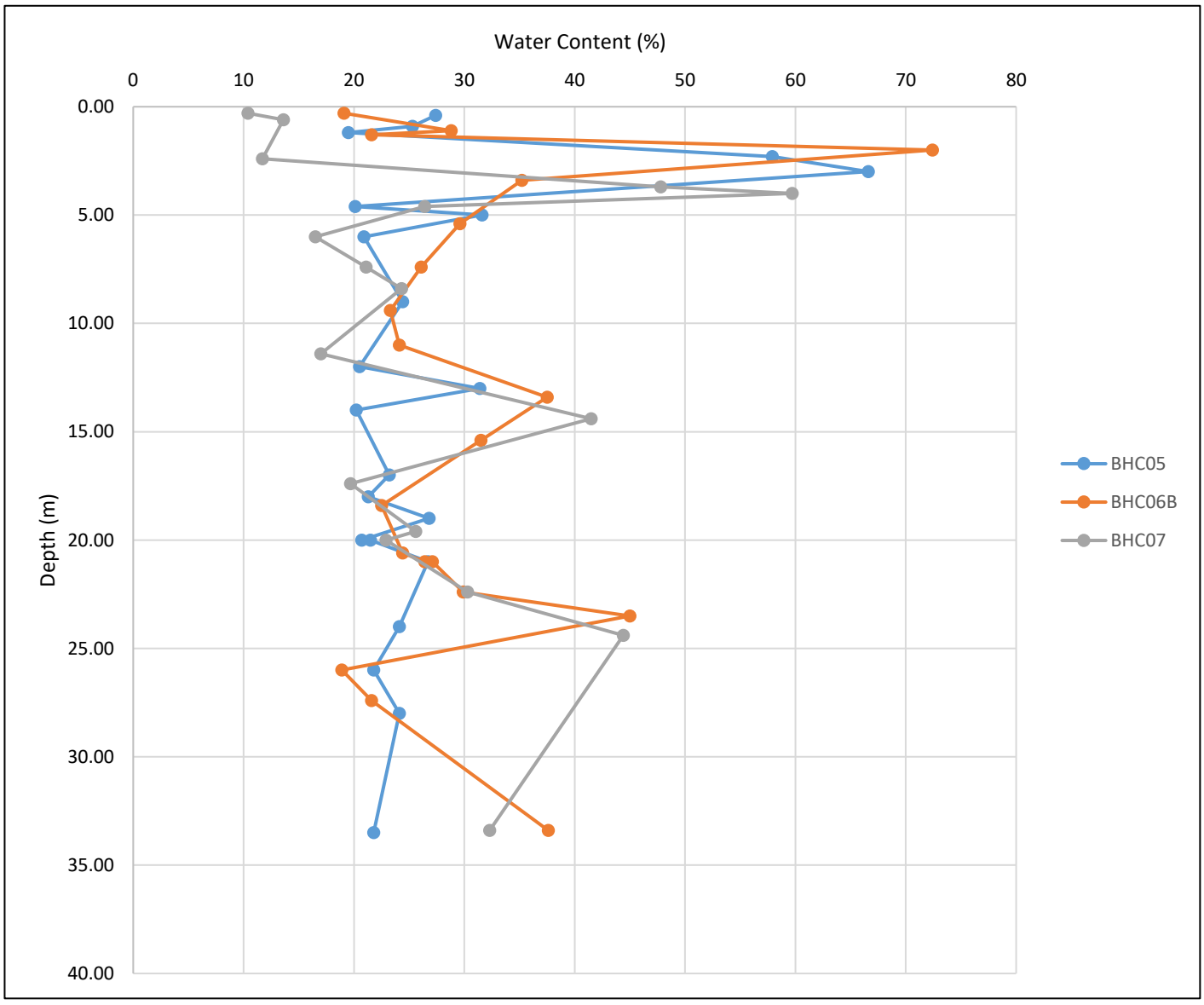
ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

WATER CONTENT VS DEPTH BELOW GROUND LEVEL



Method of Preparation:	BSEN ISO 17892-1: 2014
Method of Test:	BSEN ISO 17892-1: 2014
Type of Sample Key:	U - Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC05	0.40 - 0.60	B	1	**27.4**	33	26	7	0.20	Wet Sieved	60 (M)	N/R*	24	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular lightweight, degradeable gravel sized fragments, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	ML
BHC05	0.90 - 1.10	B	3	**25.3**	25	19	6	1.05	Wet Sieved	47 (M)	N/R*	24	Dark brown, yellowish brown and brown very gravelly SAND with occasional white angular lightweight gravel sized fragments. Gravel is brown, black and white angular to rounded flint.	CL/ML
BHC05	2.30 - 2.75	DS	8	**57.9**	77	26	51	0.63	From Natural	0 (A)		24	Very soft very dark grey organic CLAY locally oxidised to brown.	CVO
BHC05	3.00 - 3.45	UT	10	**66.6**	70	29	41	0.92	From Natural	0 (A)		24	Very soft (Very low strength) very dark grey slightly organic CLAY with black mottling, and rare decayed roots.	CHO/CVO
BHC05	4.60	D	14	**20.1**	29	16	13	0.32	From Natural	0 (A)		72	Soft light bluish grey sandy silty slightly organic CLAY with occasional olive mottling.	CLO
BHC05	5.00 - 5.50	B	15	**31.6**	25	14	11	1.60	Wet Sieved	6 (M)	N/R*	24	Very soft olive very sandy silty organic CLAY with occasional dark bluish grey mottling.	CLO
BHC05	13.00 - 13.45	UT	30	**31.4**	33	21	12	0.87	From Natural	0 (A)		71	Soft (Low strength) very dark grey silty CLAY with olive grey and dark yellowish brown mottling, and fine to medium sand pockets, and rare fine to medium flint gravel.	CL
BHC05	18.00 - 18.45	UT	39	**21.3**	24	14	10	0.73	From Natural	0 (A)		71	Dark grey very sandy silty CLAY.	CL

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC05	20.00 - 20.45	UT	44	**20.7**	34	15	19	0.30	From Natural	0 (A)		24	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	CL
BHC06B	1.10	B	2	**28.8**	30	13	17	0.93	Wet Sieved	4 (M)	30.0*	24	Very soft olive brown silty CLAY with occasional yellowish brown sand pockets, and rare fine to coarse flint gravel.	CL
BHC06B	1.30 - 1.90	B	4	**21.6**	26	13	13	0.66	Wet Sieved	28 (M)	29.9*	24	Very soft slightly gravelly sandy silty CLAY with occasional black organic pockets, and rare concrete fragments. Gravel is black, white and brown angular to rounded flint, and occasional white subangular chalk.	CL
BHC06B	2.00 - 2.50	B	6	**72.4**	76	26	50	0.93	From Natural	0 (A)		24	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown with rare shell debris.	CVO
BHC06B	3.40 - 3.90	B	8	**35.2**	32	17	15	1.21	Wet Sieved	13 (M)	N/R*	24	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown with rare decayed roots and plant material. Gravel is fine to medium flint.	CLO
BHC06B	7.40 - 7.90	B	16	**26.1**	27	18	9	0.90	Wet Sieved	2 (M)	N/R*	24	Very soft light olive brown very sandy silty slightly organic CLAY.	CLO
BHC06B	9.40 - 9.90	B	20	**23.3**	43	17	26	0.24	From Natural	0 (A)		24	Firm dark grey slightly sandy silty organic CLAY locally oxidised to yellowish brown.	CIO
BHC06B	13.40 - 13.90	B	29	**37.5**	53	17	36	0.57	From Natural	0 (A)		21	Very soft yellowish brown slightly organic CLAY with bluish grey and orange mottling and rare fine sand partings.	CHO

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC06B	20.60 - 21.00	B	43	**24.4**	45	22	23	0.10	From Natural	0 (M)		24	Firm dark bluish grey slightly sandy silty slightly organic CLAY locally oxidised to olive with occasional fine sand and silt partings.	CIO
BHC06B	21.00 - 21.45	UT	44	**26.4**	59	21	38	0.14	From Natural	0 (A)		24	Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.	CH
BHC06B	22.40 - 22.90	B	48	**29.9**	27	14	13	1.22	Wet Sieved	8 (M)	32.6*	24	Dark olive grey very sandy silty organic CLAY with rare shell debris.	CLO
BHC06B	23.50 - 23.90	B	50	**450**	39	18	21	20.57	Wet Sieved	5 (M)	474*	24	Very soft dark grey sandy silty organic CLAY locally oxdisied to brown. Sand is fine to medium.	CIO
BHC07	3.70 - 4.00	B	9	**47.8**	60	24	36	0.66	From Natural	12 (M)		24	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is quartzite.	CHO
BHC07	4.00 - 4.45	UT	10	**59.7**	75	26	49	0.69	From Natural	0 (A)		23	Very soft (Extremely low strength) very dark grey organic CLAY.	CVO
BHC07	4.60 - 5.00	B	12	**26.4**	39	17	22	0.43	Wet Sieved	45 (M)	48.0*	24	Soft very dark grey sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	CIO
BHC07	8.40 - 9.00	B	21	**24.3**	48	18	30	0.21	From Natural	0 (A)		24	Firm dark grey silty organic CLAY locally oxidised to brown with rare find sand pockets.	CIO

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC07	14.40 - 15.00	B	33	**41.5**	59	23	36	0.51	From Natural	0 (A)		24	Soft grey slightly sandy silty organic CLAY with occasional dark grey mottling, and rare orange staining.	CHO
BHC07	19.60 - 19.80	B	43	**25.6**	45	16	29	0.33	From Natural	0 (M)		24	Firm dark bluish grey slightly sandy silty CLAY with occasional olive mottling, and rare orange staining.	CI
BHC07	20.00 - 20.45	UT	44	**22.7**	39	15	24	0.32	From Natural	0 (A)		24	Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.	CIO
BHC07	24.40 - 24.90	B	54	**44.4**	27	15	12	2.45	From Natural	0 (A)		24	Dark olive grey very sandy silty organic CLAY.	CLO

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

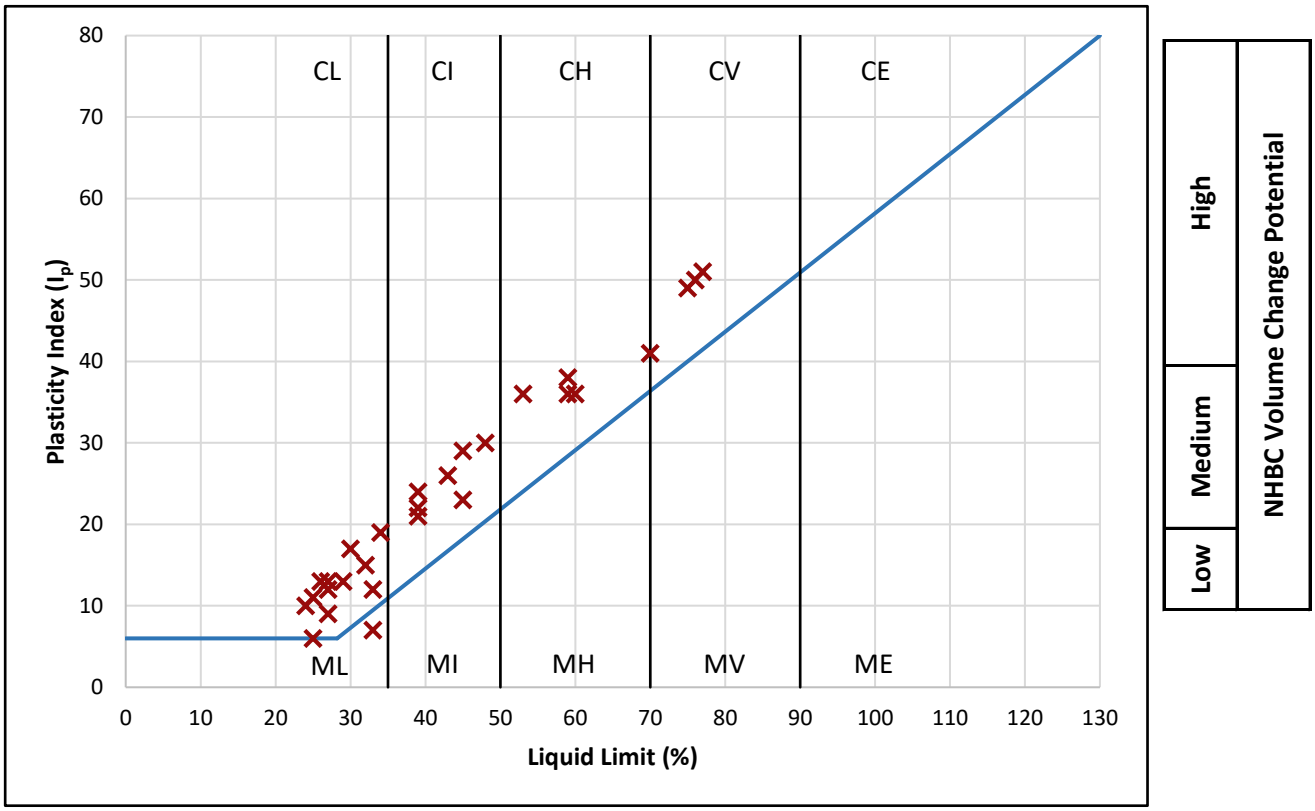
DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

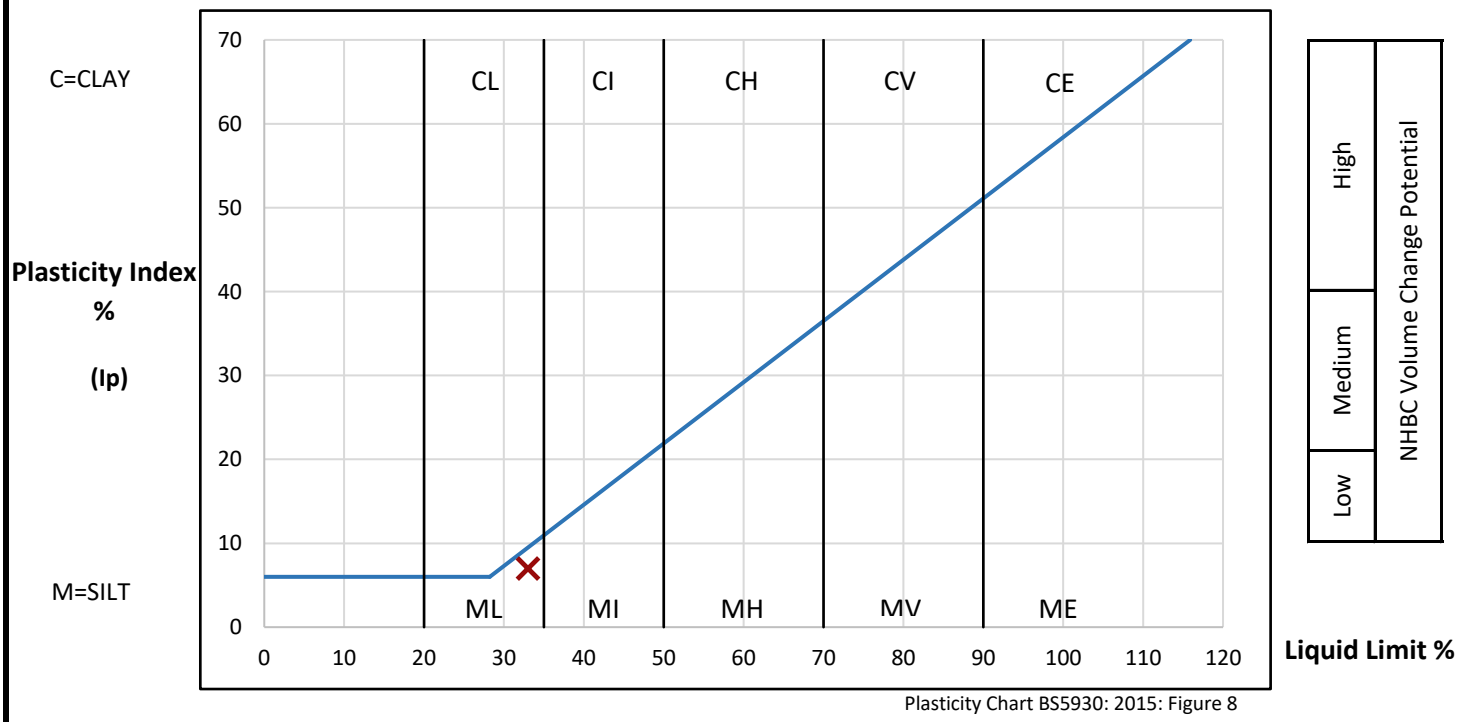
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	0.40 - 0.60	B	1	27.4	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular lightweight, degradeable gravel sized fragments, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	

PREPARATION					
Method of preparation	Wet sieved over 0.425mm sieve			Liquid Limit	33 %
Sample retained 0.425mm sieve	(Measured)	60 %		Plastic Limit	26 %
Corrected water content for material passing 0.425mm	Not reported			Plasticity Index	7 %
Sample retained 2mm sieve	(Measured)	38 %		Liquidity Index	0.20
Curing time	24 hrs	Clay Content	3 %	NHBC Modified (I'p)	3 %
				Derived Activity	2.33



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

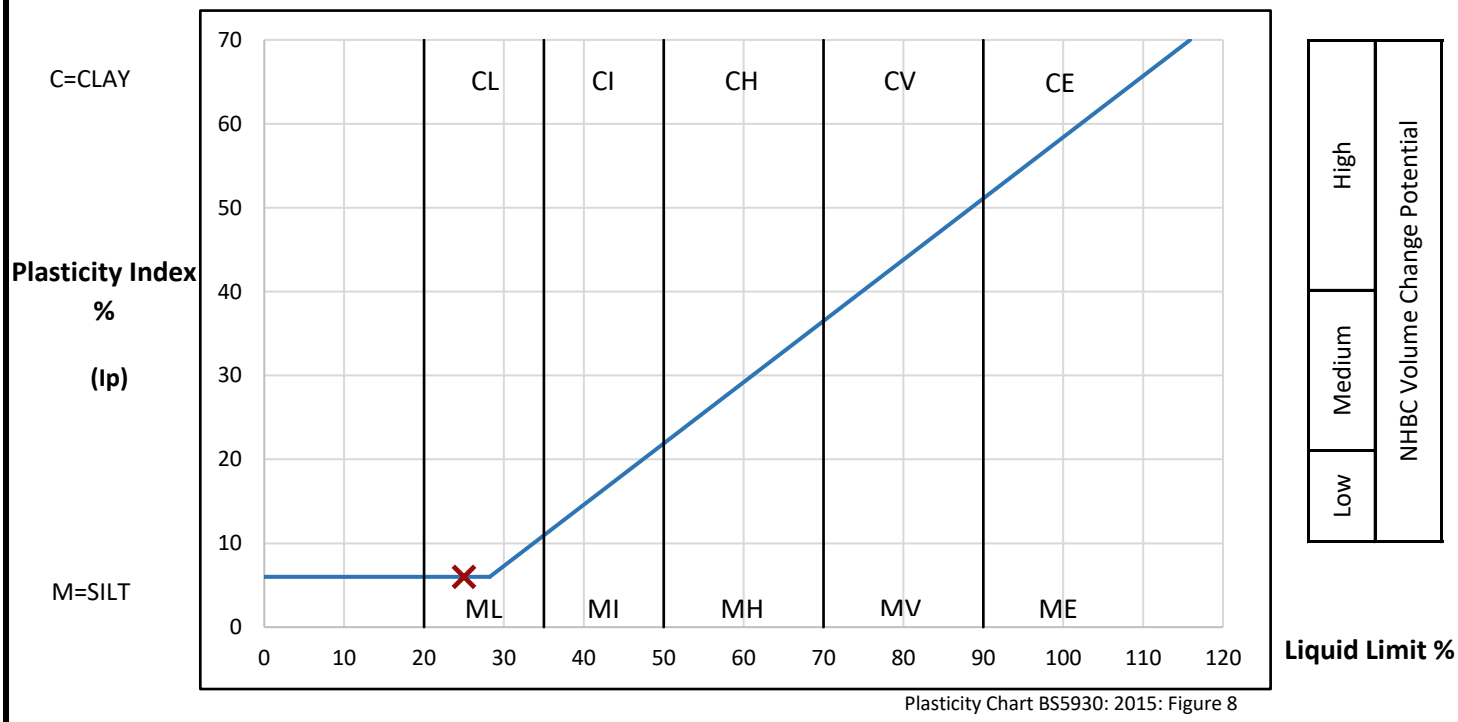
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	0.90 - 1.10	B	3	25.3	Dark brown, yellowish brown and brown very gravelly SAND with occasional white angular lightweight gravel sized fragments. Gravel is brown, black and white angular to rounded flint.	

PREPARATION				Liquid Limit	25 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	19 %
Sample retained 0.425mm sieve	(Measured)	47 %		Plasticity Index	6 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.05
Sample retained 2mm sieve	(Measured)	26 %		NHBC Modified (I'p)	3 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

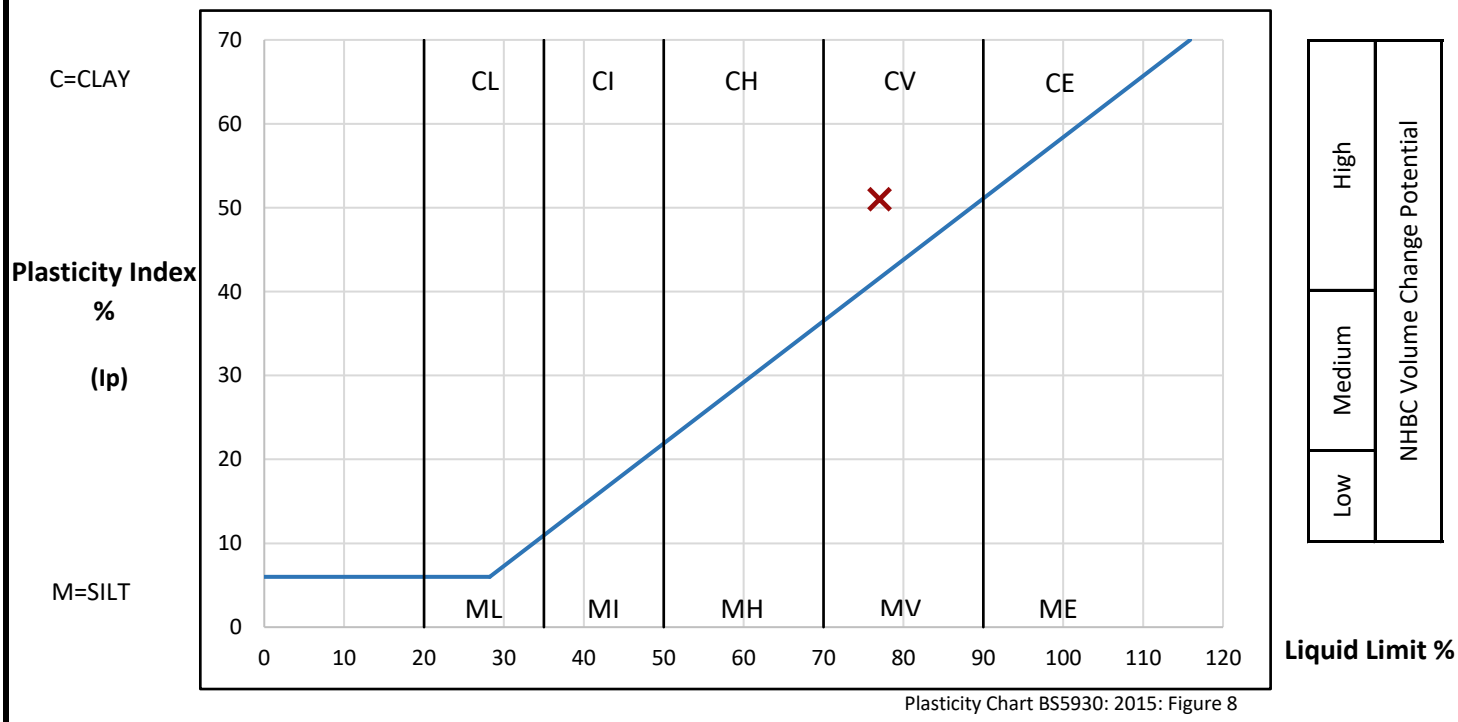
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	2.30 - 2.75	DS	8	57.9	Very soft very dark grey organic CLAY locally oxidised to brown.	Specimen oven dried at 50°C due to high organic content.

PREPARATION				Liquid Limit	77 %
Method of preparation		From natural		Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	51 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.63
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

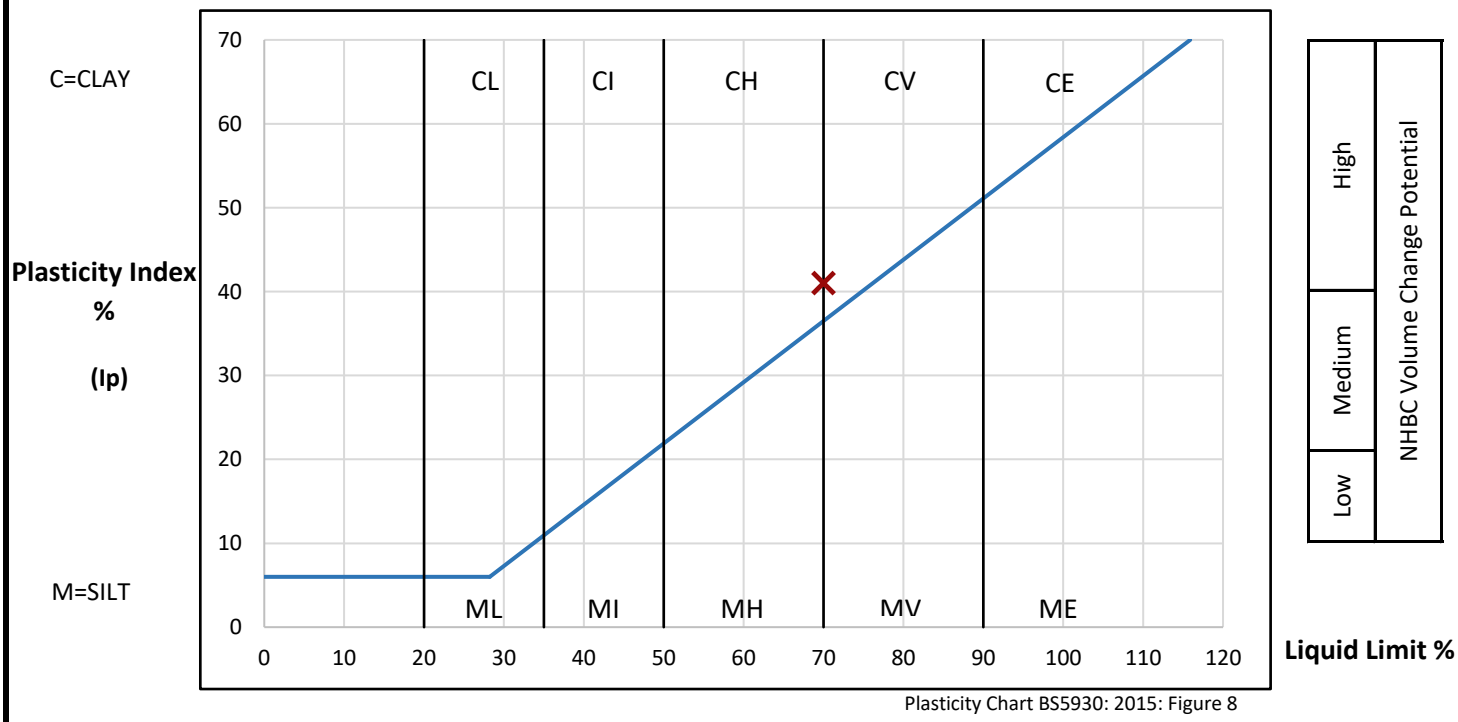
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	3.00 - 3.45	UT	10	66.6	Very soft (Very low strength) very dark grey slightly organic CLAY with black mottling, and rare decayed roots.	

PREPARATION				Liquid Limit	70 %
Method of preparation		From natural		Plastic Limit	29 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	41 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.92
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

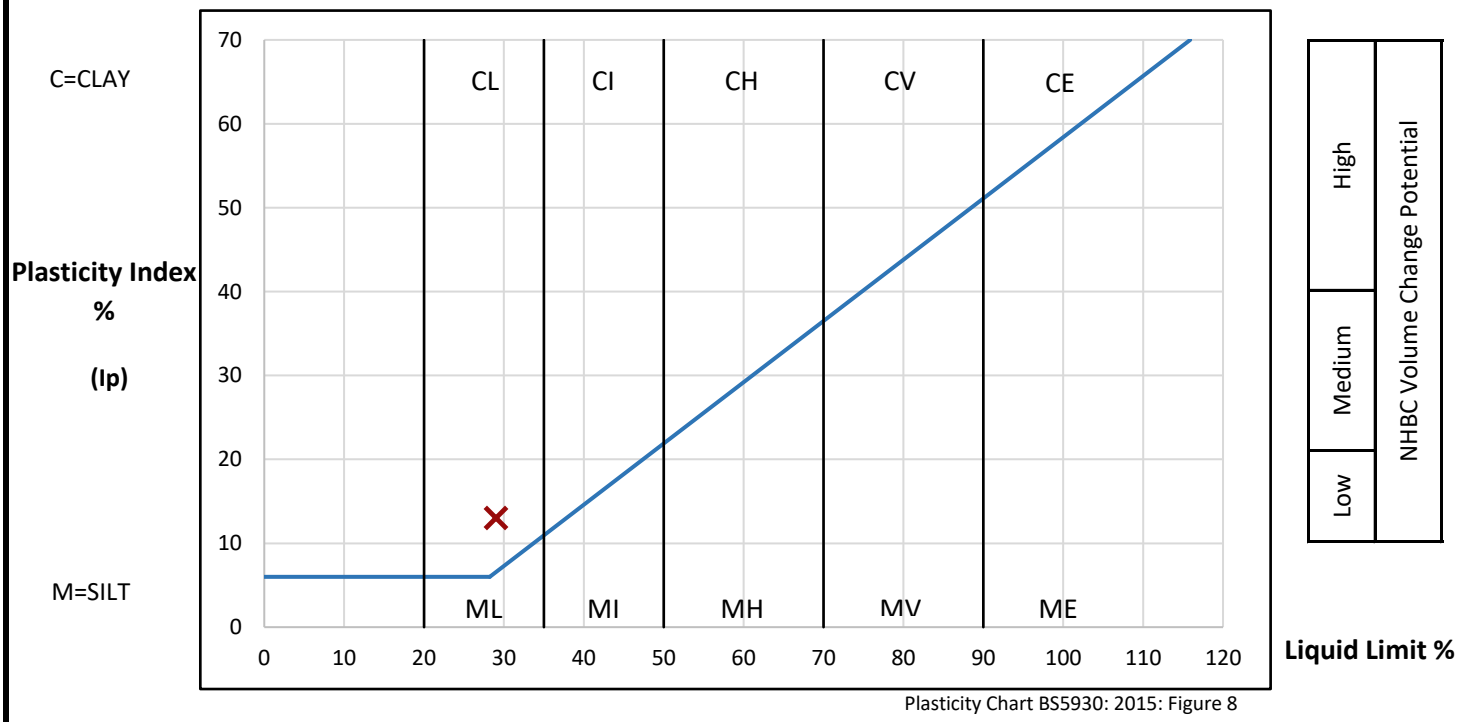
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	4.60	D	14	20.1	Soft light bluish grey sandy silty slightly organic CLAY with occasional olive mottling.	

PREPARATION				Liquid Limit	29 %
Method of preparation		From natural		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	13 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.32
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	72 hrs	Clay Content	20 %	Derived Activity	0.65



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

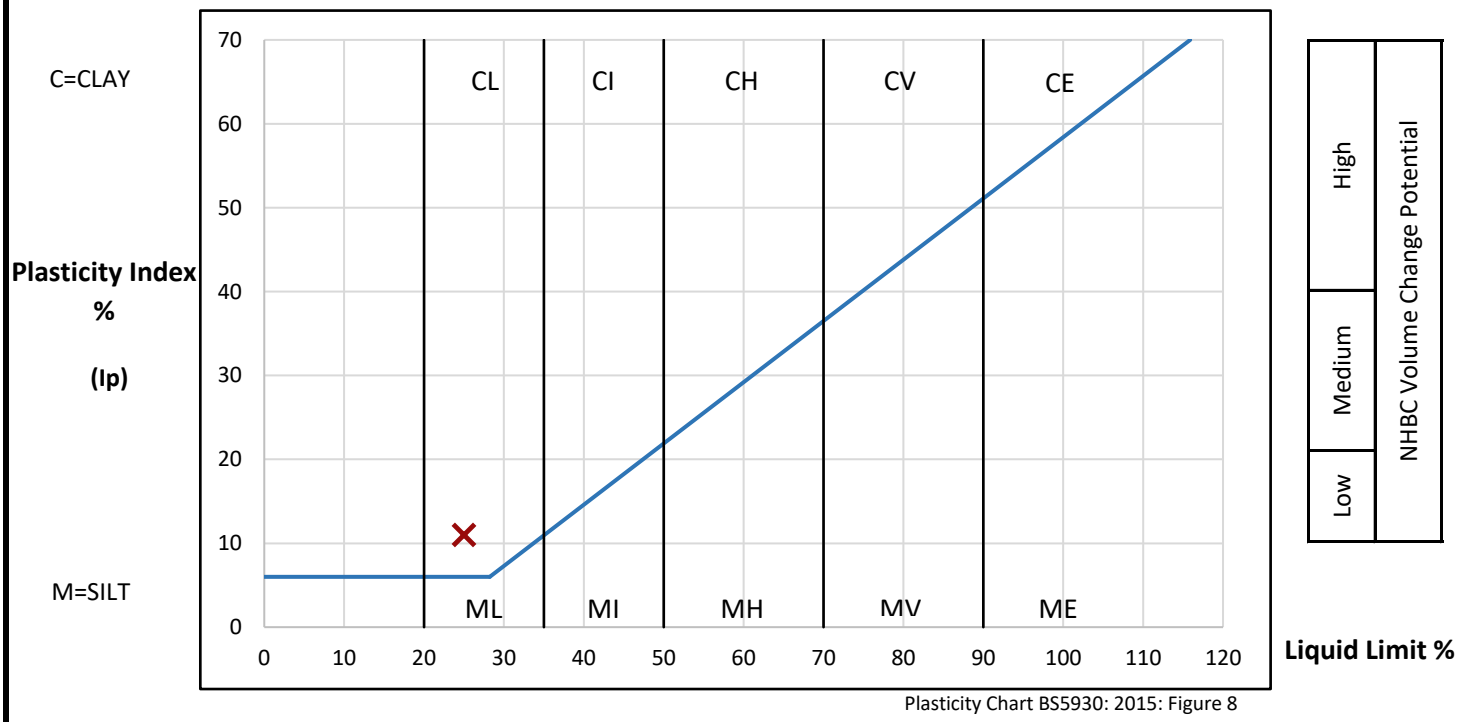
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	5.00 - 5.50	B	15	31.6	Very soft olive very sandy silty organic CLAY with occasional dark bluish grey mottling.	

PREPARATION				Liquid Limit	25 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	14 %
Sample retained 0.425mm sieve	(Measured)	6 %		Plasticity Index	11 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.60
Sample retained 2mm sieve	(Measured)	0 %		NHBC Modified (I'p)	10 %
Curing time	24 hrs	Clay Content	12 %	Derived Activity	0.92



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

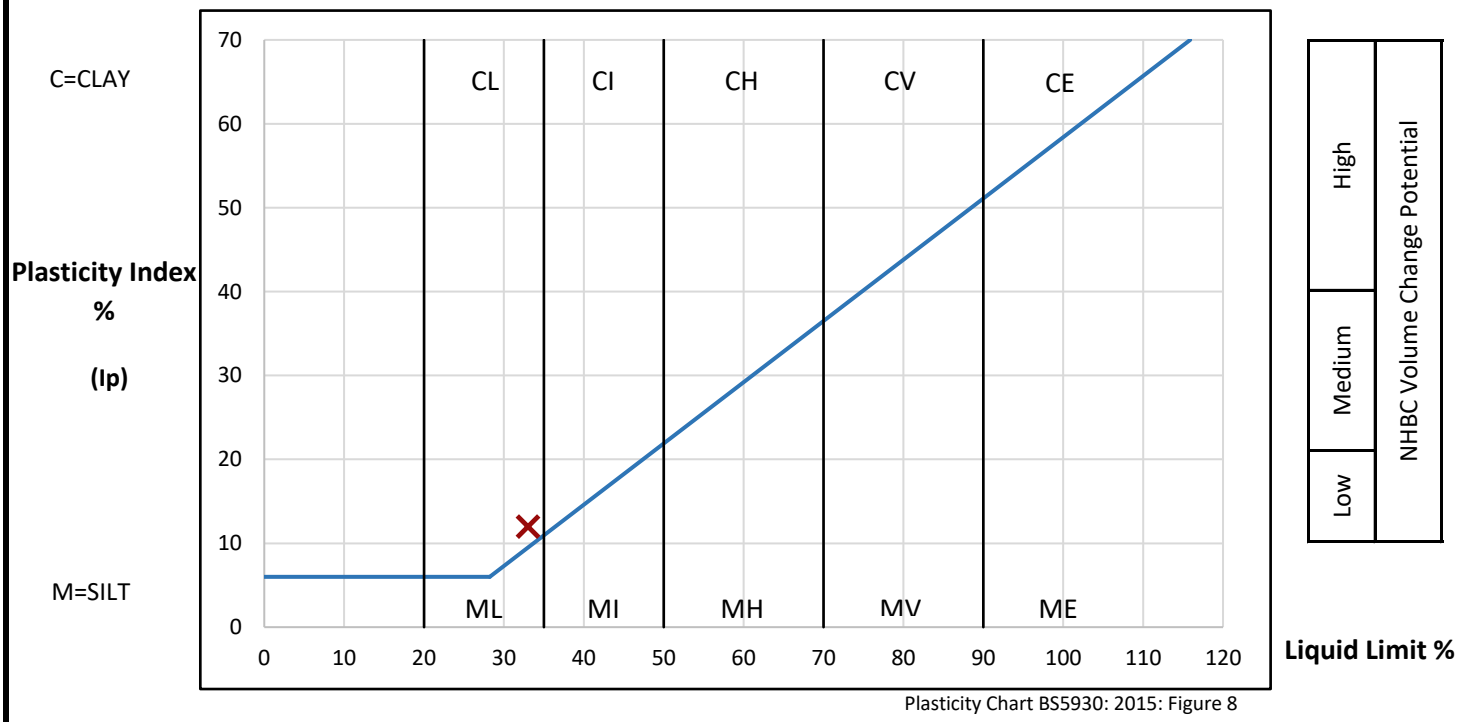
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	13.00 - 13.45	UT	30	31.4	Soft (Low strength) very dark grey silty CLAY with olive grey and dark yellowish brown mottling, and fine to medium sand pockets, and rare fine to medium flint gravel.	

PREPARATION				Liquid Limit	33 %
Method of preparation		From natural		Plastic Limit	21 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	12 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.87
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	71 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

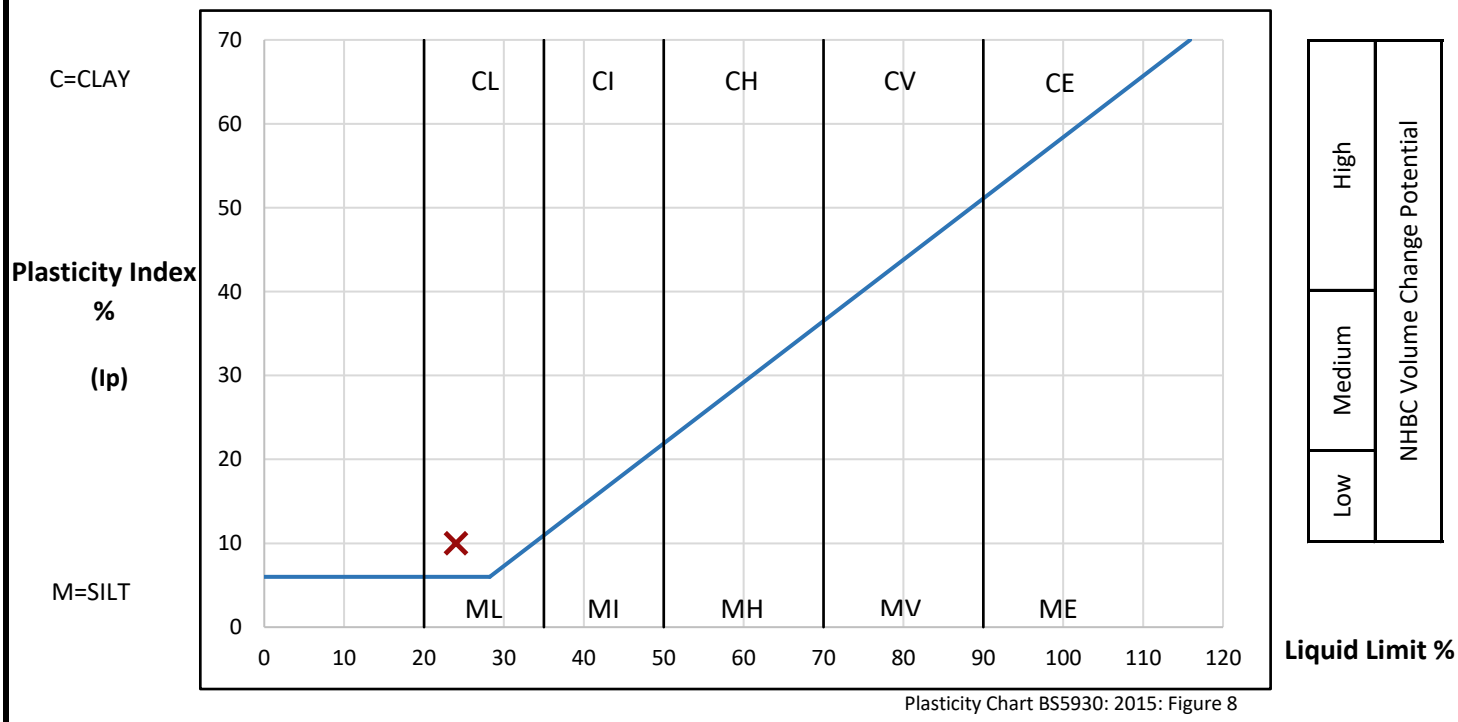
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	18.00 - 18.45	UT	39	21.3	Dark grey very sandy silty CLAY.	

PREPARATION				Liquid Limit	24 %
Method of preparation		From natural		Plastic Limit	14 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	10 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.73
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	71 hrs	Clay Content	14 %	Derived Activity	0.71



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

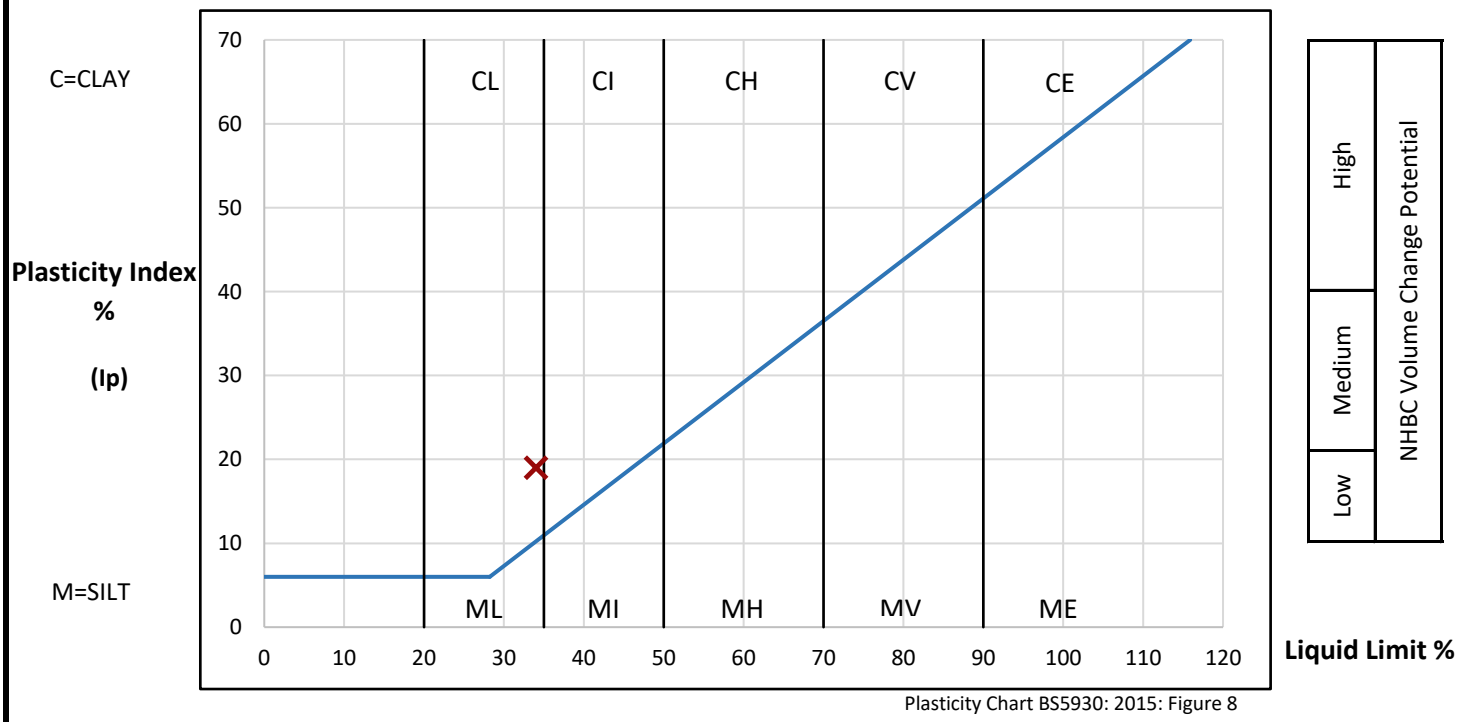
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC05	20.00 - 20.45	UT	44	20.7	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	

PREPARATION				Liquid Limit	34 %
Method of preparation		From natural		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	19 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.30
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	29 %	Derived Activity	0.66



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

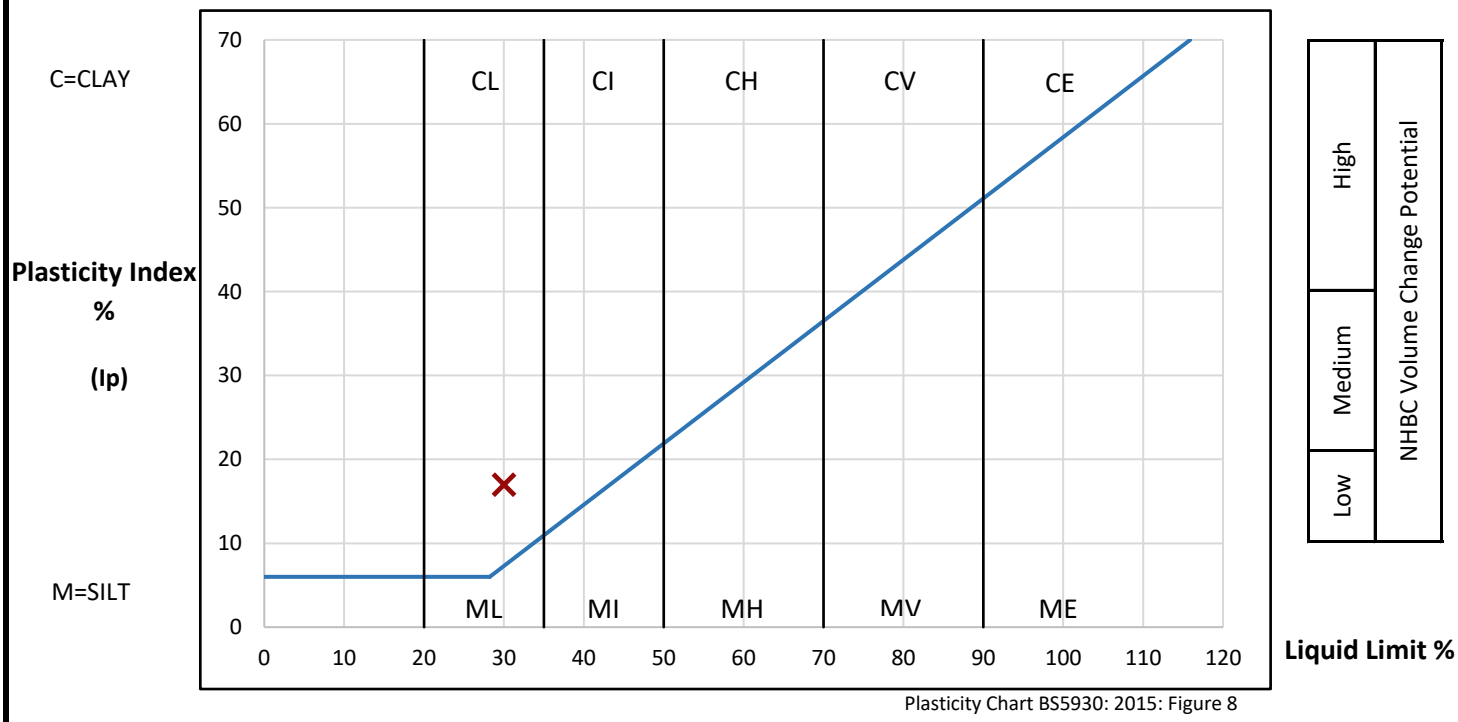
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	1.10	B	2	28.8	Very soft olive brown silty CLAY with occasional yellowish brown sand pockets, and rare fine to coarse flint gravel.	

PREPARATION				Liquid Limit	30 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	13 %
Sample retained 0.425mm sieve	(Measured)	4 %		Plasticity Index	17 %
Corrected water content for material passing 0.425mm		30.0 %		Liquidity Index	0.93
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	16 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

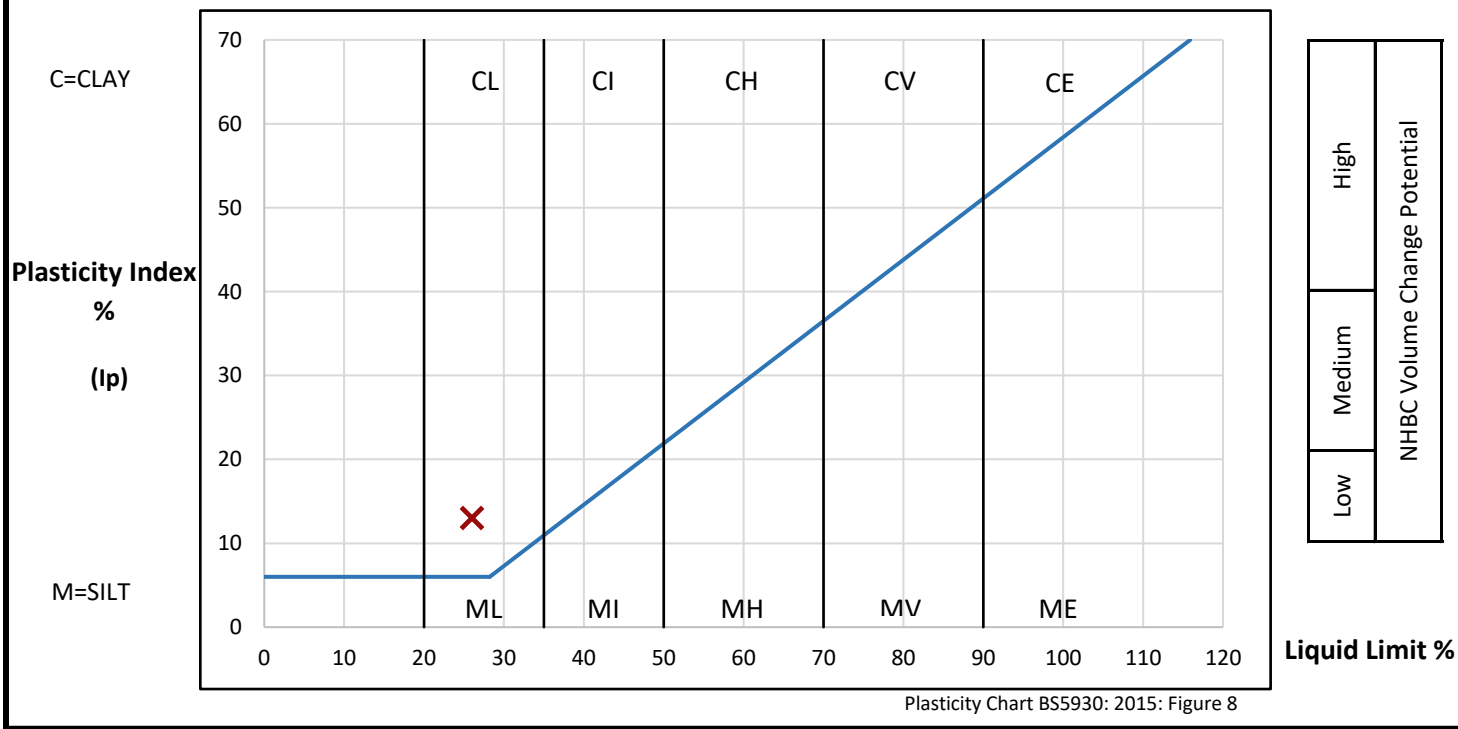
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	1.30 - 1.90	B	4	21.6	Very soft slightly gravelly sandy silty CLAY with occasional black organic pockets, and rare concrete fragments. Gravel is black, white and brown angular to rounded flint, and occasional white subangular chalk.	

PREPARATION				Liquid Limit	26 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	13 %
Sample retained 0.425mm sieve	(Measured)	28 %		Plasticity Index	13 %
Corrected water content for material passing 0.425mm		29.9 %		Liquidity Index	0.66
Sample retained 2mm sieve	(Measured)	13 %		NHBC Modified (I'p)	9 %
Curing time	24 hrs	Clay Content	13 %	Derived Activity	1.00



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

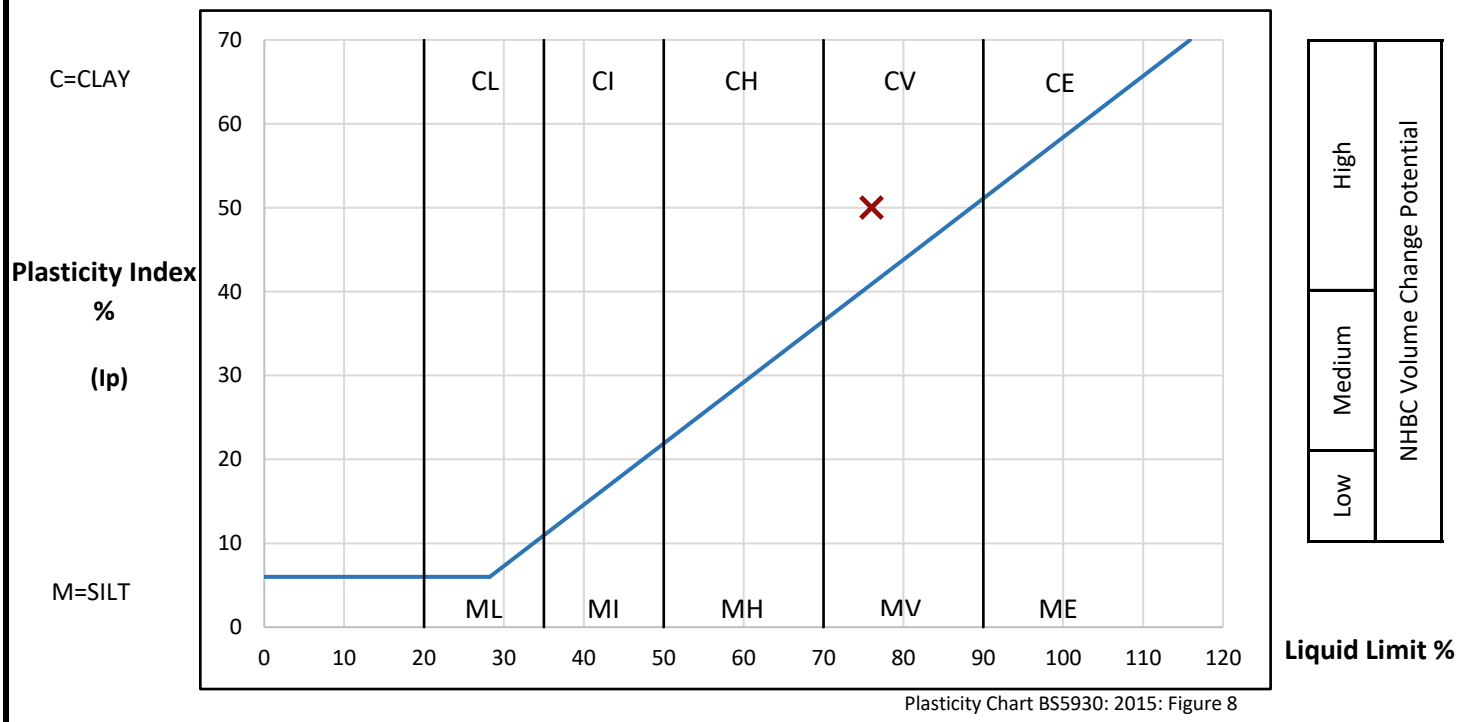
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	2.00 - 2.50	B	6	72.4	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown with rare shell debris.	

PREPARATION				Liquid Limit	76 %
Method of preparation		From natural		Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	50 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.93
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	41 %	Derived Activity	1.22



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

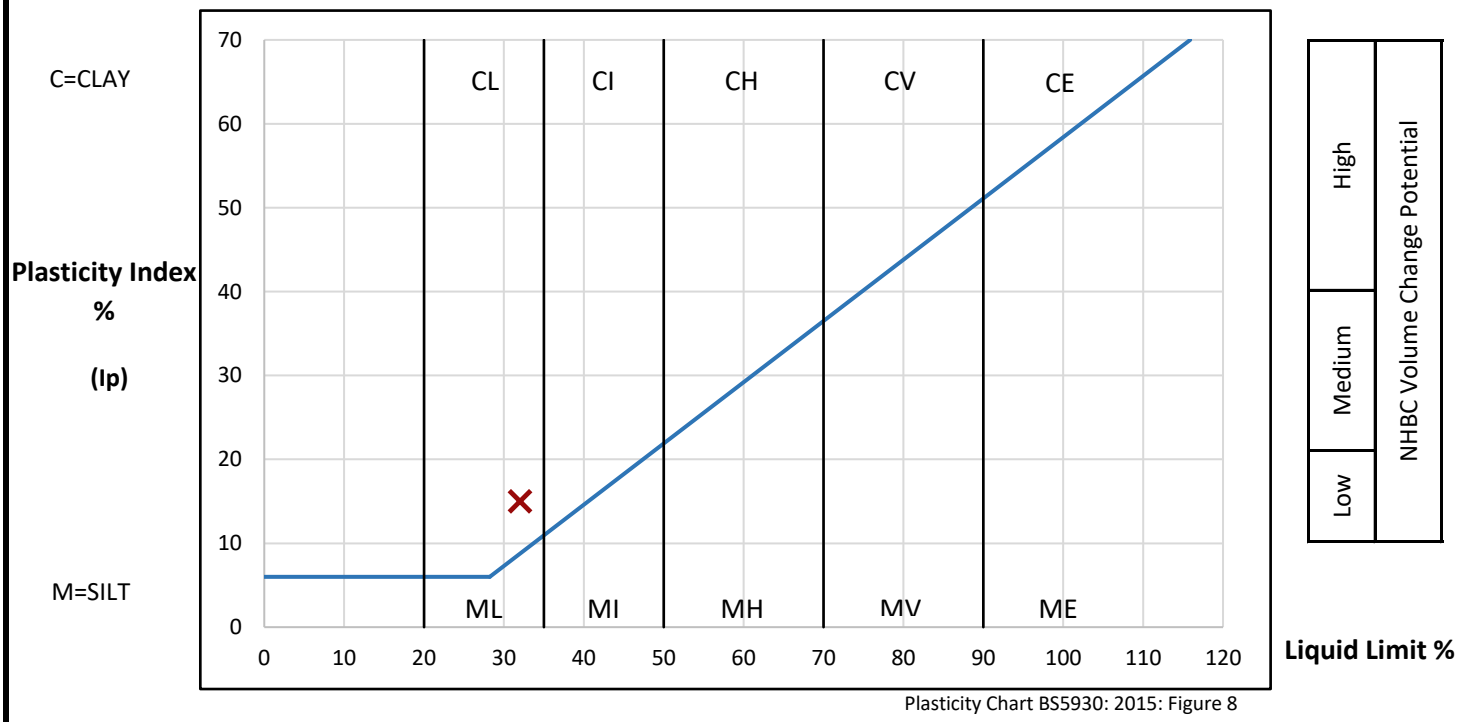
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	3.40 - 3.90	B	8	35.2	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown with rare decayed roots and plant material. Gravel is fine to medium flint.	Specimen oven dried at 50°C due to high organic content.

PREPARATION				Liquid Limit	32 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	13 %		Plasticity Index	15 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	1.21
Sample retained 2mm sieve	(Measured)	3 %		NHBC Modified (I'p)	13 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

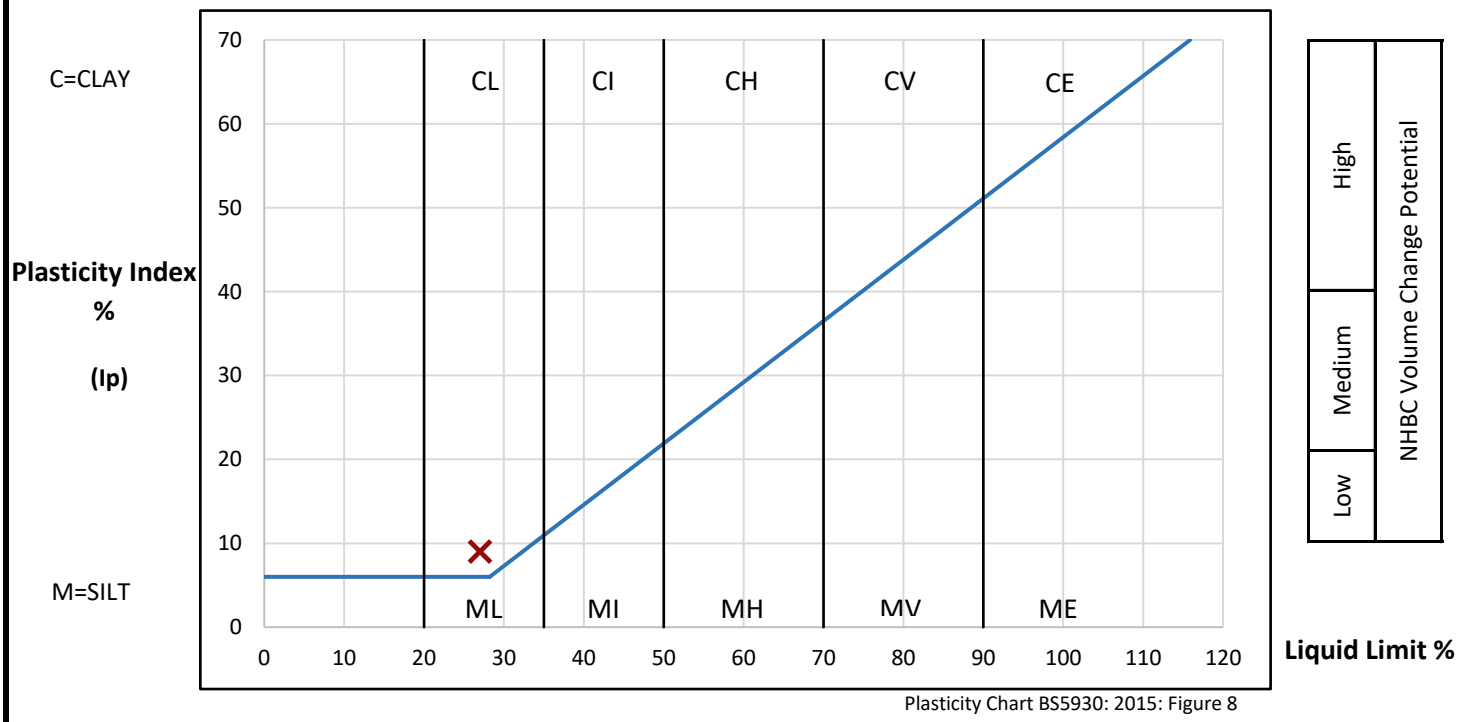
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	7.40 - 7.90	B	16	26.1	Very soft light olive brown very sandy silty slightly organic CLAY.	

PREPARATION					
Method of preparation	Wet sieved over 0.425mm sieve			Liquid Limit	27 %
Sample retained 0.425mm sieve	(Measured)	2 %		Plastic Limit	18 %
Corrected water content for material passing 0.425mm	Not reported			Plasticity Index	9 %
Sample retained 2mm sieve	(Measured)	1 %		Liquidity Index	0.90
Curing time	24 hrs	Clay Content	11 %	NHBC Modified (I'p)	9 %
				Derived Activity	0.82



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content not reported due to material type. Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

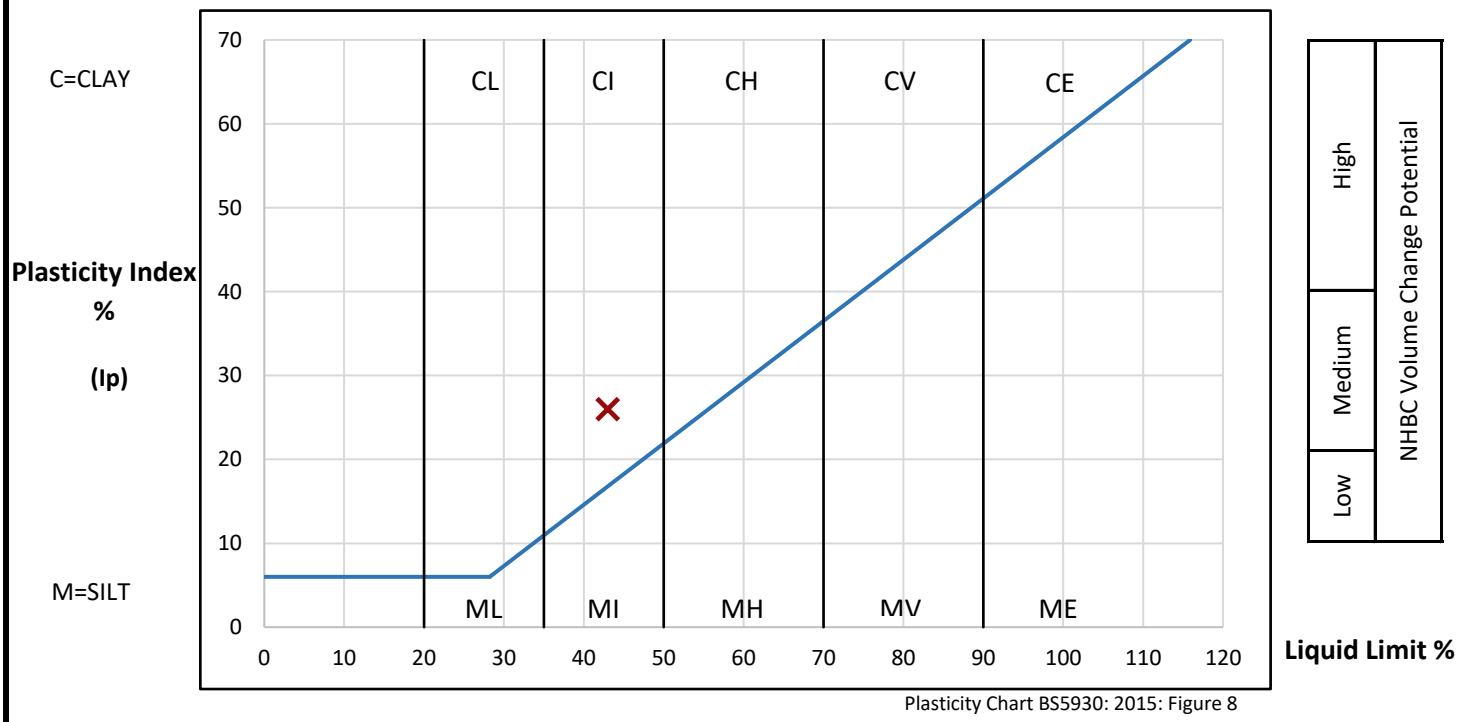
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	9.40 - 9.90	B	20	23.3	Firm dark grey slightly sandy silty organic CLAY locally oxidised to yellowish brown.	

PREPARATION				Liquid Limit	43 %
Method of preparation		From natural		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	26 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.24
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

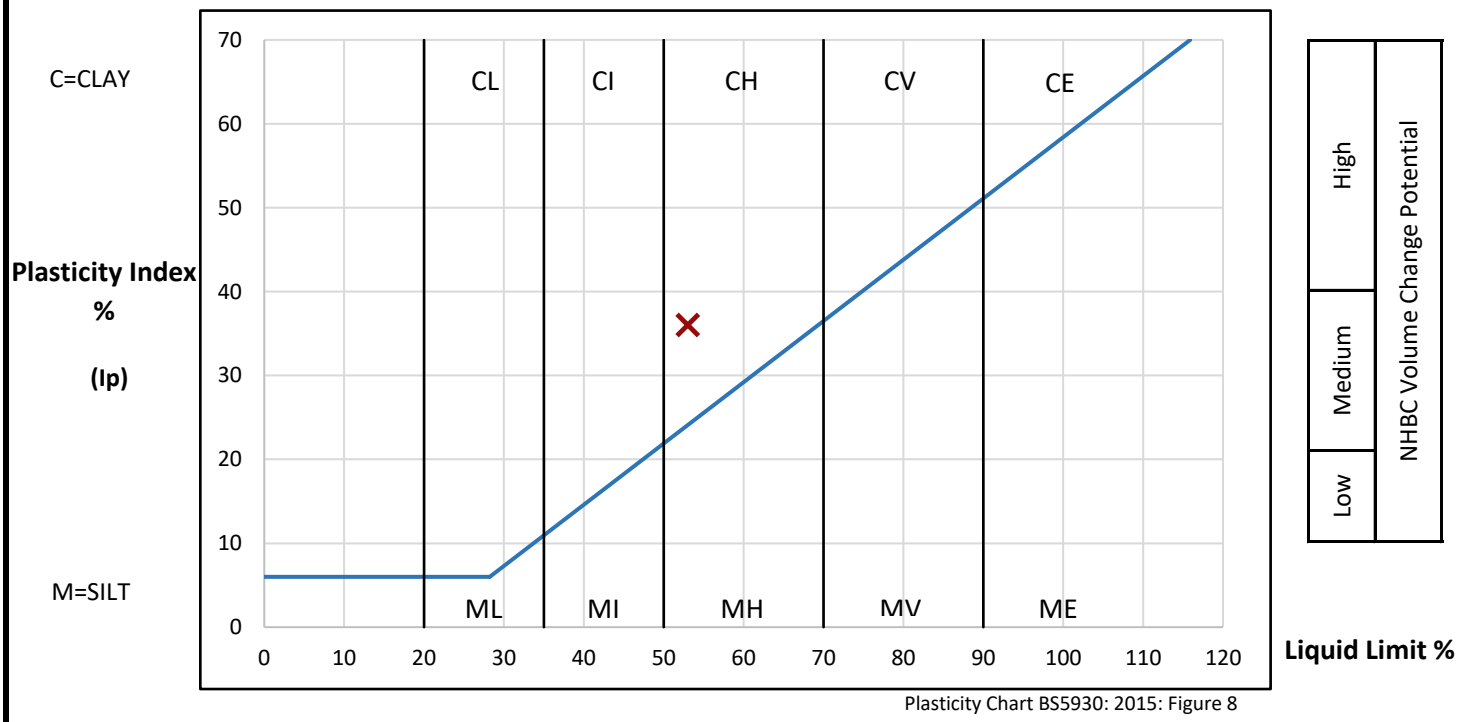
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	13.40 - 13.90	B	29	37.5	Very soft yellowish brown slightly organic CLAY with bluish grey and orange mottling and rare fine sand partings.	

PREPARATION				Liquid Limit	53 %
Method of preparation		From natural		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	36 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.57
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	21 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

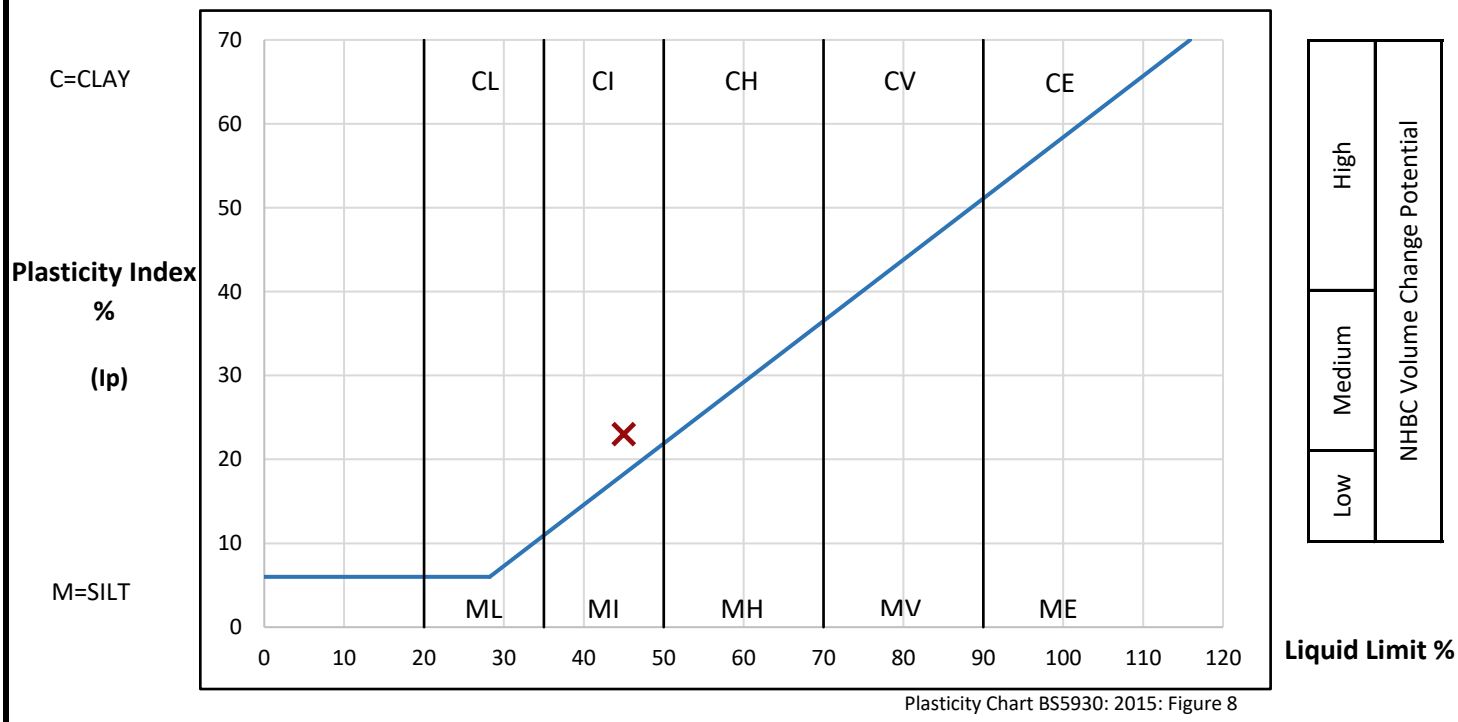
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	20.60 - 21.00	B	43	24.4	Firm dark bluish grey slightly sandy silty slightly organic CLAY locally oxidised to olive with occasional fine sand and silt partings.	

PREPARATION				Liquid Limit	45 %
Method of preparation		From natural		Plastic Limit	22 %
Sample retained 0.425mm sieve	(Measured)	0 %		Plasticity Index	23 %
Corrected water content for material passing 0.425mm		24.5 %		Liquidity Index	0.10
Sample retained 2mm sieve	(Measured)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	40 %	Derived Activity	0.58



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

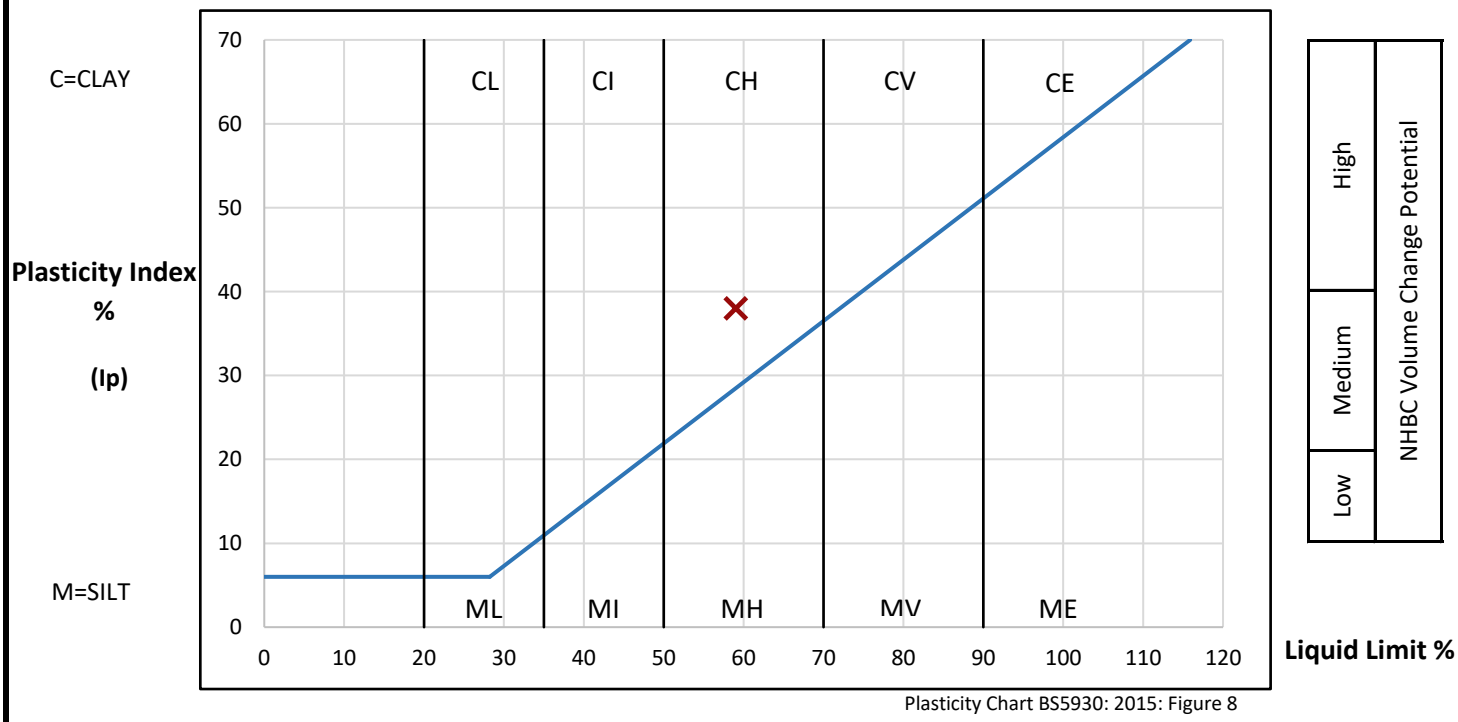
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	21.00 - 21.45	UT	44	26.4	Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.	

PREPARATION				Liquid Limit	59 %
Method of preparation		From natural		Plastic Limit	21 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	38 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.14
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

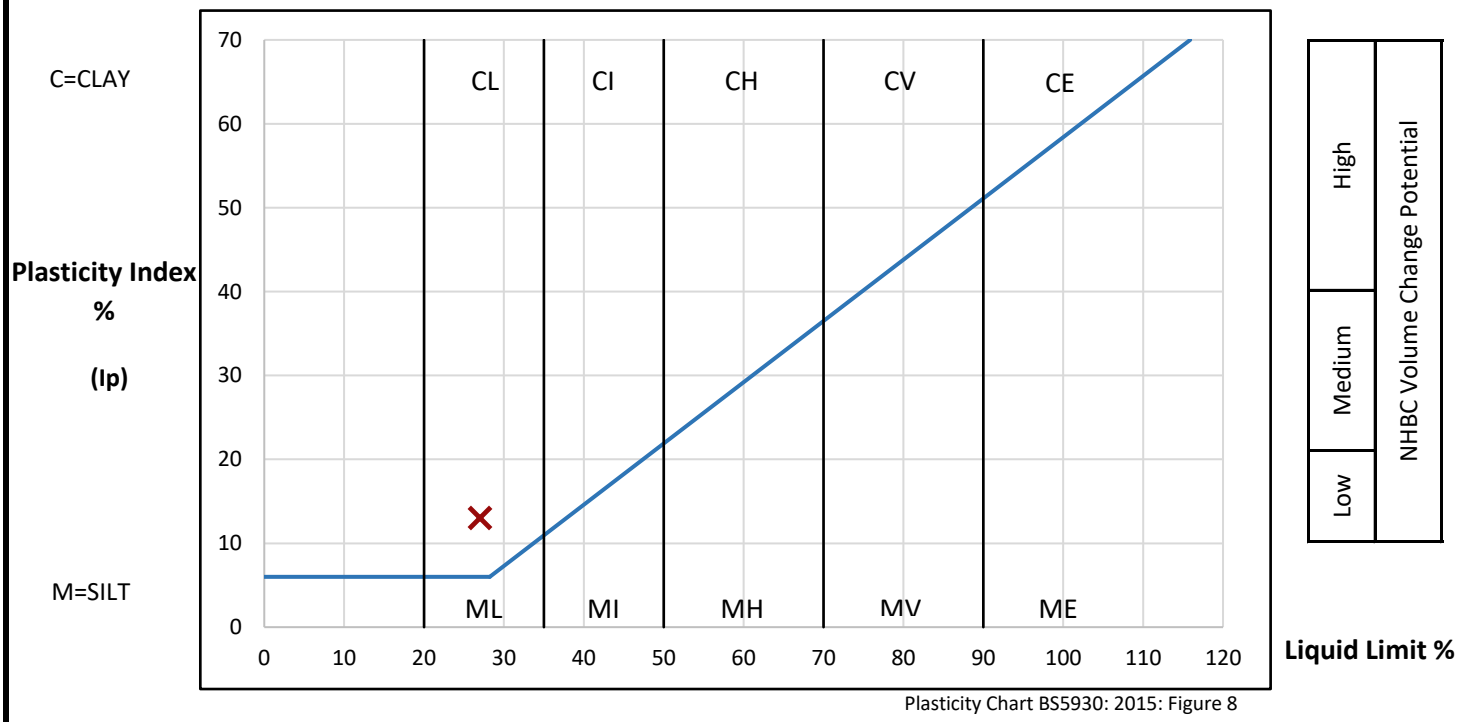
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	22.40 - 22.90	B	48	29.9	Dark olive grey very sandy silty organic CLAY with rare shell debris.	

PREPARATION				Liquid Limit	27 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	14 %
Sample retained 0.425mm sieve	(Measured)	8 %		Plasticity Index	13 %
Corrected water content for material passing 0.425mm		32.6 %		Liquidity Index	1.22
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	12 %
Curing time	24 hrs	Clay Content	15 %	Derived Activity	0.87



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

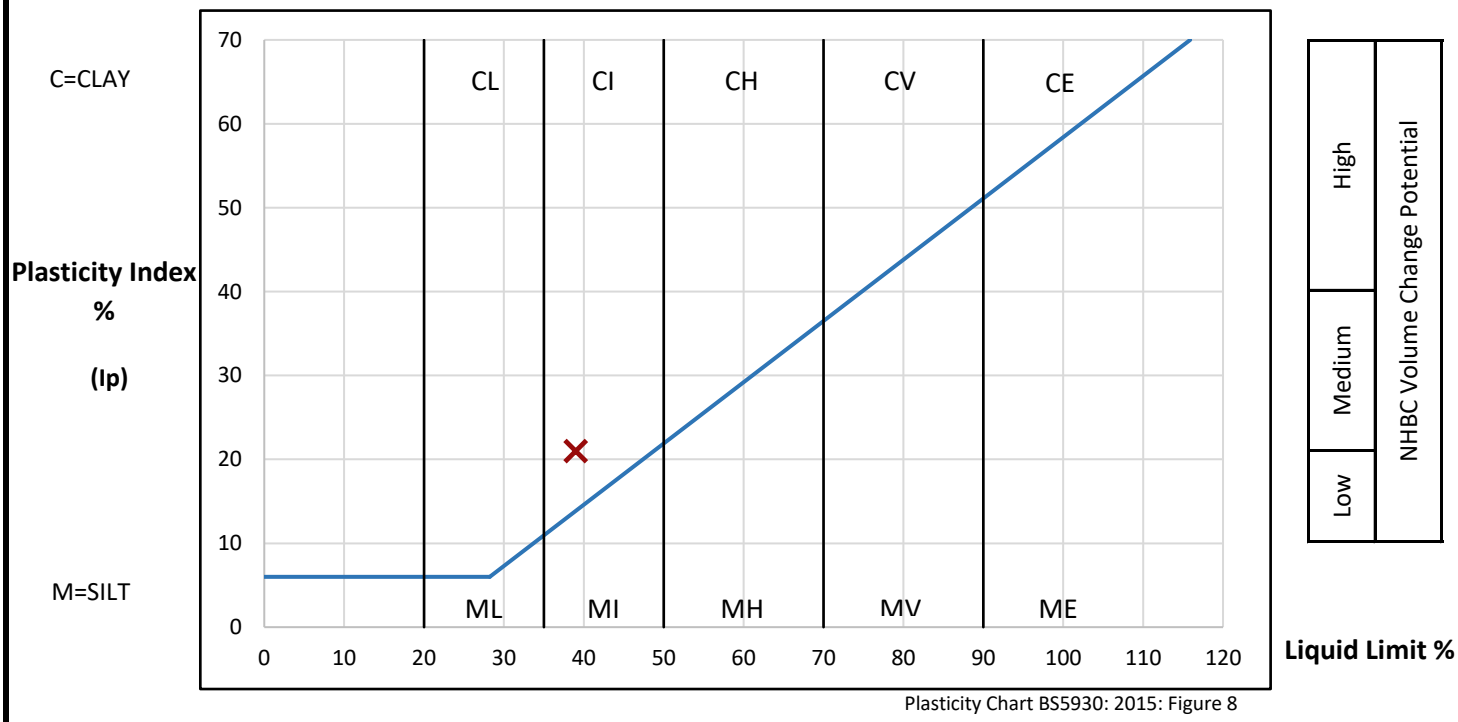
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC06B	23.50 - 23.90	B	50	450	Very soft dark grey sandy silty organic CLAY locally oxdisied to brown. Sand is fine to medium.	

PREPARATION				Liquid Limit	39 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	5 %		Plasticity Index	21 %
Corrected water content for material passing 0.425mm	Not reported			Liquidity Index	20.57
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	20 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

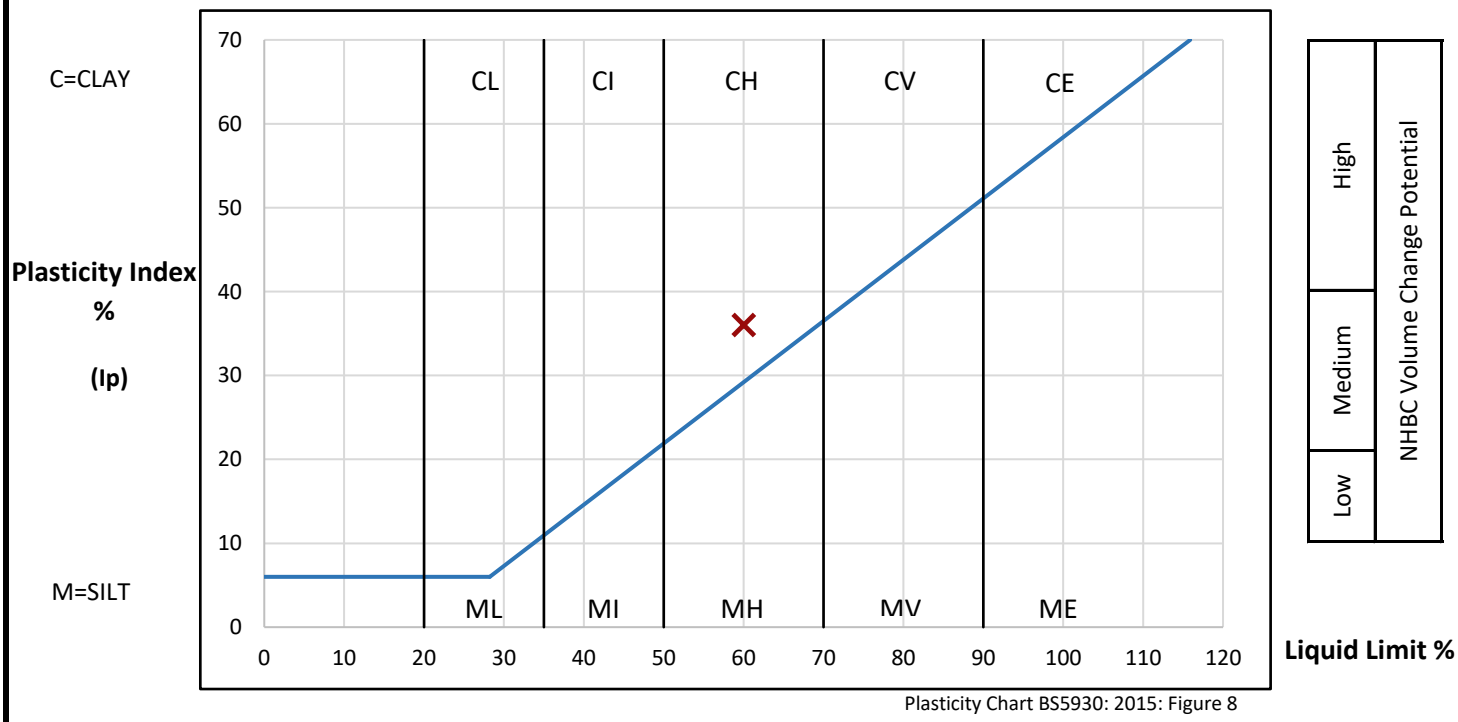
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	3.70 - 4.00	B	9	47.8	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is quartzite.	

PREPARATION				Liquid Limit	60 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Measured)	12 %		Plasticity Index	36 %
Corrected water content for material passing 0.425mm		54.0 %		Liquidity Index	0.66
Sample retained 2mm sieve	(Measured)	6 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	33 %	Derived Activity	1.09



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

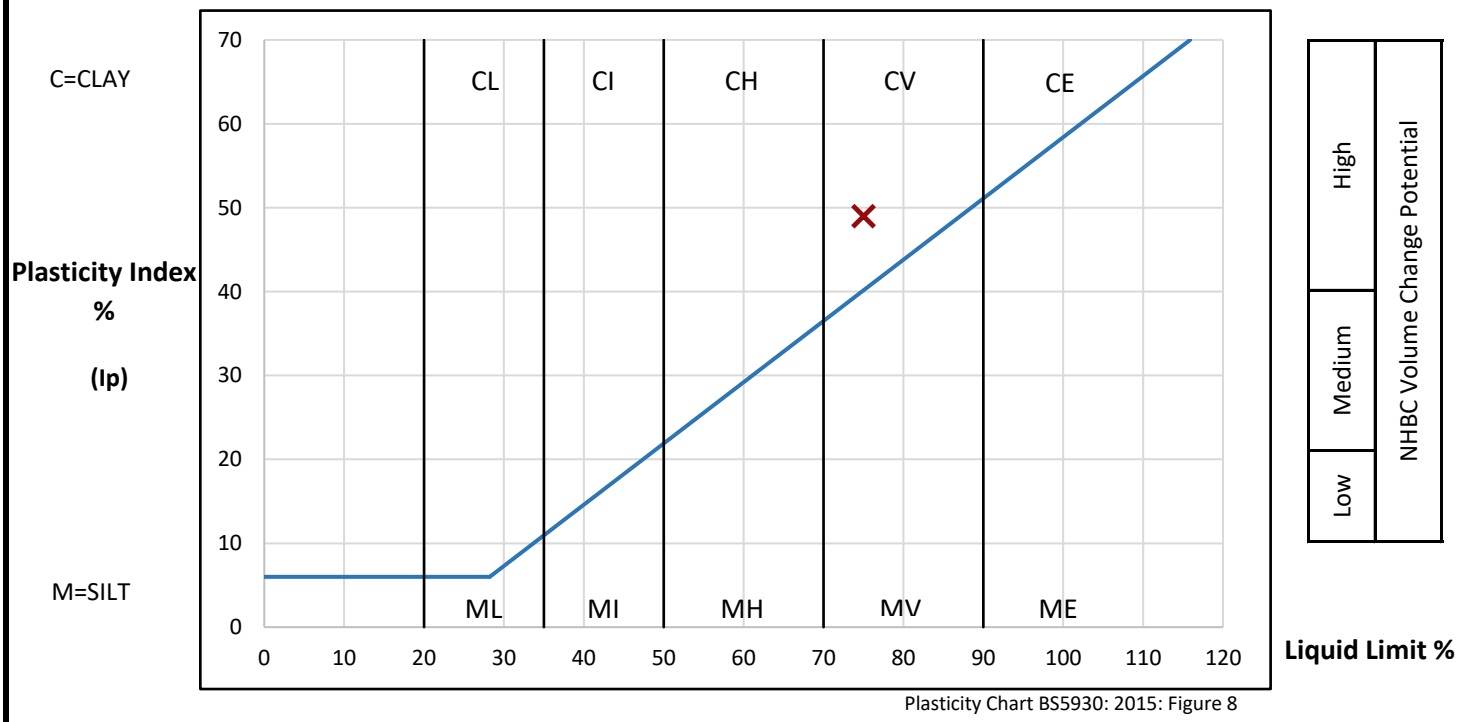
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	4.00 - 4.45	UT	10	59.7	Very soft (Extremely low strength) very dark grey organic CLAY.	Specimen oven dried at 50°C due to high organic content.

PREPARATION				Liquid Limit	75 %
Method of preparation		From natural		Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	49 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.69
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	23 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

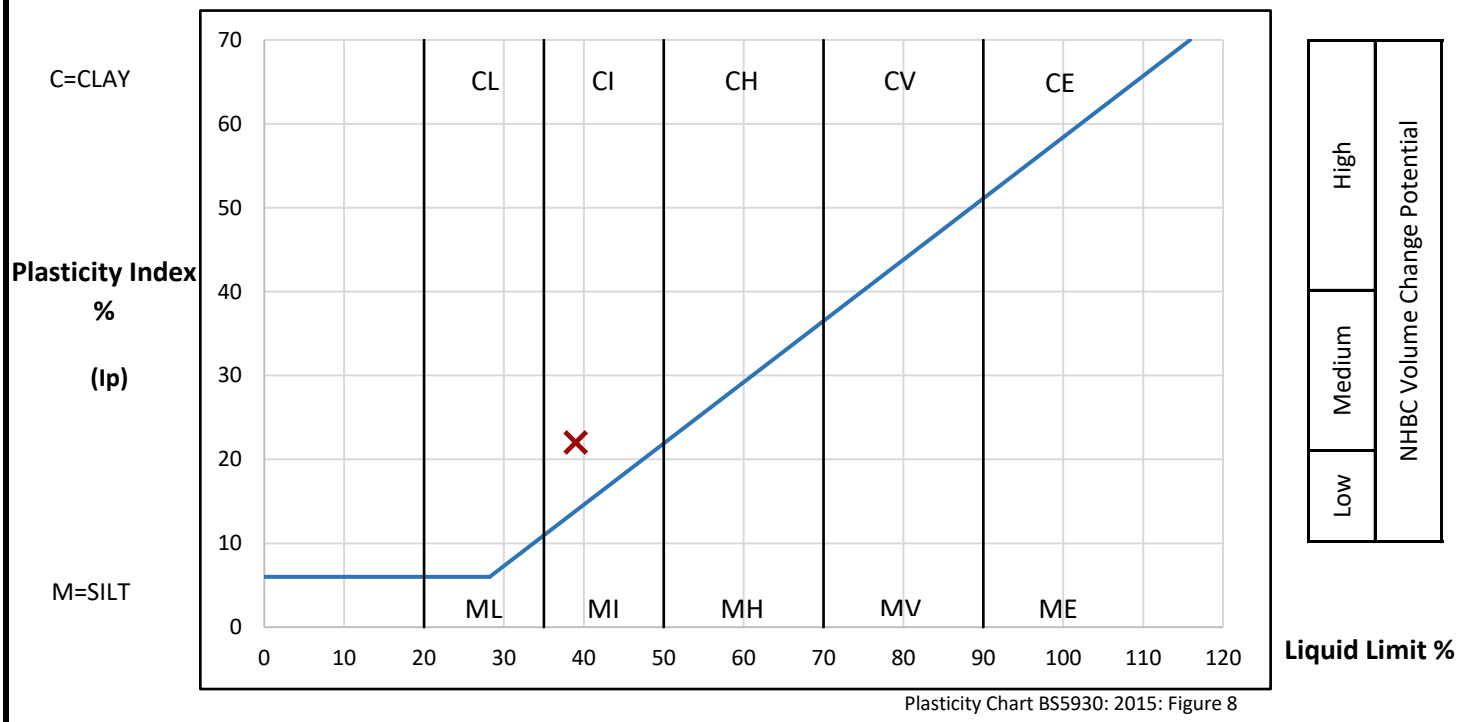
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	4.60 - 5.00	B	12	26.4	Soft very dark grey sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	Specimen oven dried at 50°C due to high organic content.

PREPARATION				Liquid Limit	39 %
Method of preparation		Wet sieved over 0.425mm sieve		Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	45 %		Plasticity Index	22 %
Corrected water content for material passing 0.425mm		48.0 %		Liquidity Index	0.43
Sample retained 2mm sieve	(Measured)	9 %		NHBC Modified (I'p)	12 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

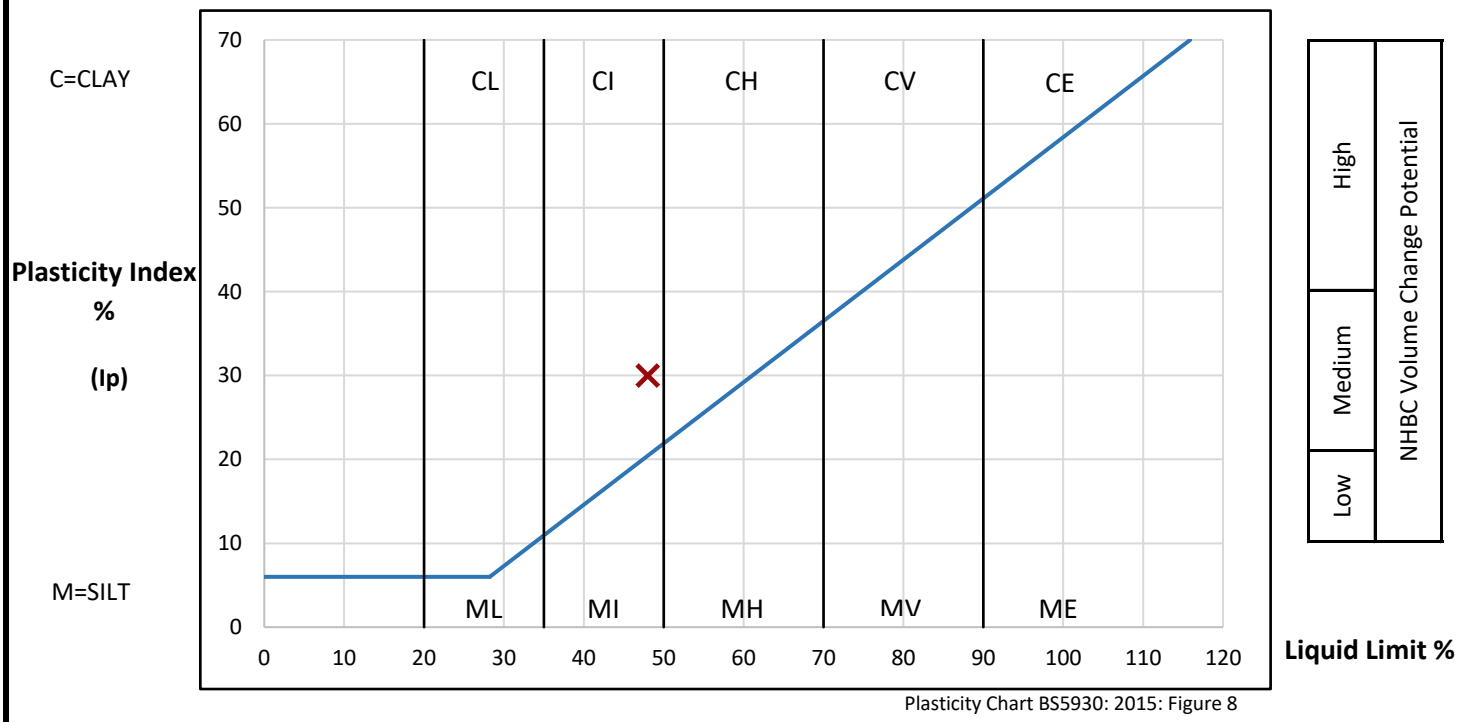
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	8.40 - 9.00	B	21	24.3	Firm dark grey silty organic CLAY locally oxidised to brown with rare find sand pockets.	

PREPARATION			Liquid Limit	48 %
Method of preparation		From natural	Plastic Limit	18 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	30 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.21
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

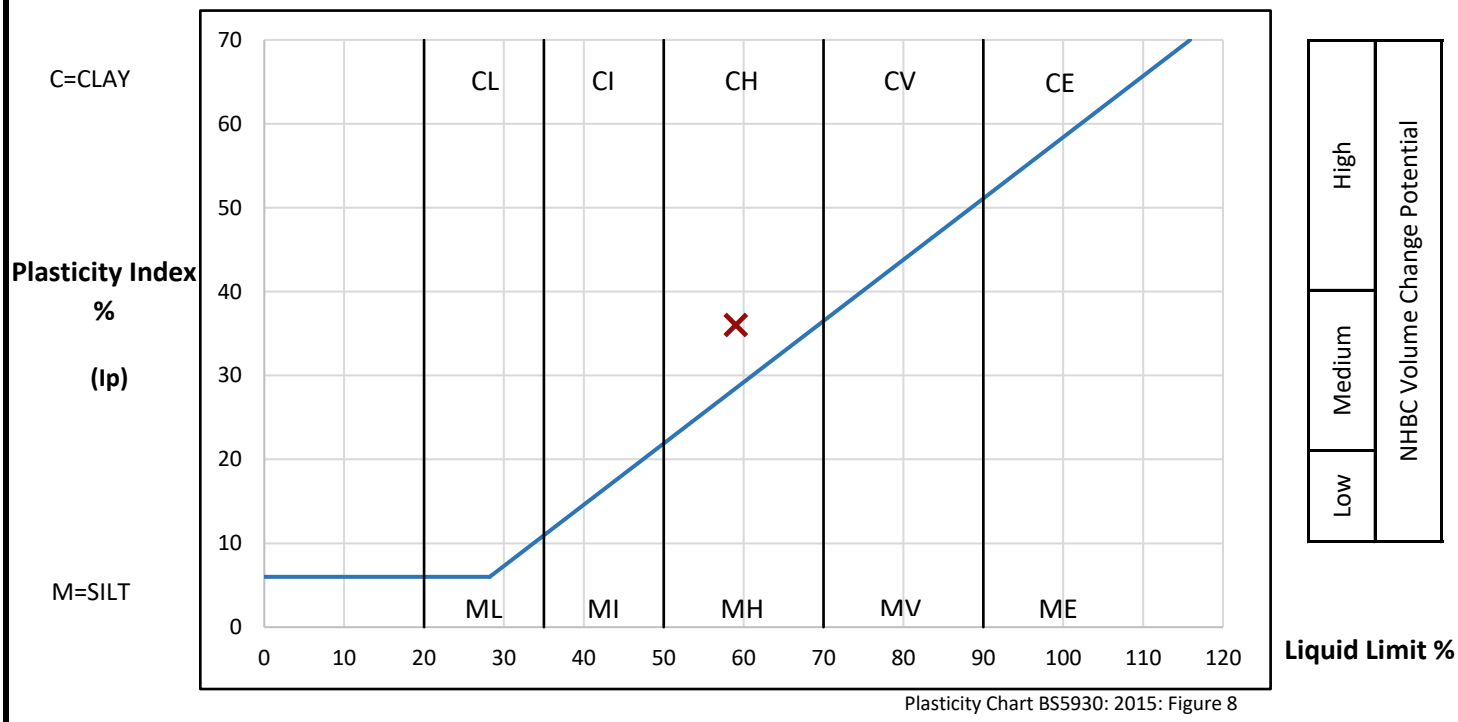
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	14.40 - 15.00	B	33	41.5	Soft grey slightly sandy silty organic CLAY with occasional dark grey mottling, and rare orange staining.	

PREPARATION				Liquid Limit	59 %
Method of preparation		From natural		Plastic Limit	23 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	36 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.51
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	51 %	Derived Activity	0.71



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

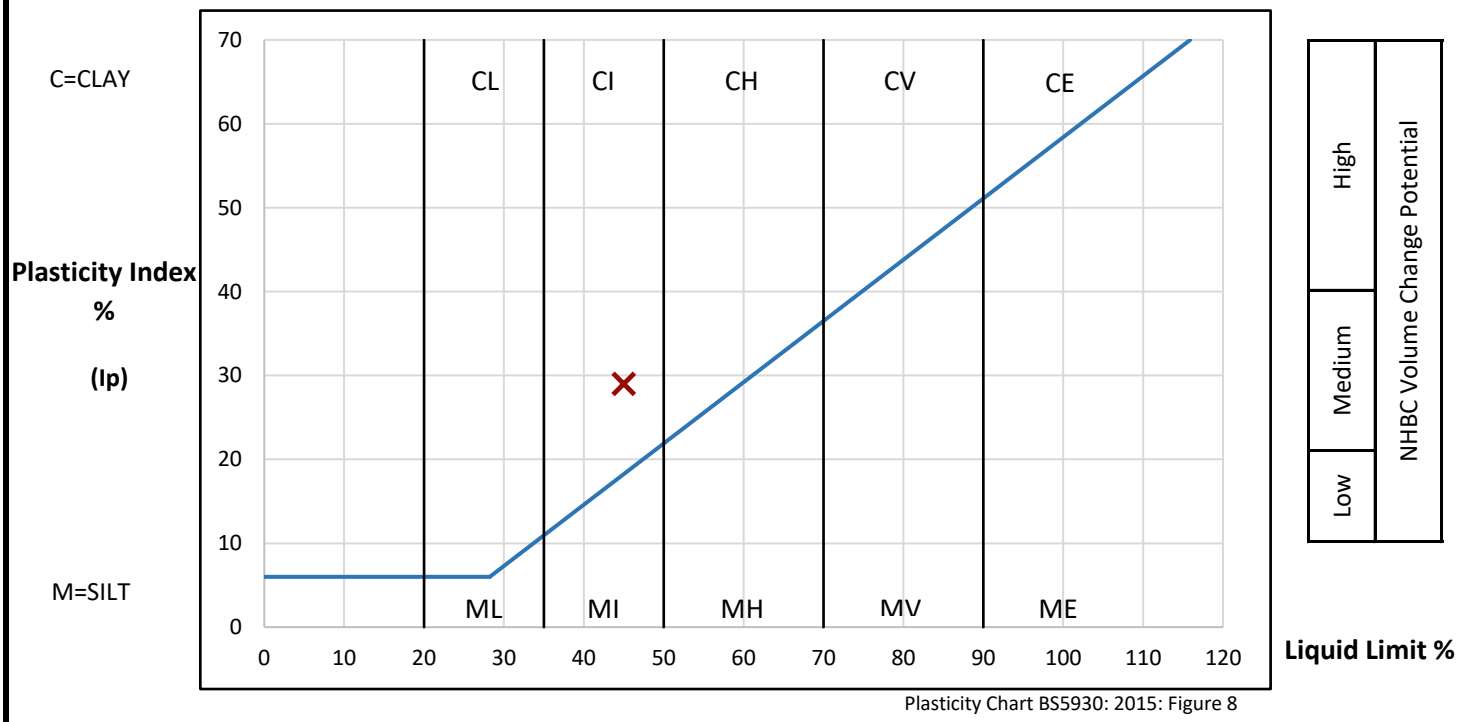
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	19.60 - 19.80	B	43	25.6	Firm dark bluish grey slightly sandy silty CLAY with occasional olive mottling, and rare orange staining.	

PREPARATION				Liquid Limit	45 %
Method of preparation		From natural		Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	0 %		Plasticity Index	29 %
Corrected water content for material passing 0.425mm		25.7 %		Liquidity Index	0.33
Sample retained 2mm sieve	(Measured)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	35 %	Derived Activity	0.83



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

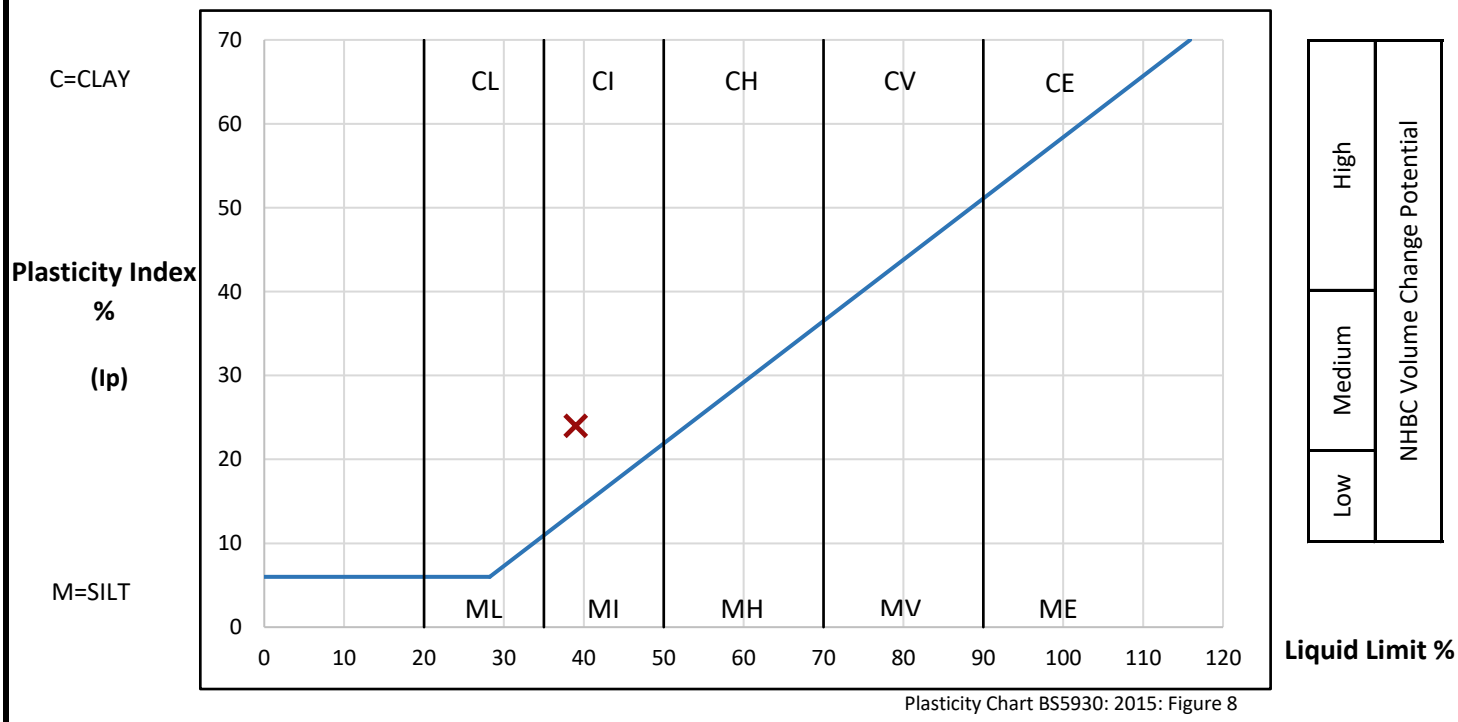
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	20.00 - 20.45	UT	44	22.7	Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.	

PREPARATION				Liquid Limit	39 %
Method of preparation		From natural		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	24 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.32
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

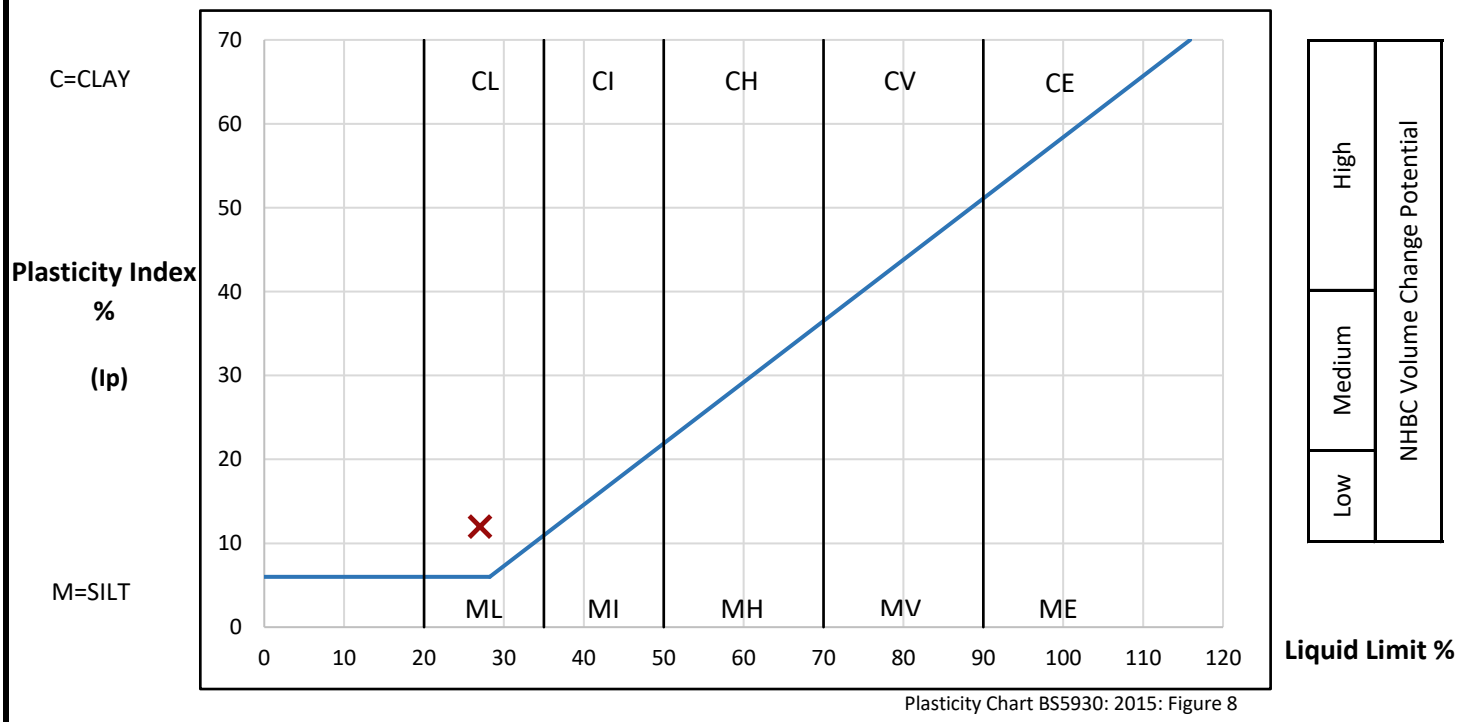
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC07	24.40 - 24.90	B	54	44.4	Dark olive grey very sandy silty organic CLAY.	

PREPARATION				Liquid Limit	27 %
Method of preparation		From natural		Plastic Limit	15 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	12 %
Corrected water content for material passing 0.425mm				Liquidity Index	2.45
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	16 %	Derived Activity	0.75



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

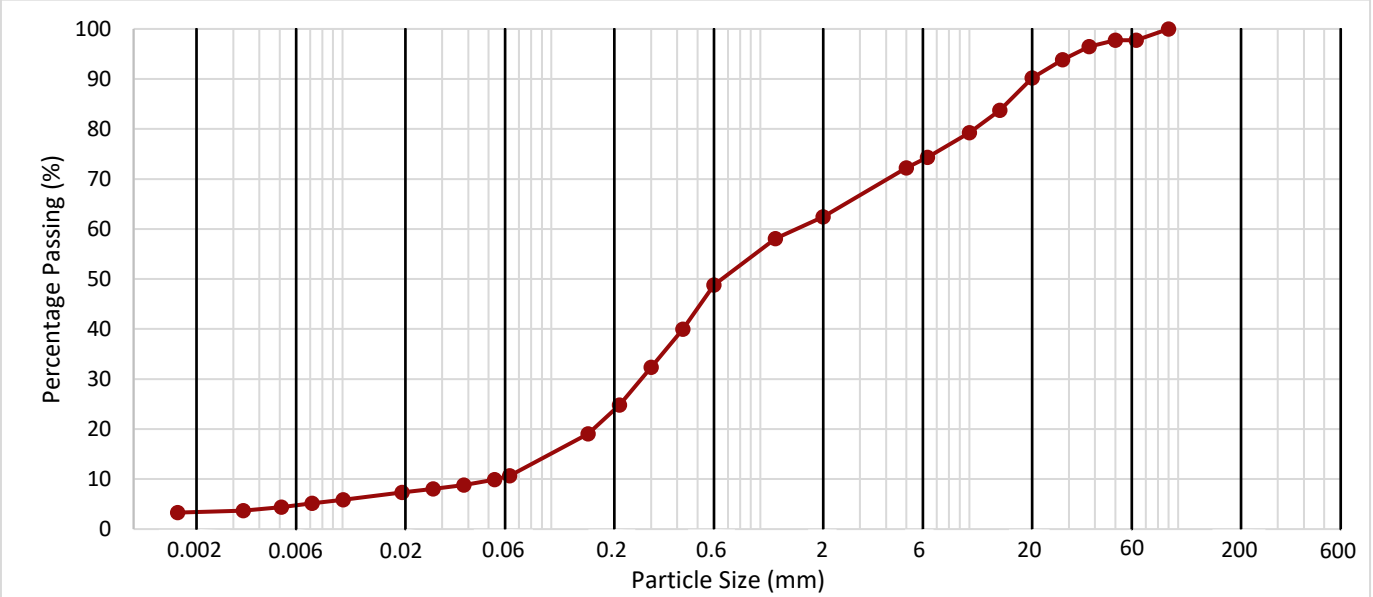
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	0.40 - 0.60	B	1	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular lightweight, degradeable gravel sized fragments, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0535	10	8	
	0.0382	9		
	0.0271	8		
	0.0193	7		
	0.0101	6		
	0.0072	5		
	0.0051	4	3	
	0.0034	4		
	0.0016	3		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	62	51
1.18	58	
0.600	49	
0.425	40	
0.300	32	
0.212	25	
0.150	19	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		38
125		
90	100	
63	98	
50	98	
37.5	96	
28	94	
20	90	
14	84	
10	79	
6.3	74	
5	72	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

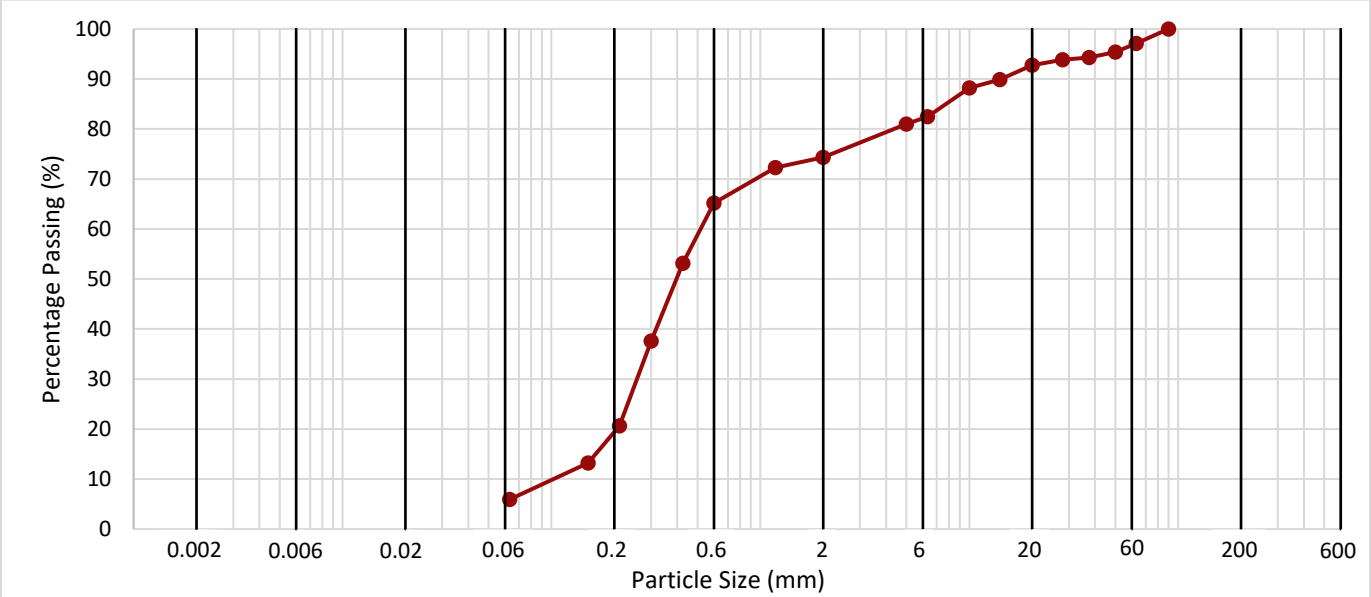
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	0.90 - 1.10	B	3	Dark brown, yellowish brown and brown very gravelly SAND with occasional white angular lightweight gravel sized fragments. Gravel is brown, black and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	74	**68**
1.18	72	
0.600	65	
0.425	53	
0.300	38	
0.212	21	
0.150	13	
0.063	6	

Fines By Dry Mass (%)	
<0.063mm	**6**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**26**
125		
90	100	
63	97	
50	95	
37.5	94	
28	94	
20	93	
14	90	
10	88	
6.3	82	
5	81	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

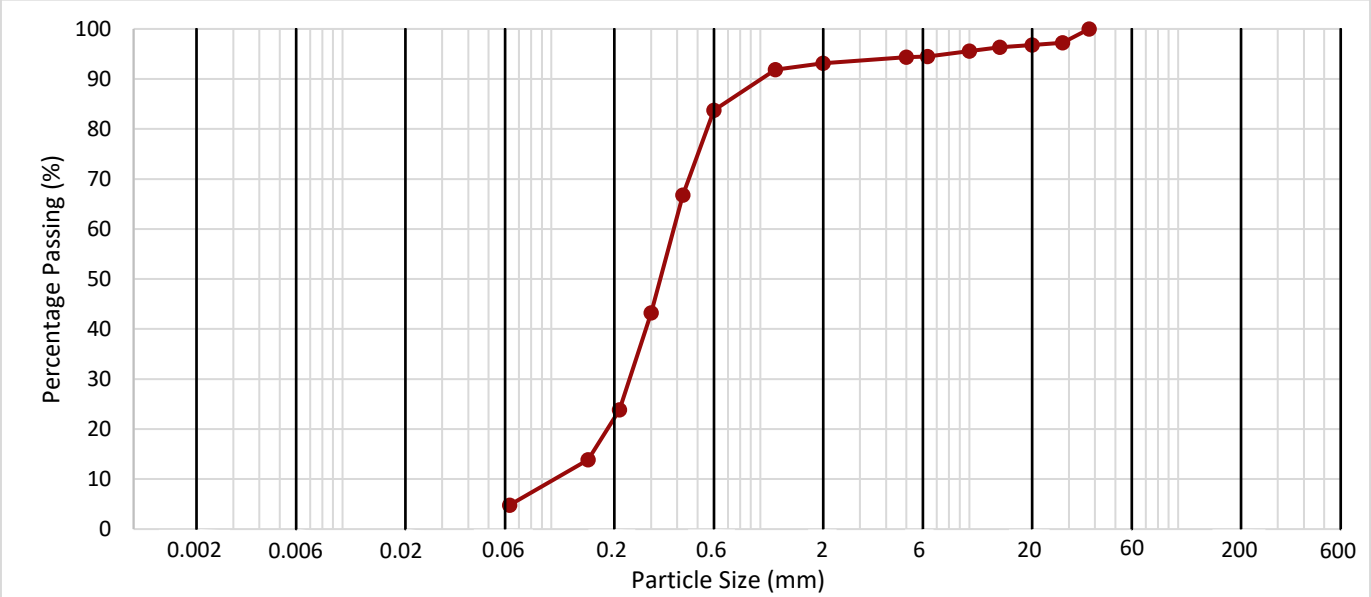
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	1.20 - 1.70	B	5	Brown and olive brown gravelly silty SAND with rare white angular lightweight gravel sized fragments. Gravel is brown, black and white subangular to subrounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	93	88
1.18	92	
0.600	84	
0.425	67	
0.300	43	
0.212	24	
0.150	14	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		7
125		
90		
63		
50		
37.5	100	
28	97	
20	97	
14	96	
10	96	
6.3	94	
5	94	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

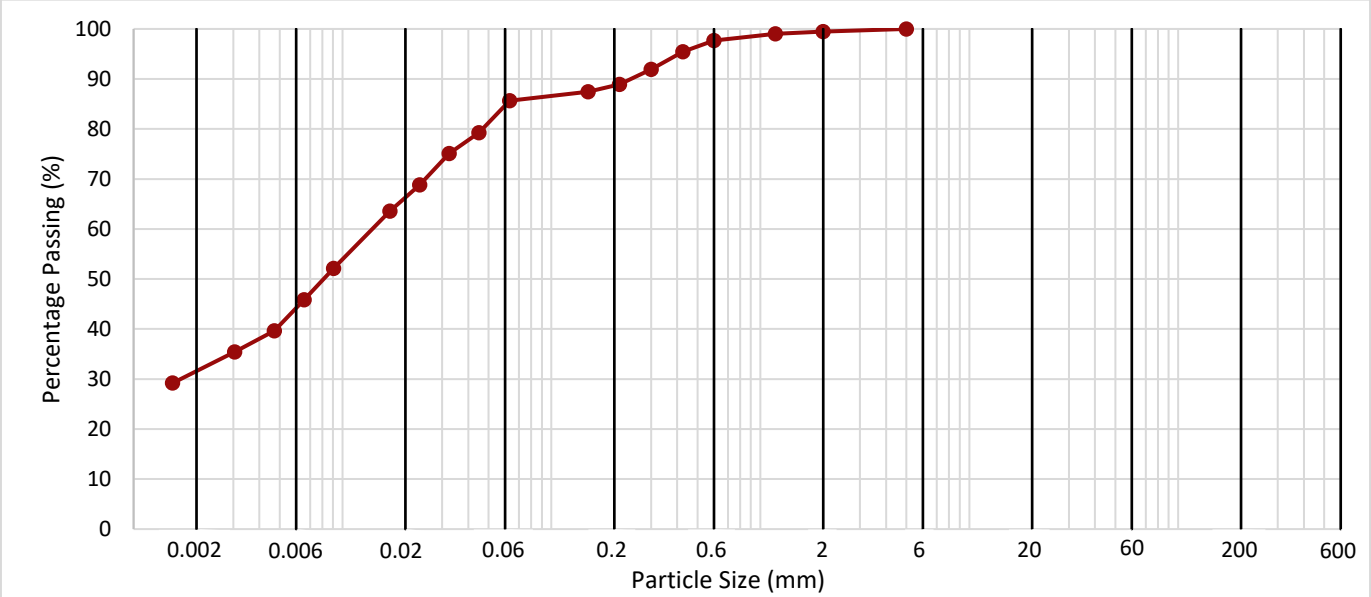
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	2.30 - 2.80	B	9	Very soft very dark grey slightly sandy silty organic CLAY with rare fine flint gravel.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0450	79	55	
0.0323	75		
0.0234	69		
0.0169	64		
0.0091	52		
0.0065	46		
0.0047	40		31
0.0030	35		
0.0015	29		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	14
1.18	99	
0.600	98	
0.425	95	
0.300	92	
0.212	89	
0.150	87	
0.063	86	

Fines By Dry Mass (%)	
<0.063mm	86

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

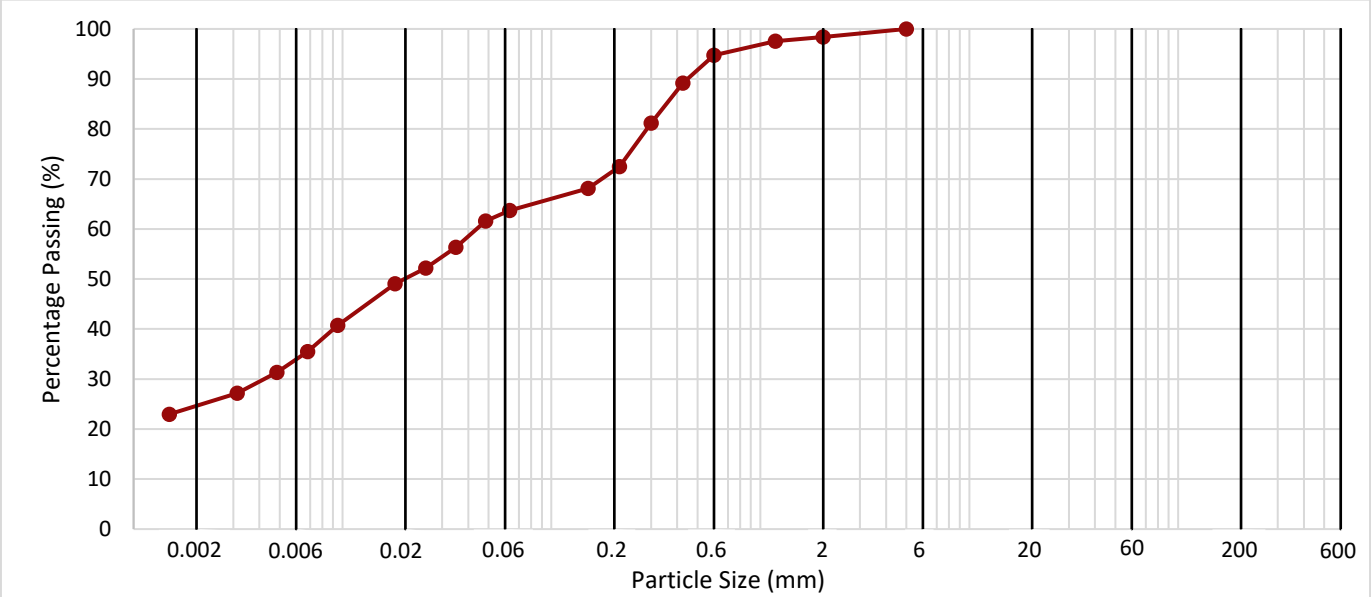
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	3.00 - 3.50	B	12	Very soft very dark grey slightly sandy silty organic CLAY with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0485	62	40
0.0349	56	
0.0250	52	
0.0178	49	Clay by Dry Mass (%)
0.0095	41	
0.0068	35	
0.0048	31	24
0.0031	27	
0.0015	23	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	34
1.18	98	
0.600	95	
0.425	89	
0.300	81	
0.212	72	
0.150	68	
0.063	64	

Fines By Dry Mass (%)	
<0.063mm	64

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

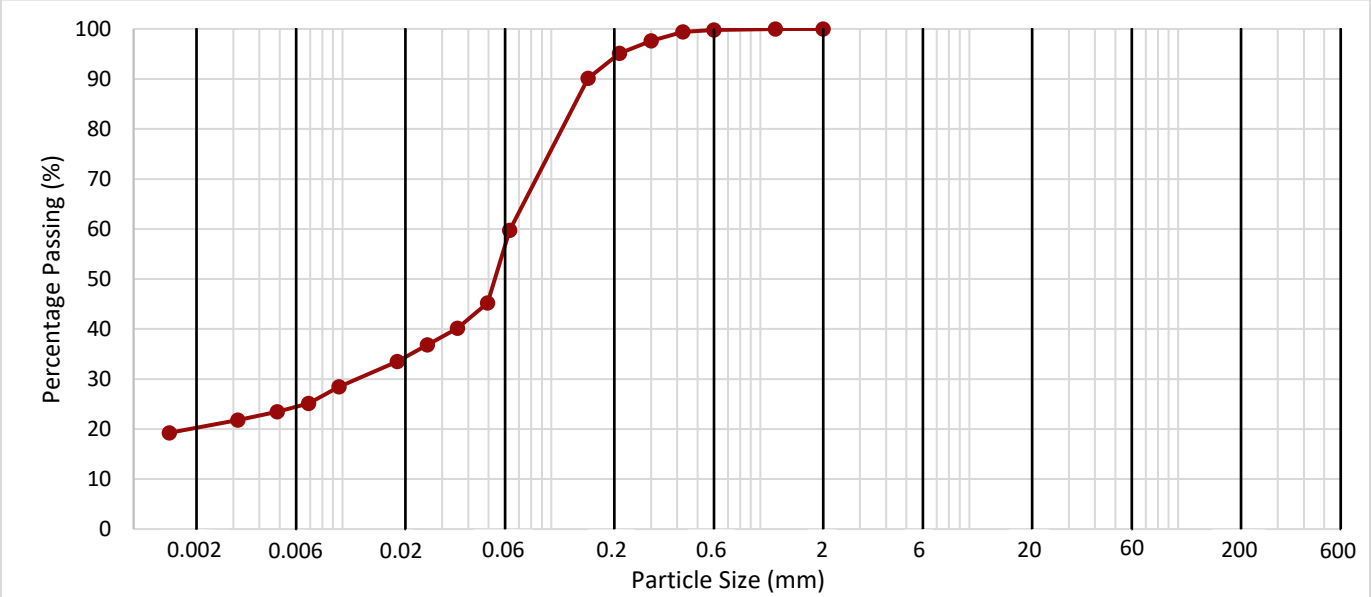
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	4.60	D	14	Soft light bluish grey sandy silty slightly organic CLAY with occasional olive mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0494	45	40
	0.0355	40	
	0.0255	37	
	0.0183	33	Clay by Dry Mass (%)
	0.0096	28	
	0.0069	25	
	0.0049	23	20
	0.0032	22	
	0.0015	19	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	40
1.18	100	
0.600	100	
0.425	99	
0.300	98	
0.212	95	
0.150	90	
0.063	60	

Fines By Dry Mass (%)	
<0.063mm	60

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

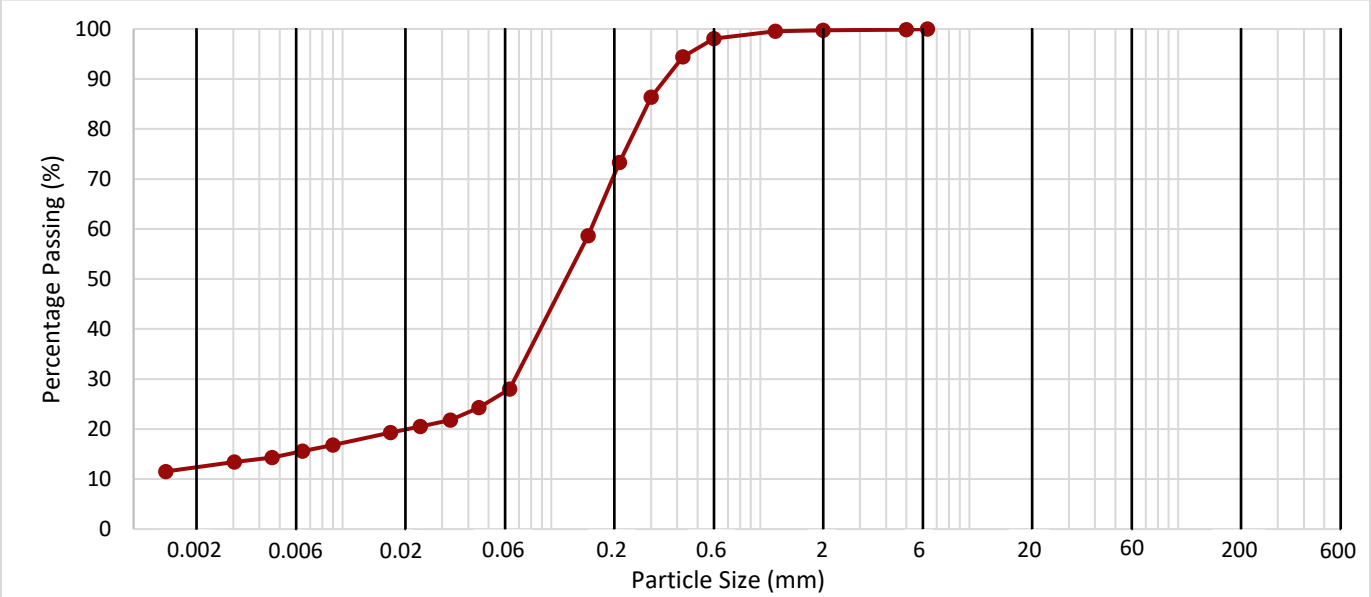
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	5.00 - 5.50	B	15	Very soft olive very sandy silty organic CLAY with occasional dark bluish grey mottling.	Description based on possible engineering behaviour.

Method of Test: Hydrometer + Pre-sieve

Method of Pretreatment: Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0449	24	16
0.0329	22	
0.0236	21	
0.0170	19	Clay by Dry Mass (%)
0.0090	17	
0.0064	16	
0.0046	14	12
0.0030	13	
0.0014	12	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	72
1.18	100	
0.600	98	
0.425	94	
0.300	86	
0.212	73	
0.150	59	
0.063	28	

Fines By Dry Mass (%)	
<0.063mm	28

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part2: 1990: 9.2, 9.5

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

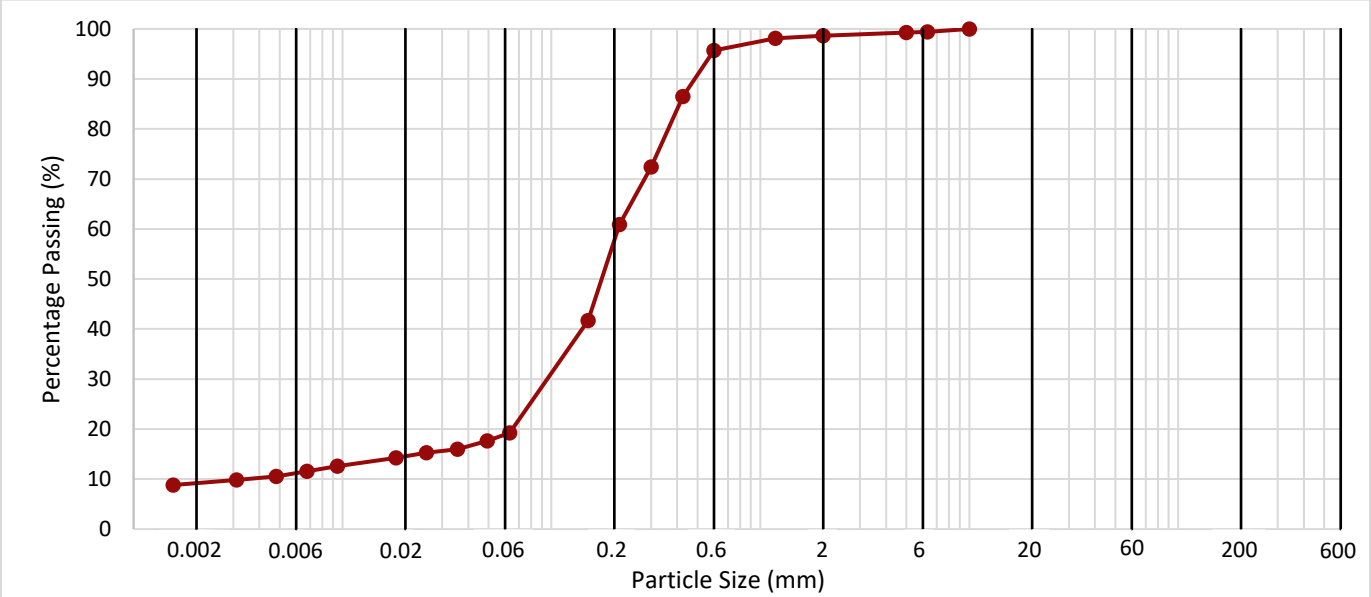
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	6.00 - 6.50	B	17	Light olive brown slightly gravelly silty clayey slightly organic SAND. Gravel is fine flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0493	18	10	
	0.0355	16		
	0.0252	15		
	0.0180	14		9
	0.0095	13		
	0.0068	12		
	0.0048	11		
	0.0031	10		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	96	
0.425	86	
0.300	72	
0.212	61	
0.150	42	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

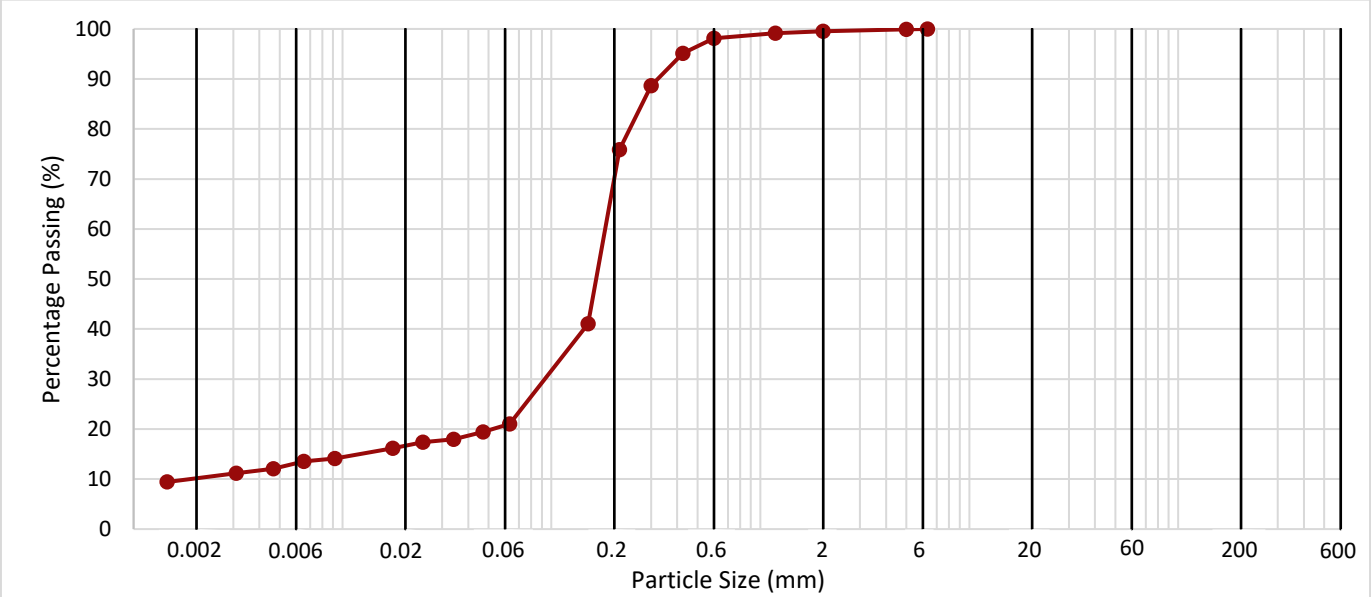
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	9.00 - 9.50	B	23	Olive silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0472	19	11
	0.0340	18	
	0.0243	17	
	0.0174	16	Clay by Dry Mass (%)
	0.0092	14	
	0.0065	14	
	0.0047	12	10
	0.0031	11	
	0.0014	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	79
1.18	99	
0.600	98	
0.425	95	
0.300	89	
0.212	76	
0.150	41	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

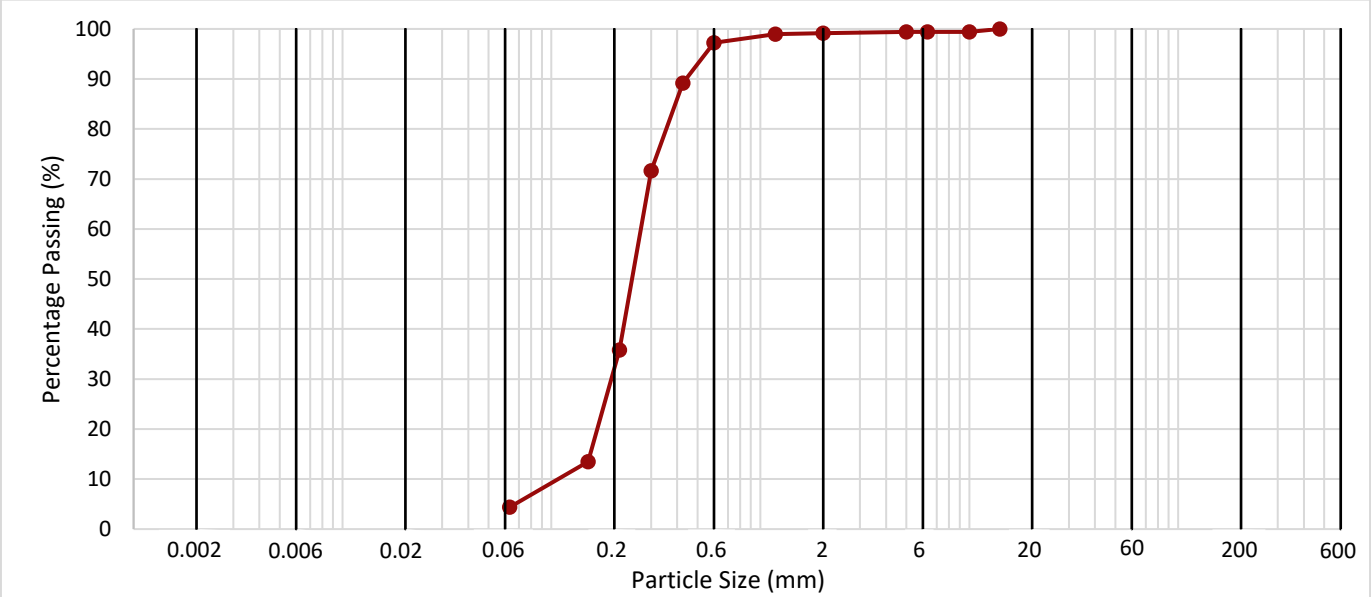
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	12.00 - 12.45	DS	28	Olive yellow slightly silty slightly clayey slightly organic SAND with rare light bluish grey pockets.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	95
1.18	99	
0.600	97	
0.425	89	
0.300	72	
0.212	36	
0.150	13	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	4

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	99	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

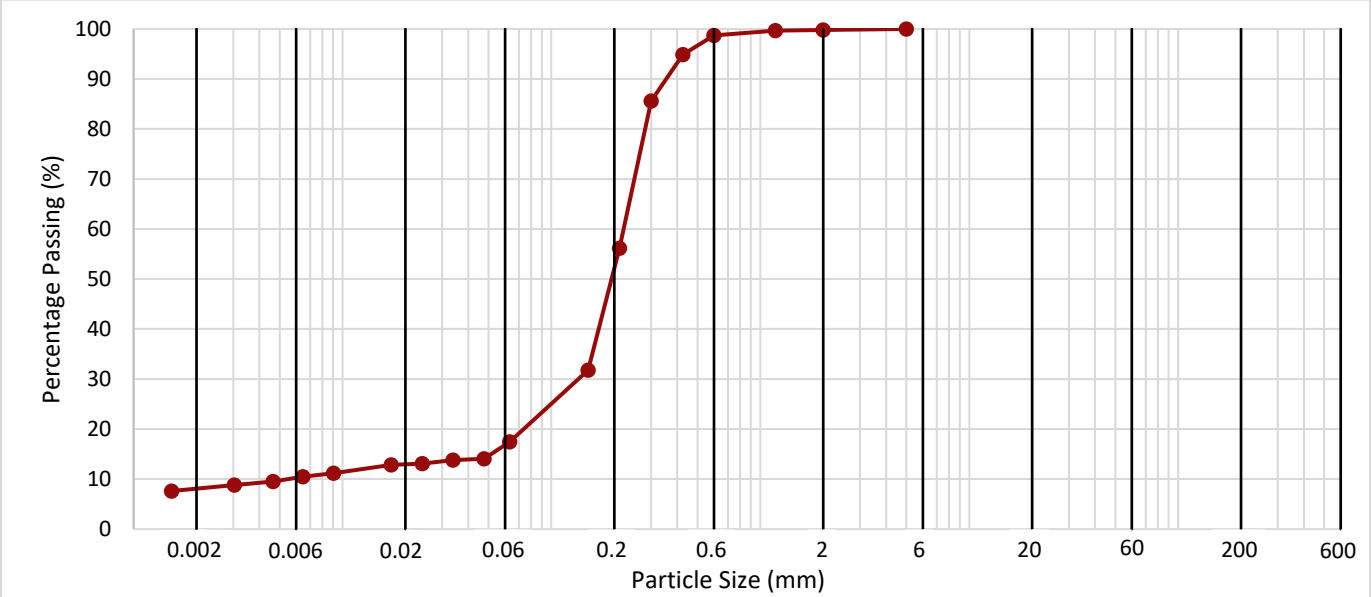
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	14.00 - 14.50	B	33	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0475	14	9	
	0.0337	14		
	0.0241	13		
	0.0171	13		8
	0.0091	11		
	0.0065	10		
	0.0046	10		
	0.0030	9		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	83
1.18	100	
0.600	99	
0.425	95	
0.300	86	
0.212	56	
0.150	32	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

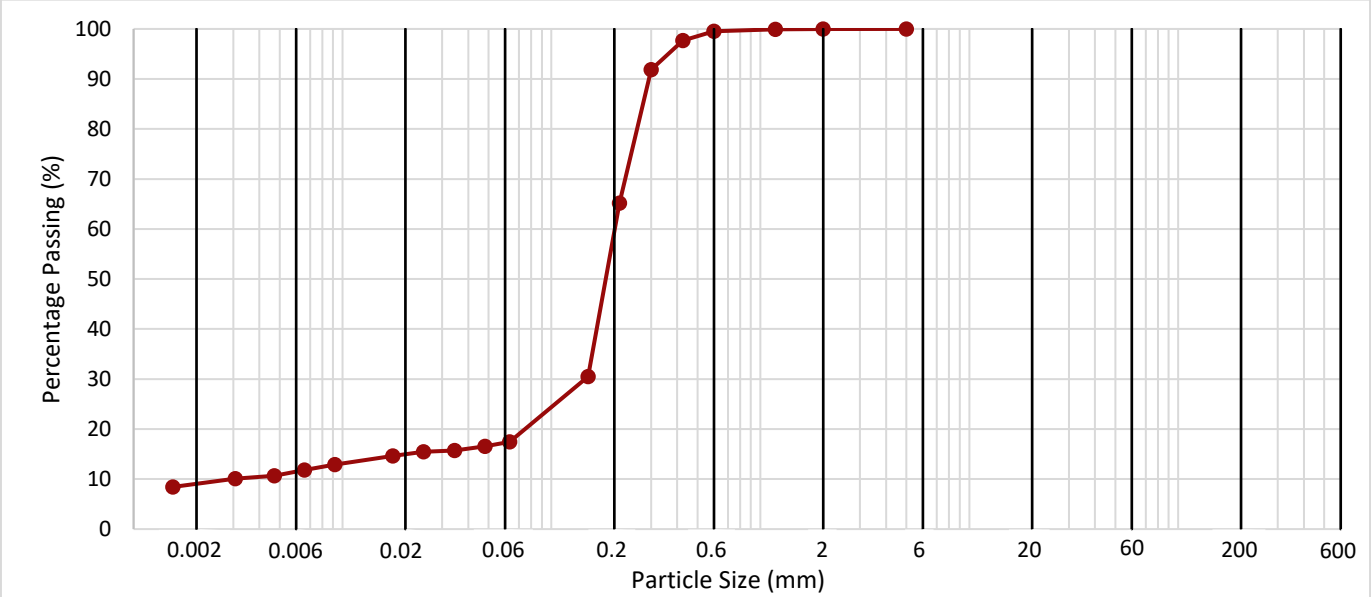
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	17.00 - 17.50	B	38	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0481	17	8	
	0.0344	16		
	0.0244	15		
	0.0174	15		9
	0.0092	13		
	0.0066	12		
	0.0047	11		
	0.0031	10		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	83
1.18	100	
0.600	100	
0.425	98	
0.300	92	
0.212	65	
0.150	31	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

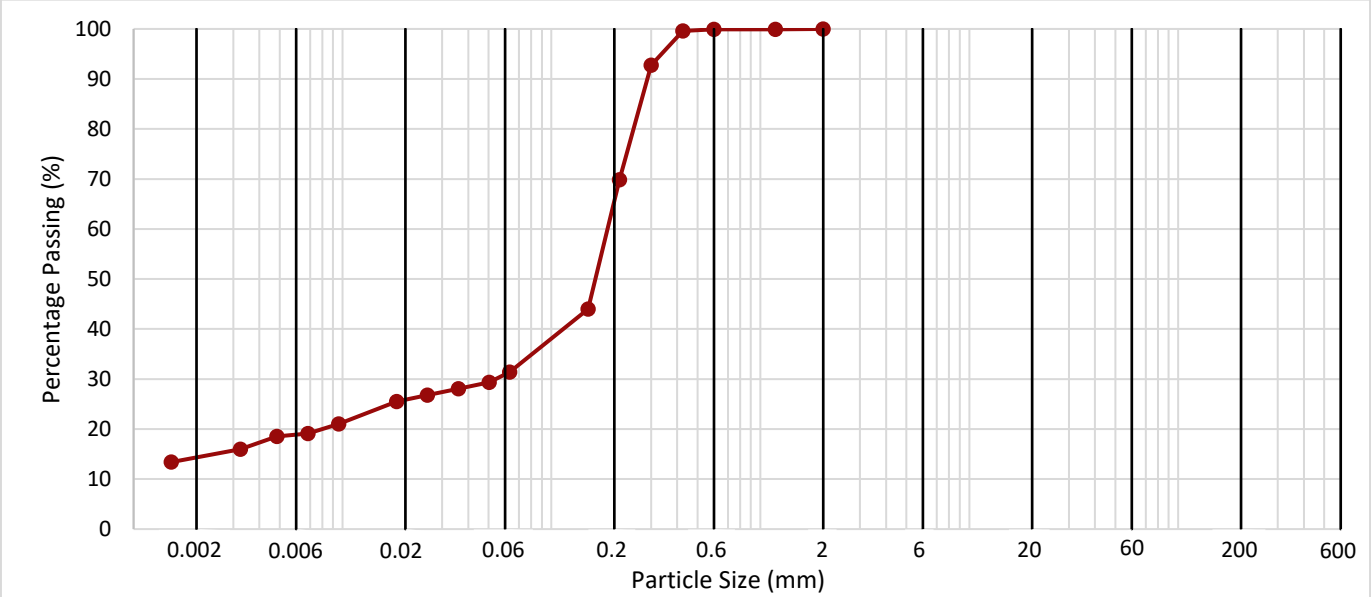
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	18.00 - 18.45	UT	39	Dark grey very sandy silty CLAY.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0504	29	17	
0.0359	28		
0.0255	27		
0.0182	26		
0.0096	21		
0.0068	19		
0.0049	19		14
0.0032	16		
0.0015	13		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	69
1.18	100	
0.600	100	
0.425	100	
0.300	93	
0.212	70	
0.150	44	
0.063	31	

Fines By Dry Mass (%)	
<0.063mm	31

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

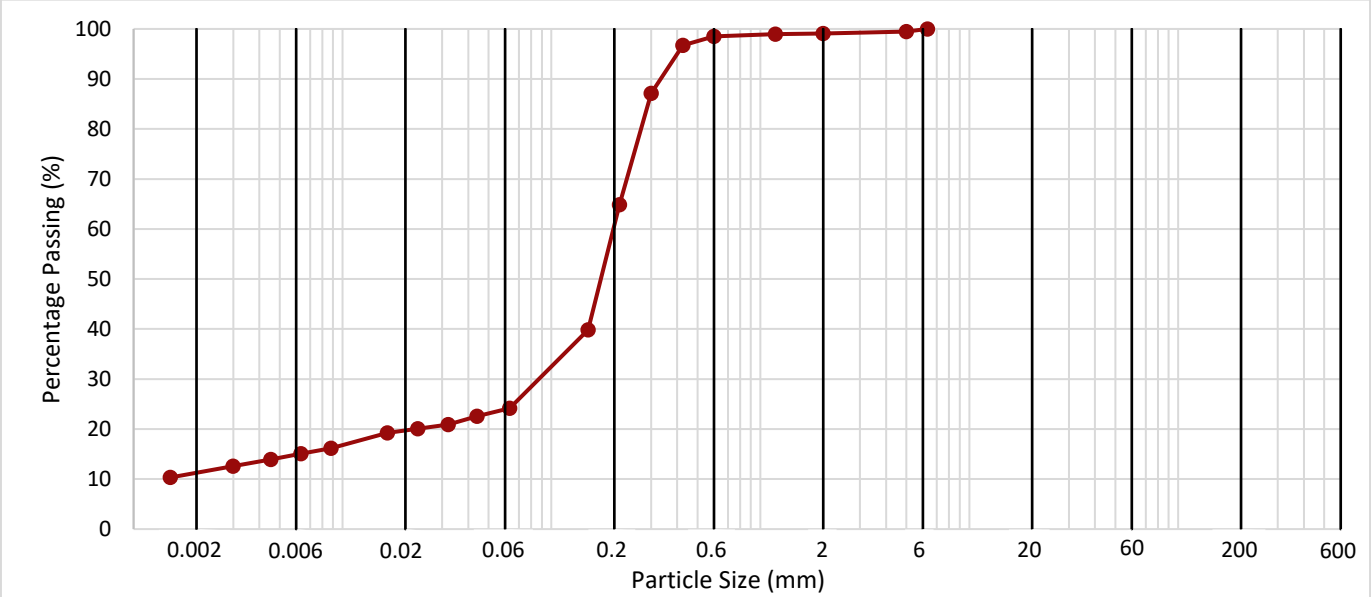
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	19.00 - 19.50	B	43	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0441	23	13
0.0320	21	
0.0229	20	
0.0164	19	Clay by Dry Mass (%)
0.0088	16	
0.0063	15	
0.0045	14	11
0.0030	13	
0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	75
1.18	99	
0.600	99	
0.425	97	
0.300	87	
0.212	65	
0.150	40	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

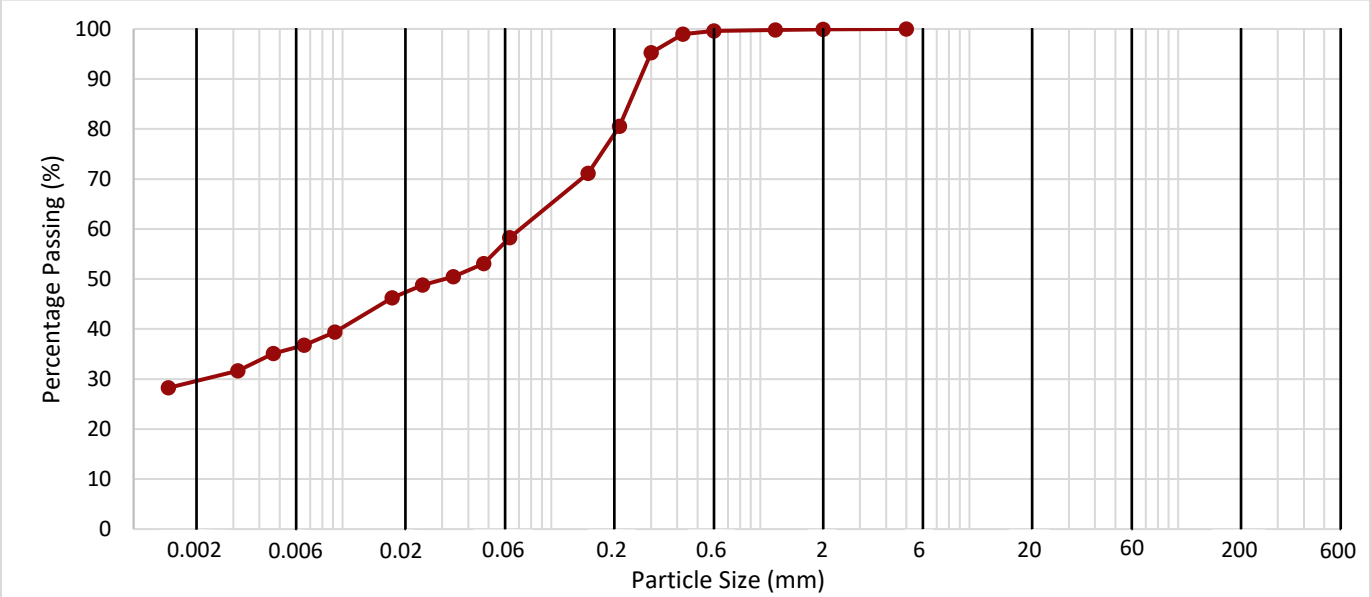
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	20.00 - 20.45	UT	44	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0475	53	29
	0.0340	50	
	0.0242	49	
	0.0173	46	Clay by Dry Mass (%)
	0.0092	39	
	0.0066	37	
	0.0047	35	29
	0.0032	32	
	0.0015	28	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	42
1.18	100	
0.600	100	
0.425	99	
0.300	95	
0.212	81	
0.150	71	
0.063	58	

Fines By Dry Mass (%)	
<0.063mm	58

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

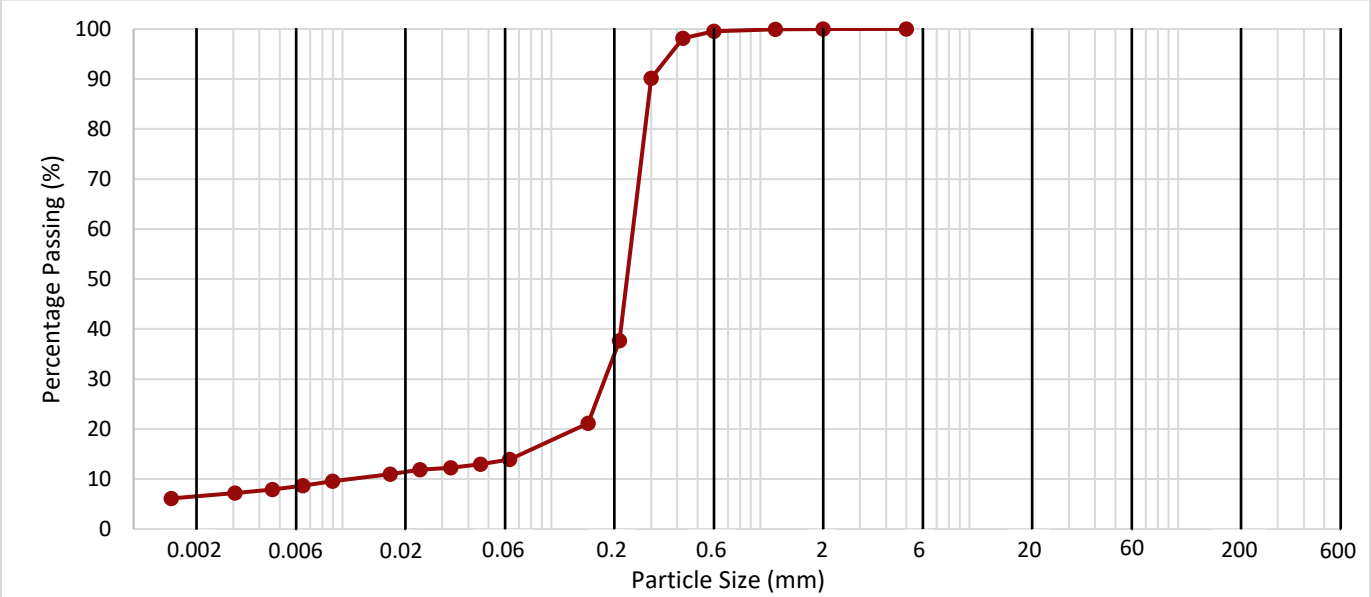
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	20.00 - 20.50	B	45	Dark olive grey silty clayey SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0458	13	8	
	0.0330	12		
	0.0235	12		
	0.0169	11		6
	0.0090	10		
	0.0065	9		
	0.0046	8		
	0.0031	7		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	86
1.18	100	
0.600	100	
0.425	98	
0.300	90	
0.212	38	
0.150	21	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

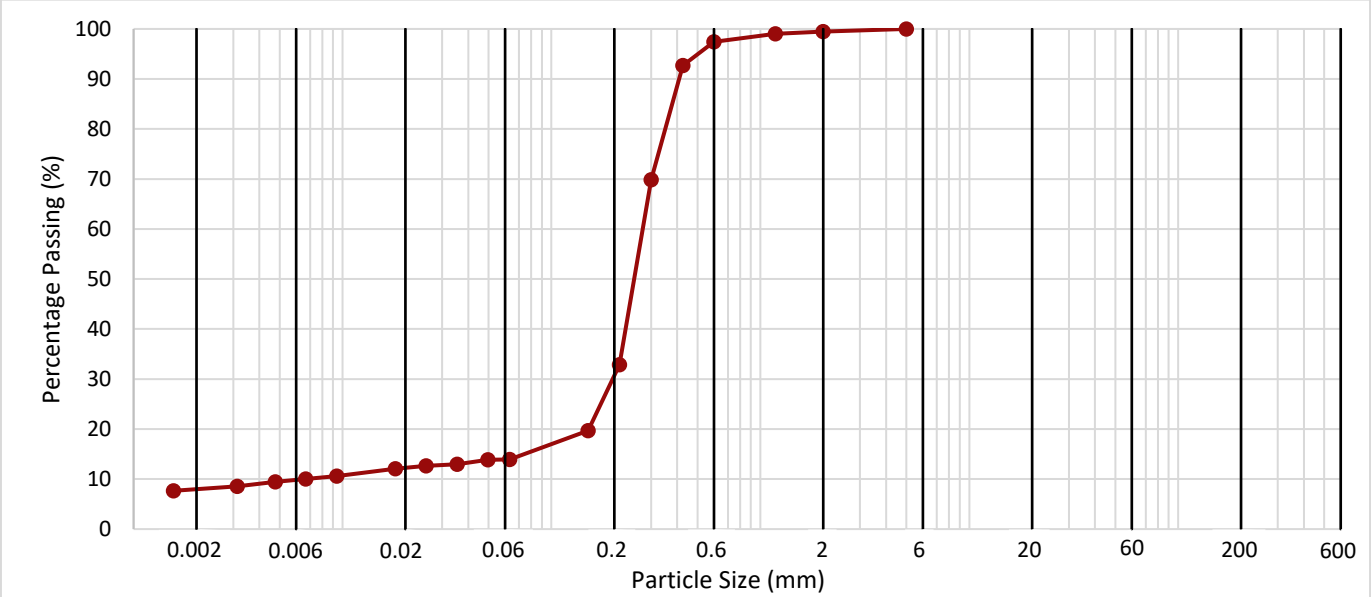
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	21.00 - 21.50	B	48	Dark olive grey silty clayey slightly organic SAND locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0496	14	6
	0.0354	13	
	0.0251	13	
	0.0179	12	Clay by Dry Mass (%)
	0.0094	11	
	0.0067	10	
	0.0048	9	8
	0.0031	9	
	0.0016	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	85
1.18	99	
0.600	97	
0.425	93	
0.300	70	
0.212	33	
0.150	20	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

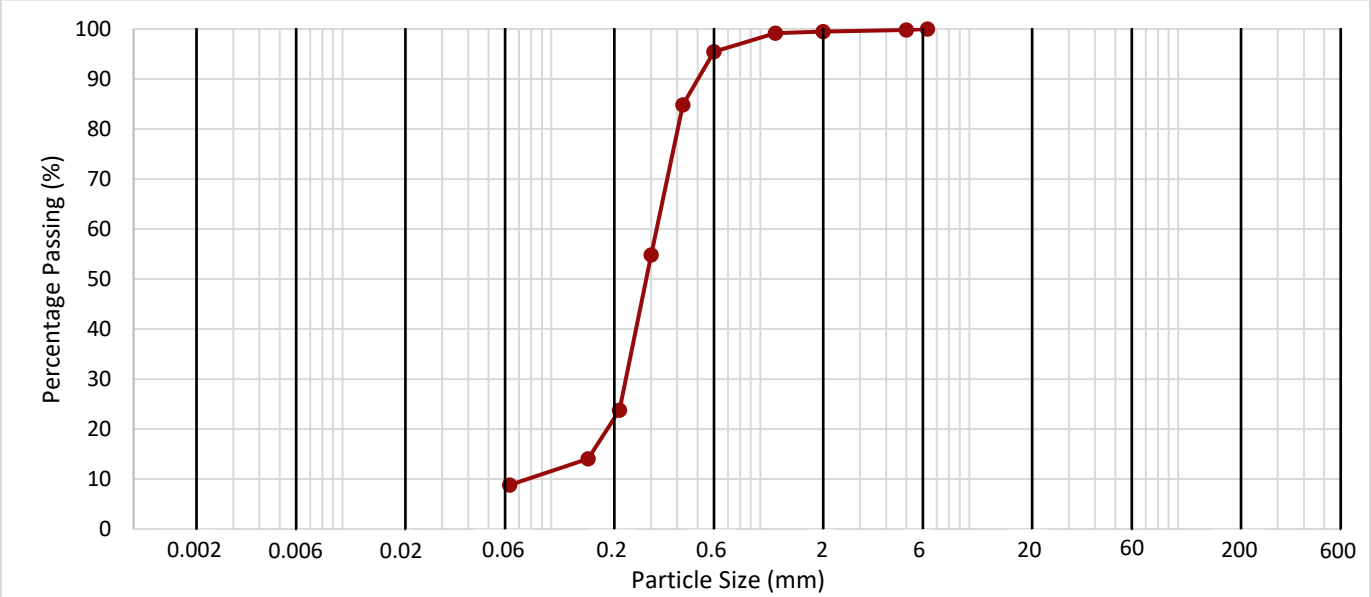
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	24.00 - 24.50	B	54	Dark olive and dark grey slightly silty clayey slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	90
1.18	99	
0.600	95	
0.425	85	
0.300	55	
0.212	24	
0.150	14	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	9

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

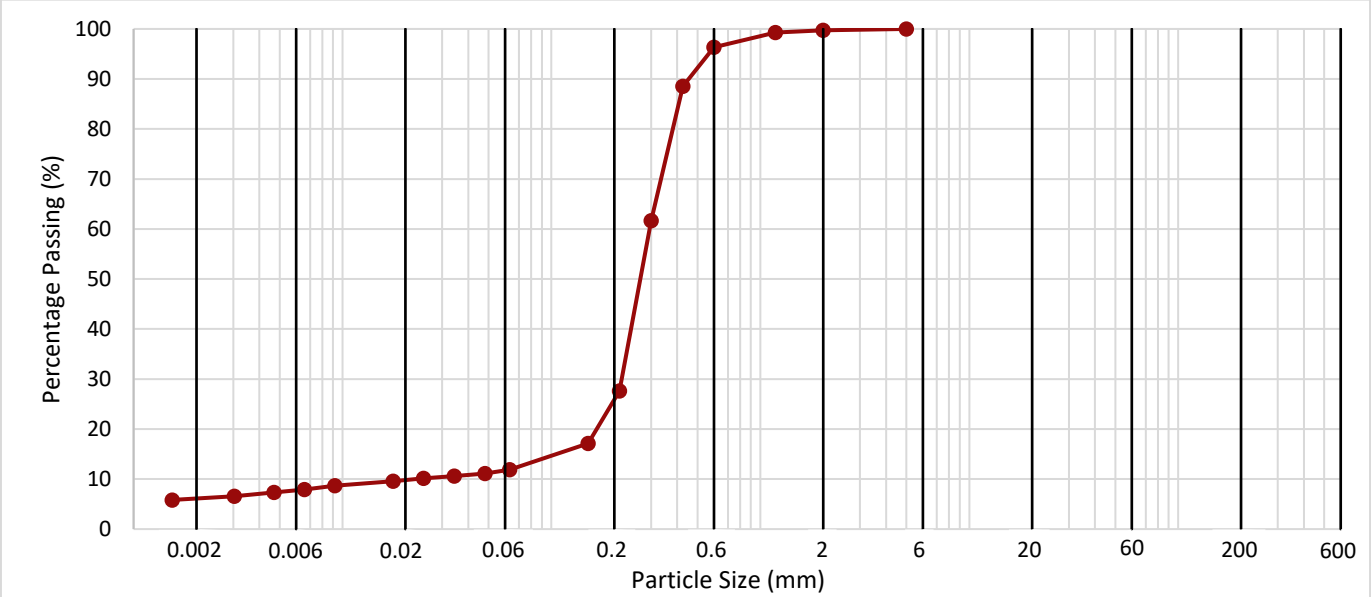
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	26.00 - 26.50	B	58	Dark olive and dark grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0480	11	6	
	0.0343	11		
	0.0244	10		
	0.0175	10		
	0.0092	9		
	0.0066	8		
	0.0047	7		6
	0.0030	7		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	99	
0.600	96	
0.425	89	
0.300	62	
0.212	28	
0.150	17	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

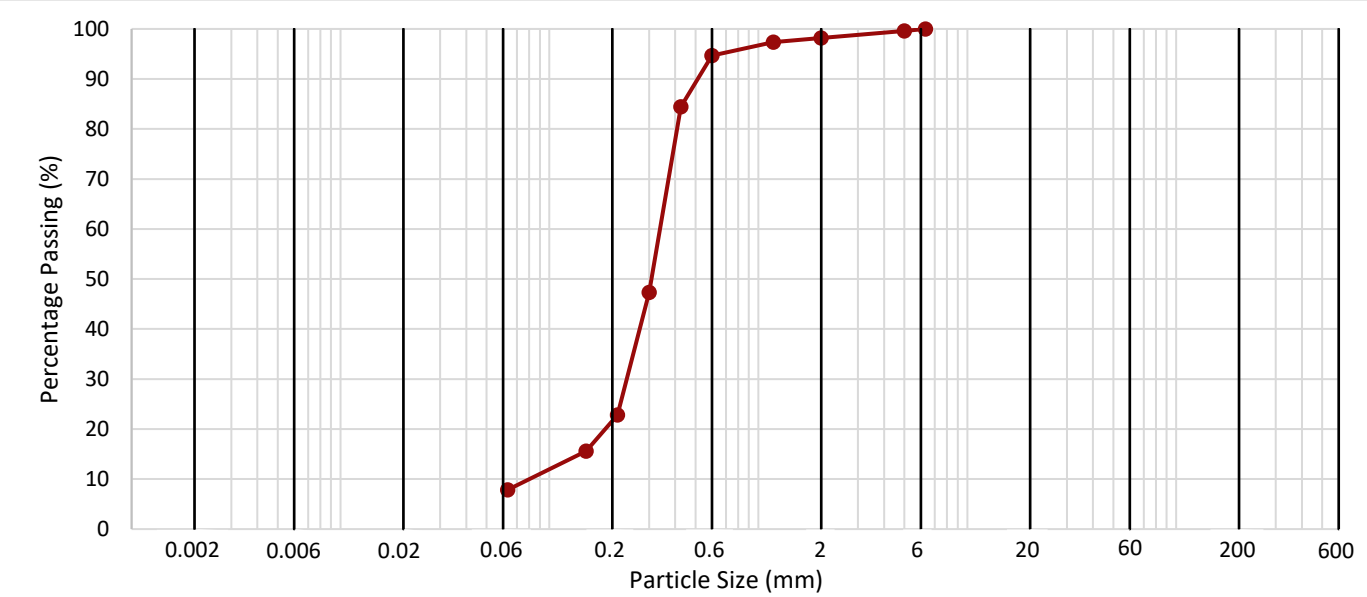
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	28.00 - 28.50	B	61	Dark olive grey silty slightly clayey SAND with occasional shell and fossil debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	98	**90**
1.18	97	
0.600	95	
0.425	84	
0.300	47	
0.212	23	
0.150	16	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	**8**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**2**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

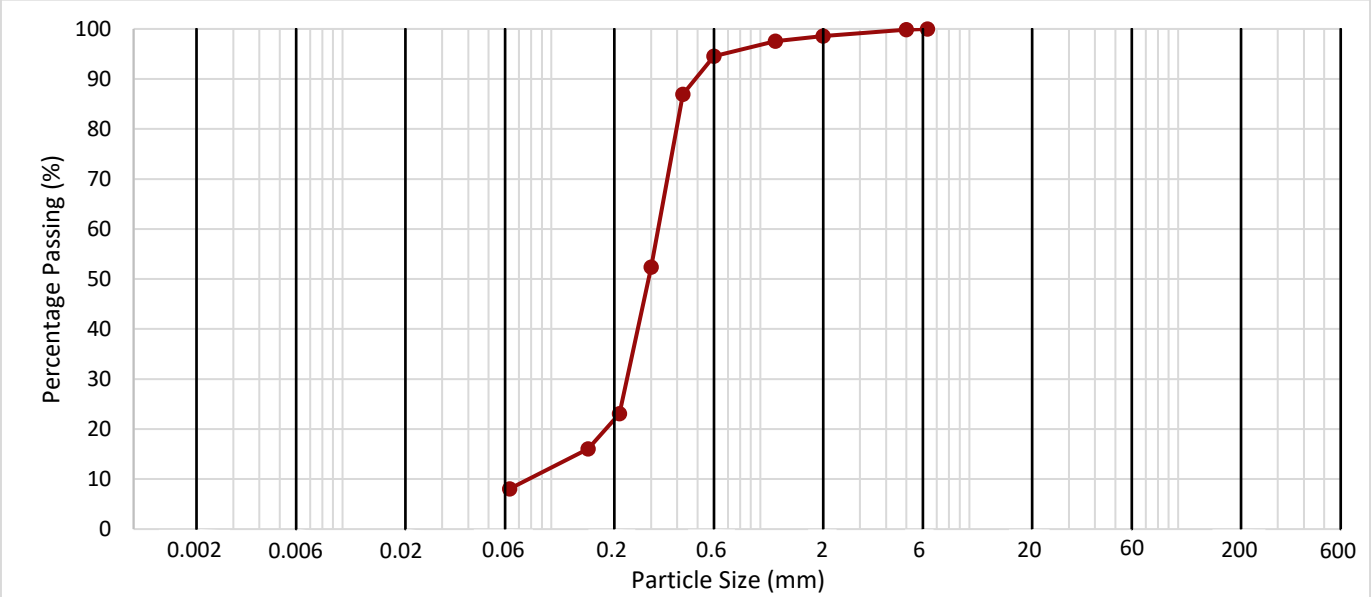
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	30.50 - 31.00	B	67	Dark olive grey slightly silty slightly clayey SAND with occasional shell and fossil debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	91
1.18	98	
0.600	95	
0.425	87	
0.300	52	
0.212	23	
0.150	16	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	8

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

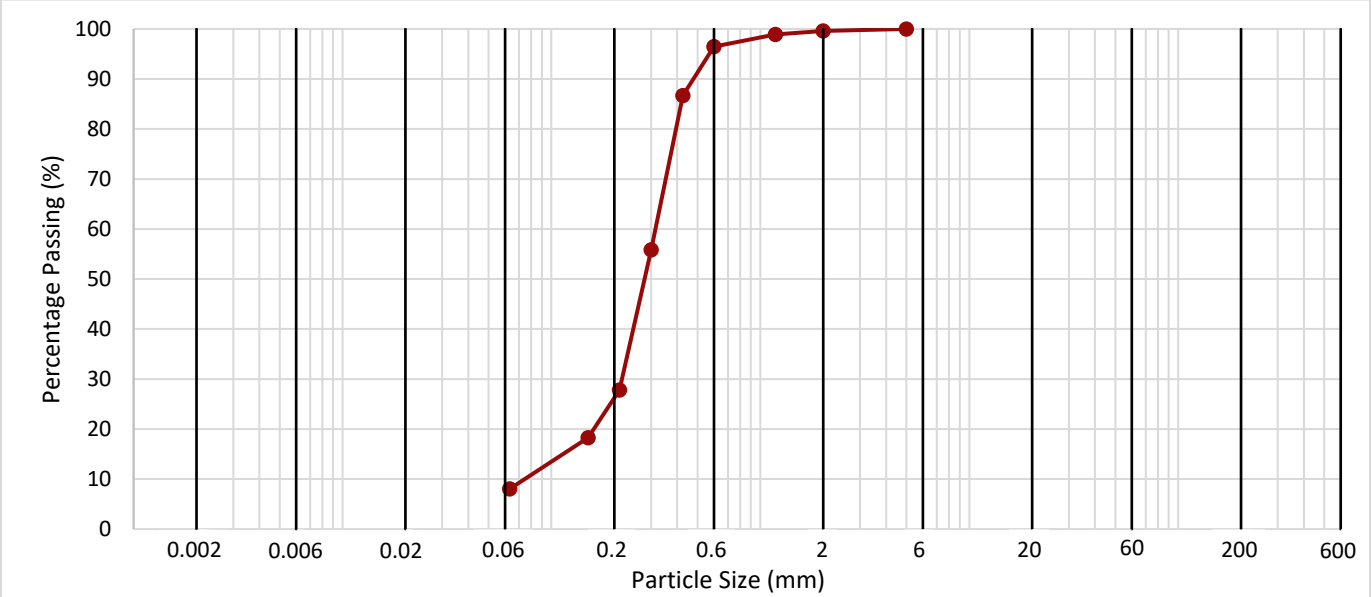
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	33.50 - 34.00	B	73	Dark olive grey silty slightly clayey SAND with occasional shell and fossil debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**92**
1.18	99	
0.600	96	
0.425	87	
0.300	56	
0.212	28	
0.150	18	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	**8**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

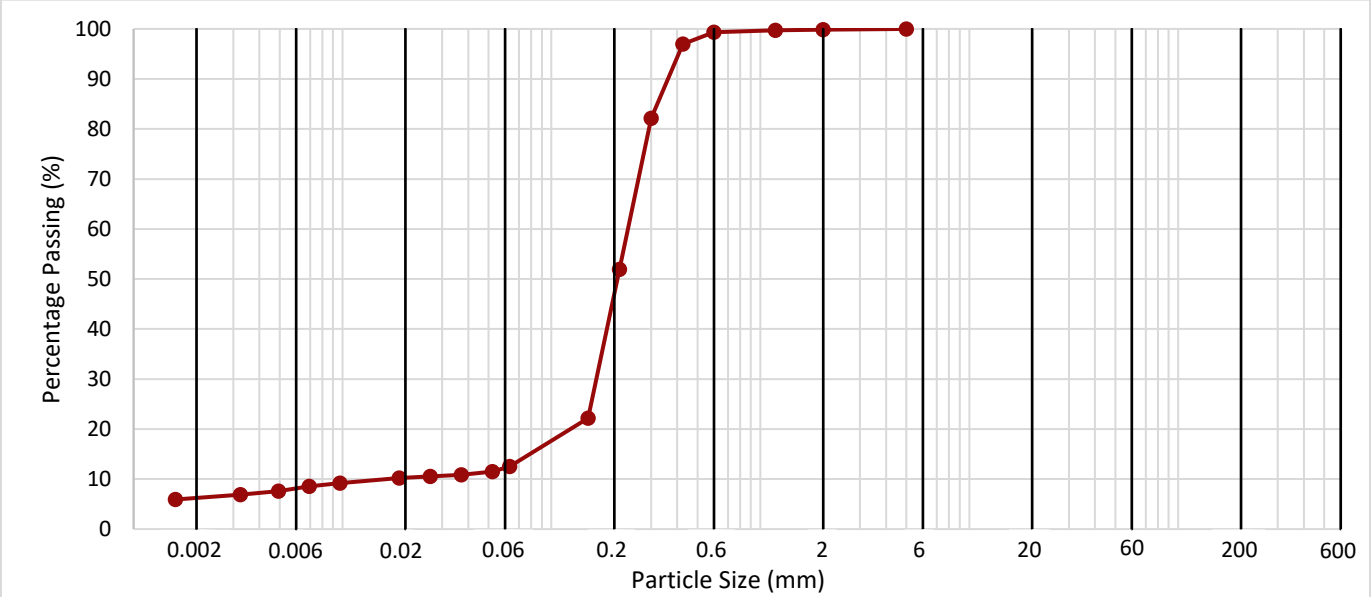
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	36.50 - 37.00	B	79	Dark bluish grey silty clayey slightly organic SAND locally oxidised to olive with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0521	12	6	
	0.0371	11		
	0.0263	11		
	0.0187	10		
	0.0097	9		
	0.0069	9		
	0.0049	8		6
	0.0032	7		
	0.0016	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	100	
0.600	99	
0.425	97	
0.300	82	
0.212	52	
0.150	22	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

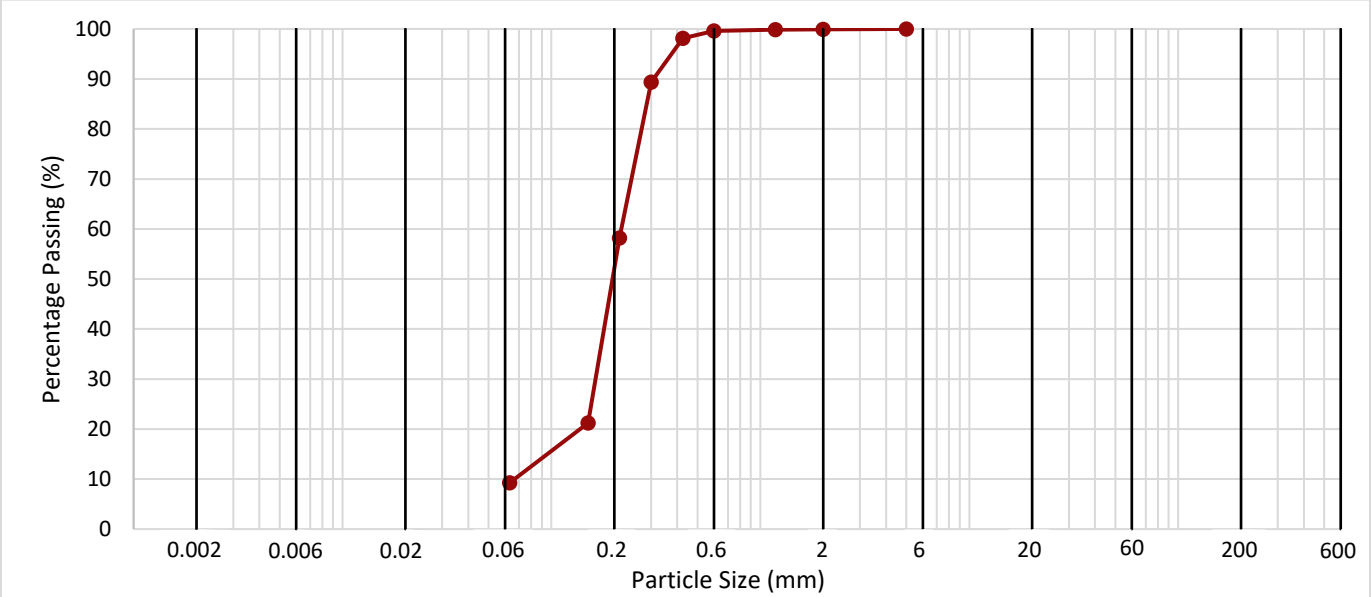
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	39.50 - 40.00	B	84	Dark bluish grey and dark olive grey silty slightly clayey slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**91**
1.18	100	
0.600	100	
0.425	98	
0.300	89	
0.212	58	
0.150	21	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	**9**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

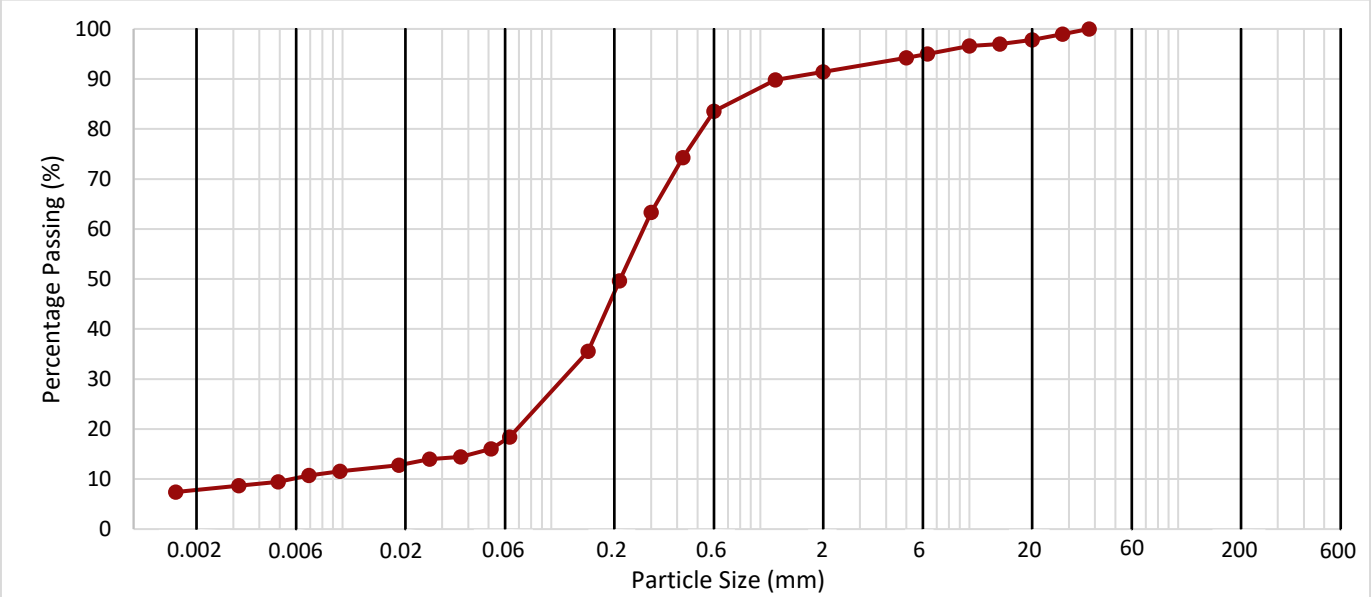
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	0.30	B	1	Dark greyish brown gravelly silty clayey SAND with occasional black organic pockets, and glass fragments, rare coal and ceramic fragments. Gravel is brown, black and white angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0514	16	10	
	0.0368	14		
	0.0261	14		
	0.0186	13		8
	0.0097	12		
	0.0069	11		
	0.0049	9		
	0.0032	9		
	0.0016	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	91	73
1.18	90	
0.600	84	
0.425	74	
0.300	63	
0.212	50	
0.150	36	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		9
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	97	
10	97	
6.3	95	
5	94	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

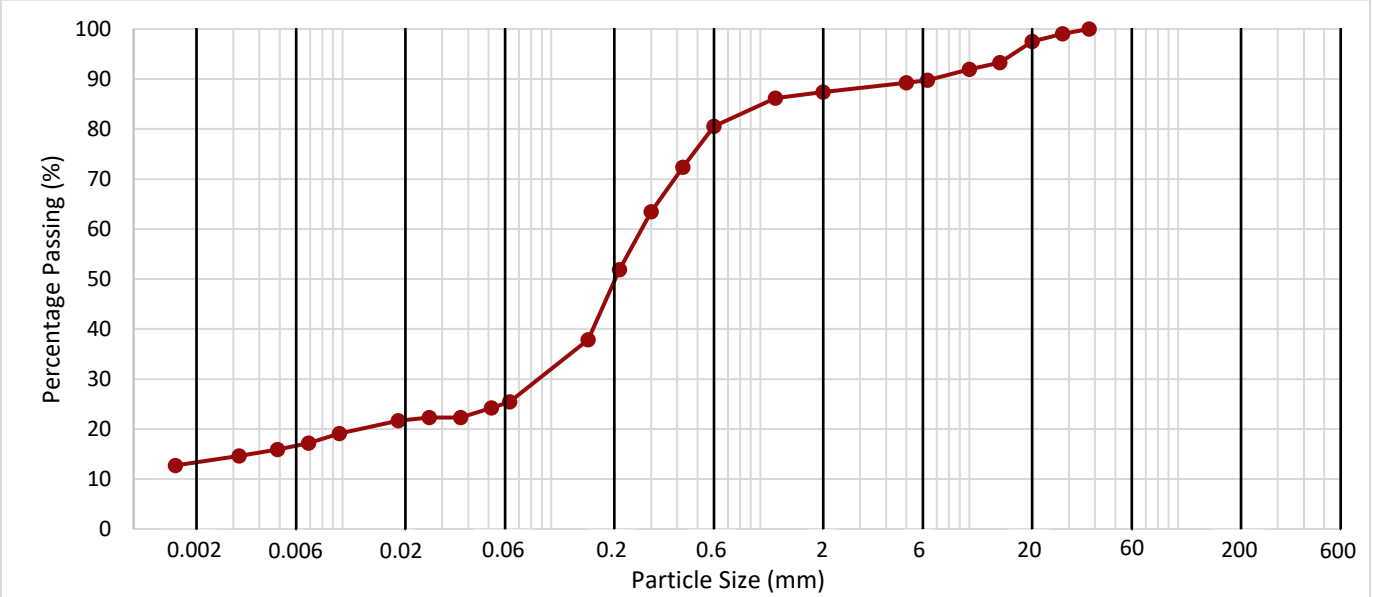
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	1.30 - 1.90	B	4	Very soft slightly gravelly sandy silty CLAY with occasional black organic pockets, and rare concrete fragments. Gravel is black, white and brown angular to rounded flint, and occasional white subangular chalk.	Description based on possible engineering behaviour.

Method of Test: Wet Sieve + Hydrometer

Method of Pretreatment: Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0516	24	12	
0.0368	22		
0.0260	22		
0.0185	22		
0.0097	19		
0.0069	17		
0.0049	16	13	
0.0032	15		
0.0016	13		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	87	62
1.18	86	
0.600	81	
0.425	72	
0.300	63	
0.212	52	
0.150	38	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	25

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		13
125		
90		
63		
50		
37.5	100	
28	99	
20	97	
14	93	
10	92	
6.3	90	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part2: 1990: 9.2, 9.5

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

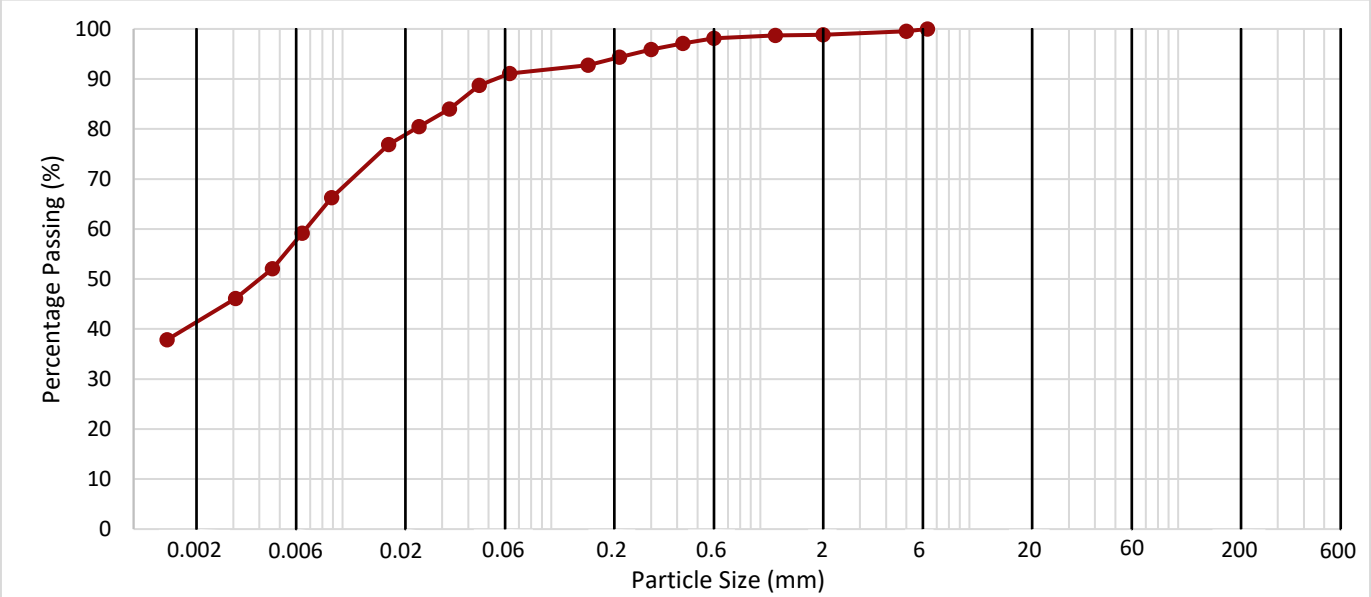
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	2.00 - 2.50	B	6	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown with rare shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0452	89	50
	0.0325	84	
	0.0232	80	
	0.0166	77	Clay by Dry Mass (%)
	0.0089	66	
	0.0064	59	
	0.0046	52	41
	0.0031	46	
	0.0014	38	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	8
1.18	99	
0.600	98	
0.425	97	
0.300	96	
0.212	94	
0.150	93	
0.063	91	

Fines By Dry Mass (%)	
<0.063mm	91

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

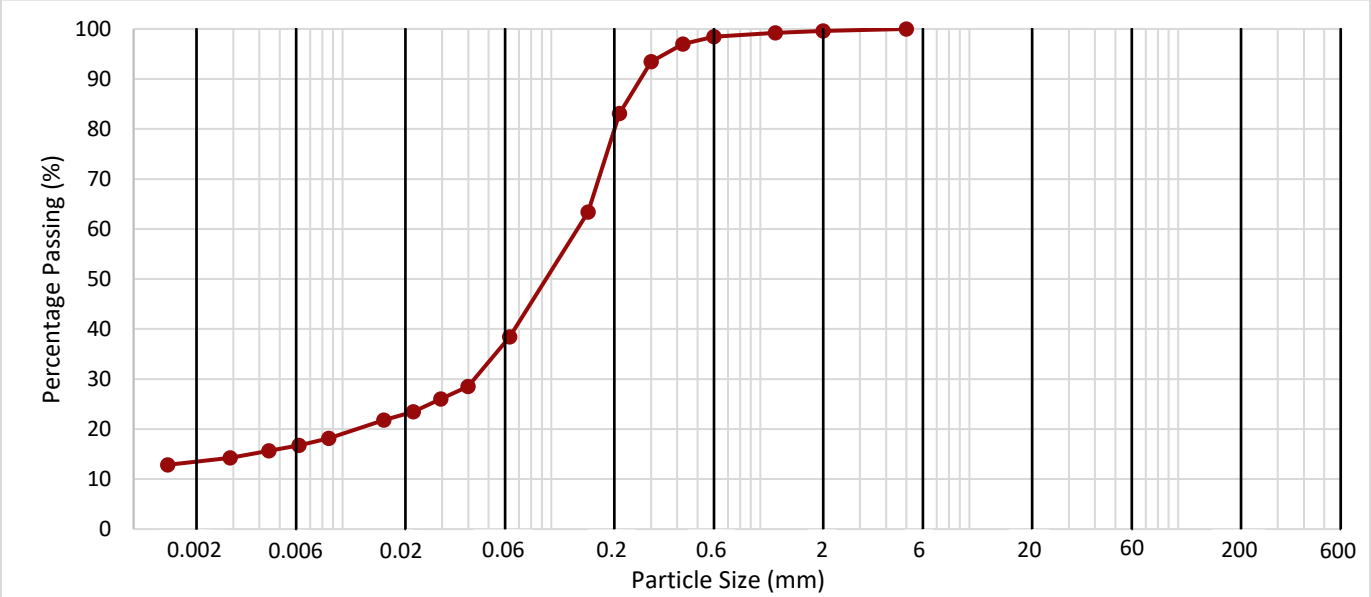
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	5.40 - 5.90	B	12	Olive very silty clayey slightly organic SAND	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0399	29	25
	0.0296	26	
	0.0218	23	
	0.0158	22	Clay by Dry Mass (%)
	0.0086	18	
	0.0062	17	
	0.0044	16	13
	0.0029	14	
	0.0015	13	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	62
1.18	99	
0.600	98	
0.425	97	
0.300	93	
0.212	83	
0.150	63	
0.063	38	

Fines By Dry Mass (%)	
<0.063mm	38

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

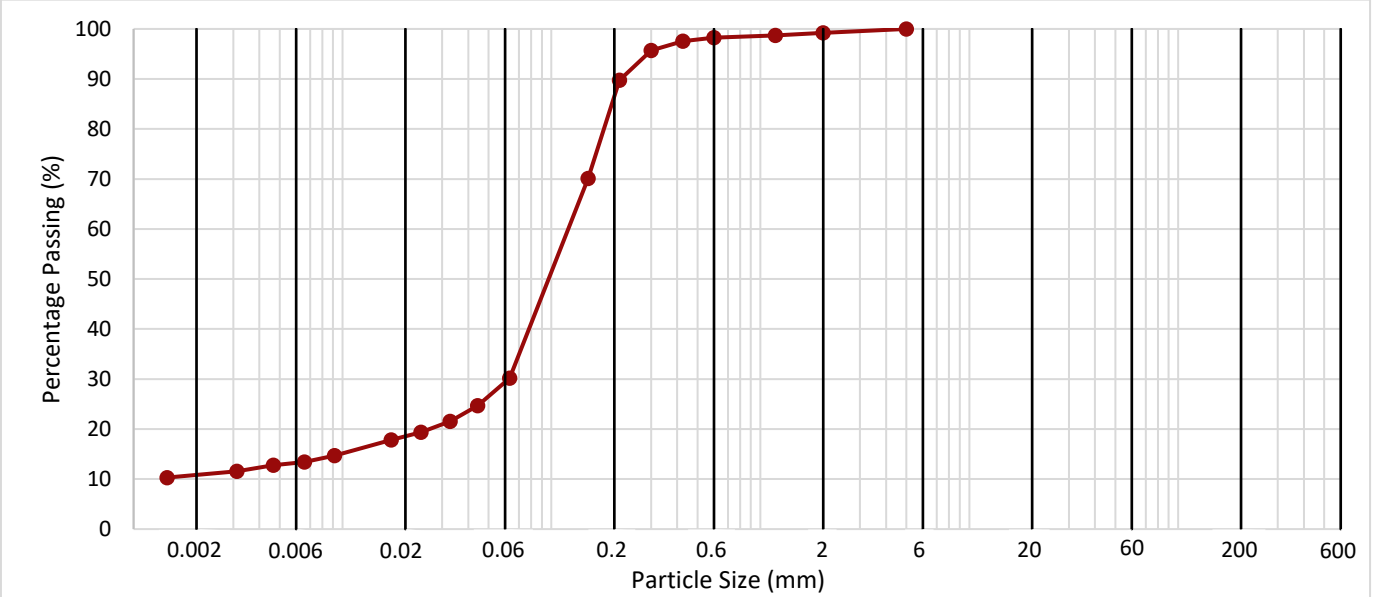
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	7.40 - 7.90	B	16	Very soft light olive brown very sandy silty slightly organic CLAY.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0444	25	19
	0.0327	22	
	0.0238	19	
	0.0171	18	Clay by Dry Mass (%)
	0.0092	15	
	0.0066	13	
	0.0047	13	11
	0.0031	12	
	0.0014	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	69
1.18	99	
0.600	98	
0.425	98	
0.300	96	
0.212	90	
0.150	70	
0.063	30	

Fines By Dry Mass (%)	
<0.063mm	30

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

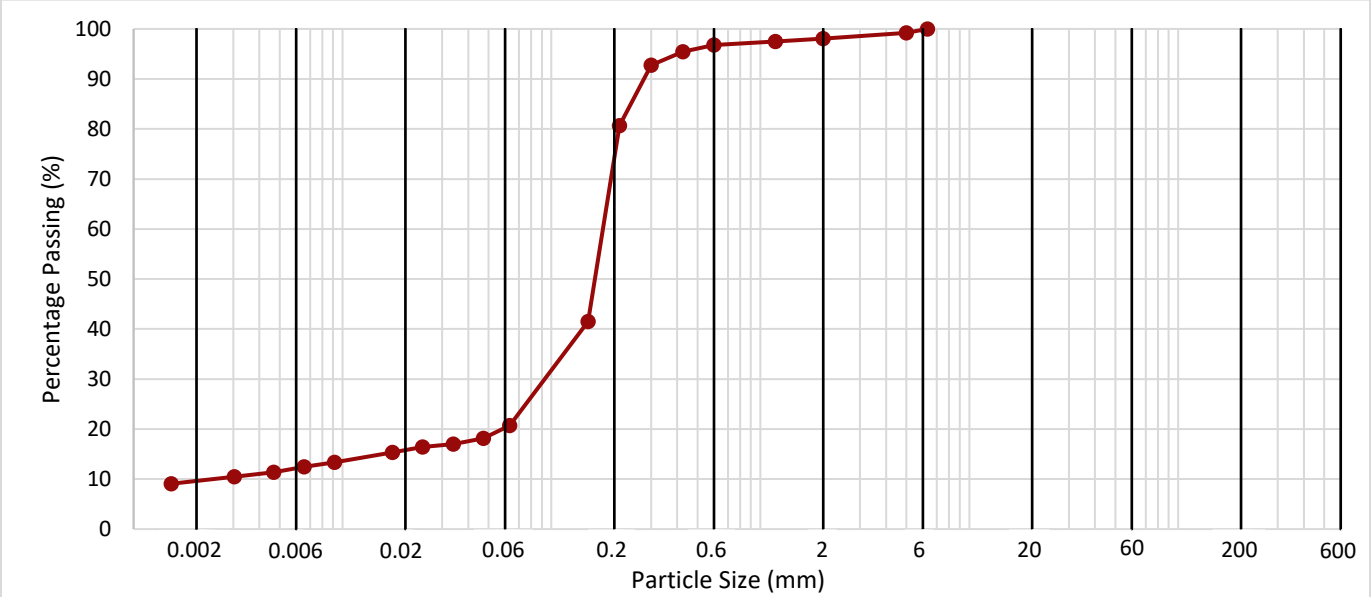
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	11.00 - 11.50	B	25	Light olive brown slightly gravelly silty clayey slightly organic SAND. Gravel is fine quartzite.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0472	18	11	
	0.0339	17		
	0.0242	16		
	0.0173	15		
	0.0092	13		
	0.0065	12		
	0.0047	11		10
	0.0030	10		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	77
1.18	98	
0.600	97	
0.425	95	
0.300	93	
0.212	81	
0.150	41	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

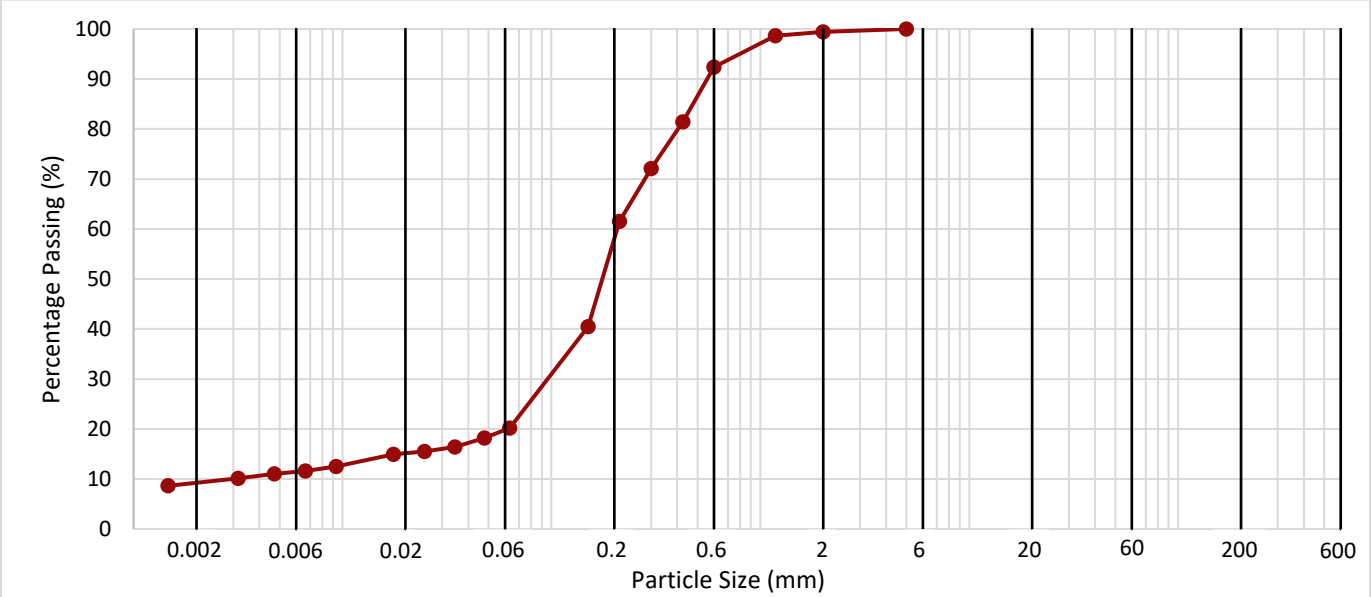
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	15.40 - 15.90	B	33	Olive grey silty clayey organic SAND locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0477	18	11	
	0.0345	16		
	0.0246	16		
	0.0176	15		9
	0.0093	13		
	0.0066	12		
	0.0047	11		
	0.0032	10		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	79
1.18	99	
0.600	92	
0.425	81	
0.300	72	
0.212	62	
0.150	40	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

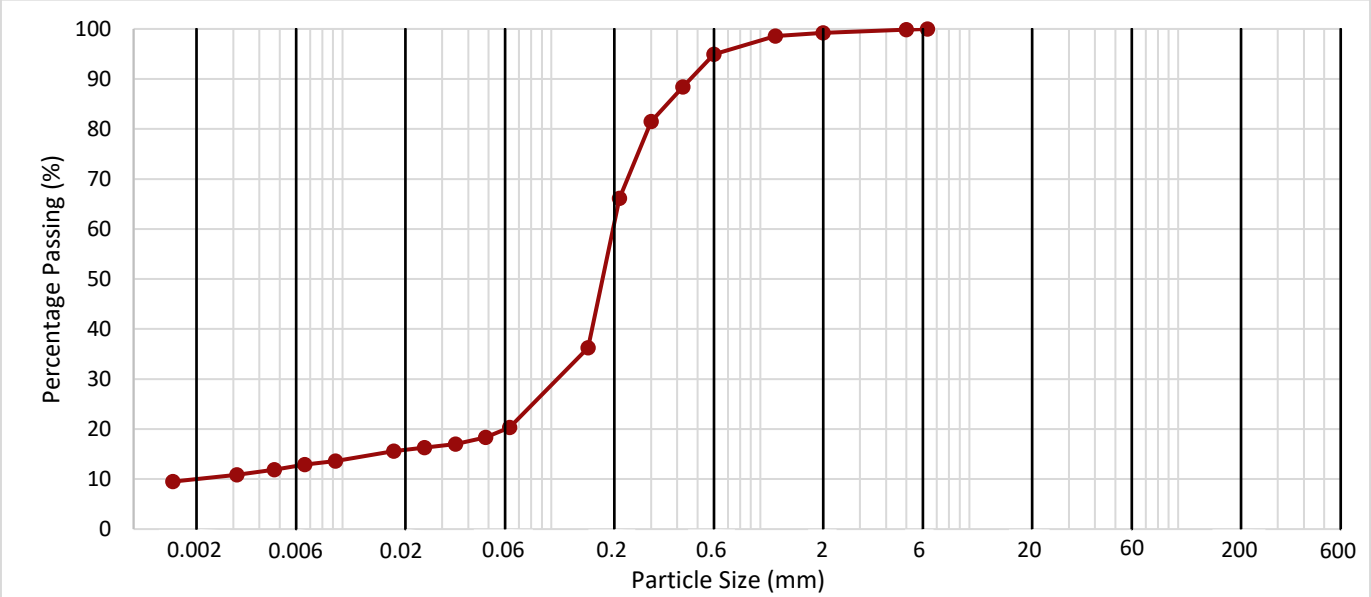
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	18.40 - 18.90	B	39	Olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0484	18	10	
0.0347	17		
0.0247	16		
0.0176	16		
0.0093	14		
0.0066	13		
0.0047	12		10
0.0031	11		
0.0015	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	79
1.18	99	
0.600	95	
0.425	88	
0.300	81	
0.212	66	
0.150	36	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

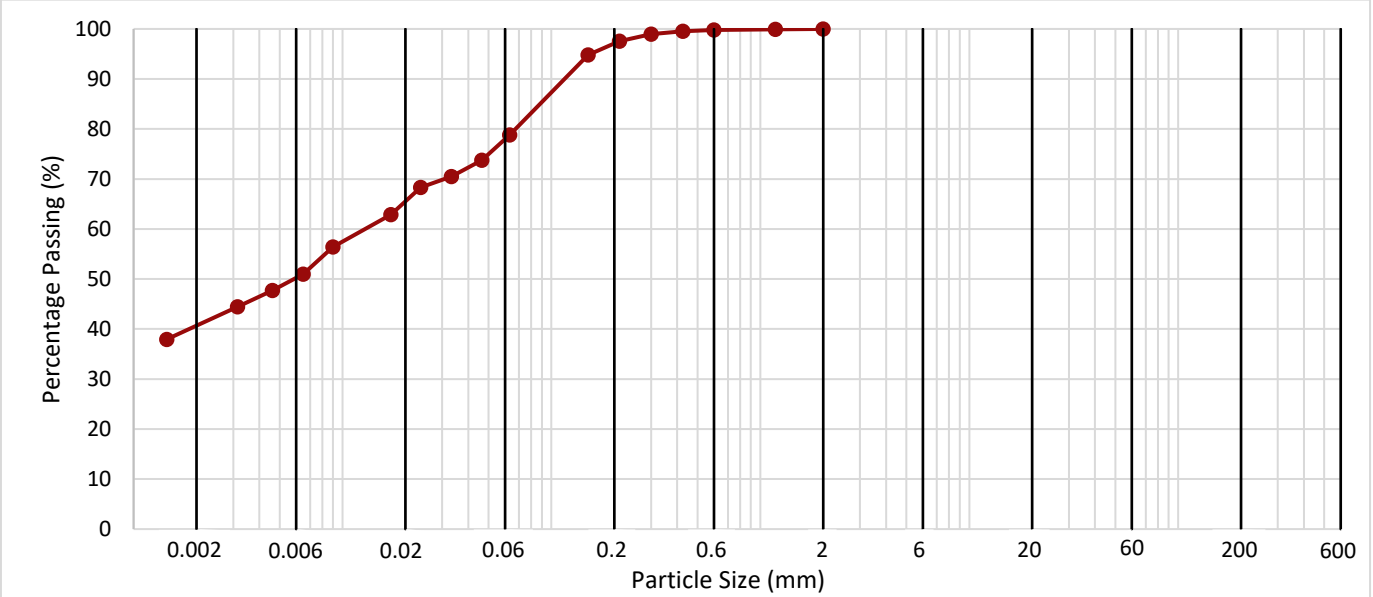
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	20.60 - 21.00	B	43	Firm dark bluish grey slightly sandy silty slightly organic CLAY locally oxidised to olive with occasional fine sand and silt partings.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0465	74	39
0.0332	70	
0.0237	68	
0.0171	63	Clay by Dry Mass (%)
0.0090	56	
0.0065	51	
0.0046	48	40
0.0031	44	
0.0014	38	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	21
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	98	
0.150	95	
0.063	79	

Fines By Dry Mass (%)	
<0.063mm	79

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

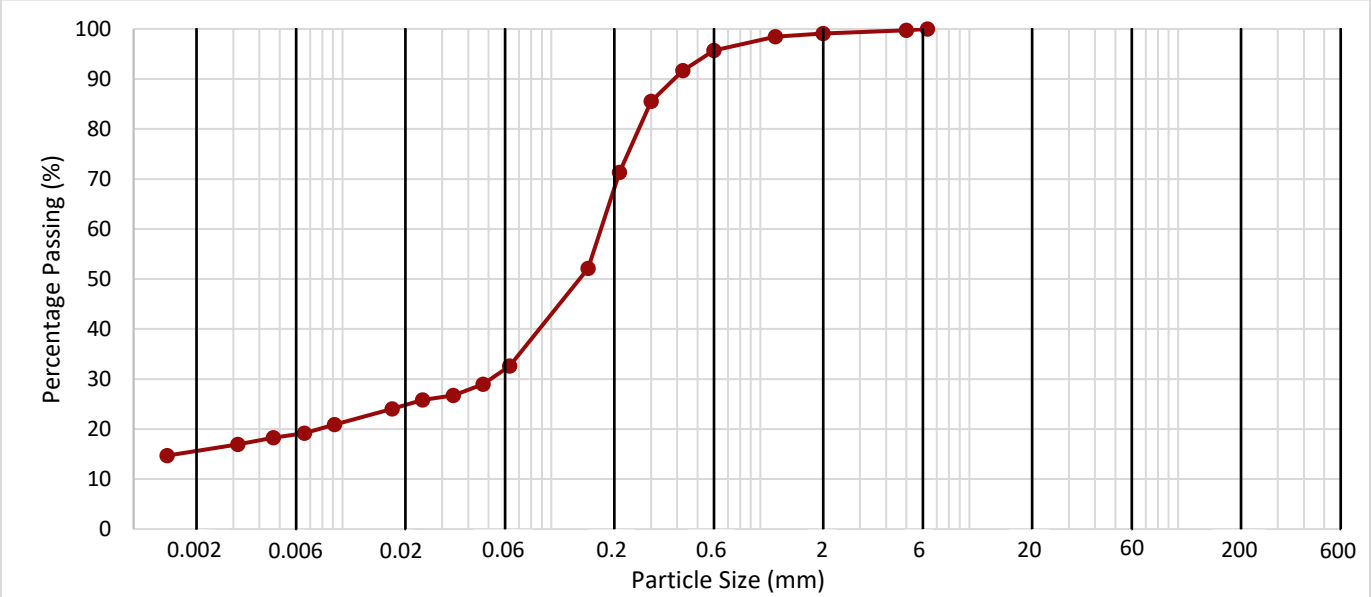
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	22.40 - 22.90	B	48	Dark olive grey very sandy silty organic CLAY with rare shell debris.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0470	29	18
	0.0339	27	
	0.0241	26	
	0.0173	24	Clay by Dry Mass (%)
	0.0092	21	
	0.0066	19	
	0.0047	18	15
	0.0032	17	
	0.0014	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	66
1.18	98	
0.600	96	
0.425	92	
0.300	86	
0.212	71	
0.150	52	
0.063	33	

Fines By Dry Mass (%)	
<0.063mm	33

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

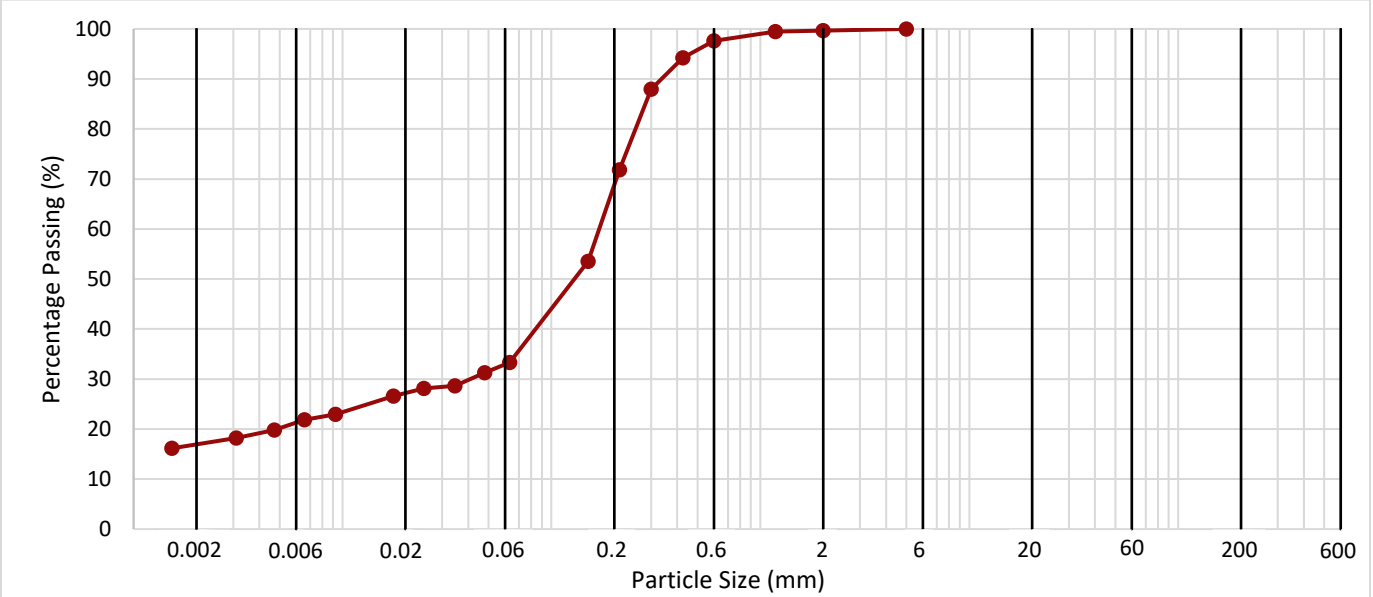
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	24.40 - 24.90	B	52	Dark olive grey very sandy silty organic CLAY.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0480	31	16
0.0345	29	
0.0245	28	
0.0175	27	Clay by Dry Mass (%)
0.0092	23	
0.0066	22	
0.0047	20	17
0.0031	18	
0.0015	16	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	67
1.18	99	
0.600	98	
0.425	94	
0.300	88	
0.212	72	
0.150	54	
0.063	33	

Fines By Dry Mass (%)	
<0.063mm	33

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

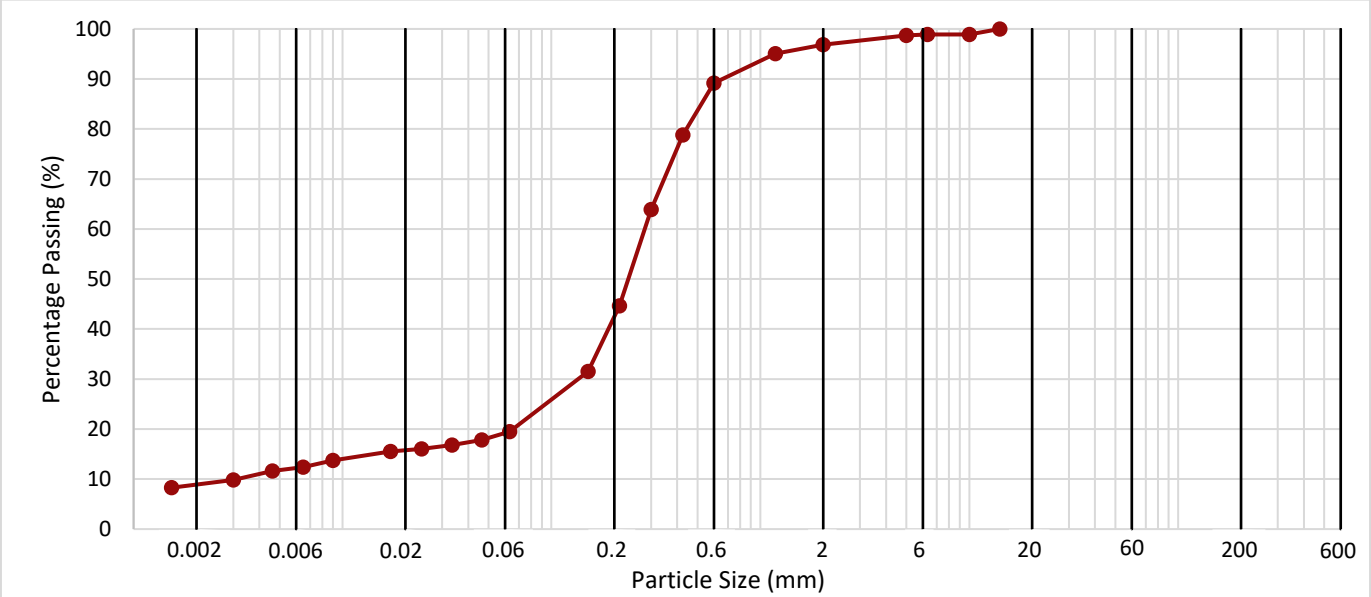
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	27.40 - 27.90	B	59	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0465	18	10
	0.0334	17	
	0.0239	16	
	0.0170	16	Clay by Dry Mass (%)
	0.0090	14	
	0.0065	12	
	0.0046	12	9
	0.0030	10	
	0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	97	78
1.18	95	
0.600	89	
0.425	79	
0.300	64	
0.212	45	
0.150	32	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		3
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	99	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

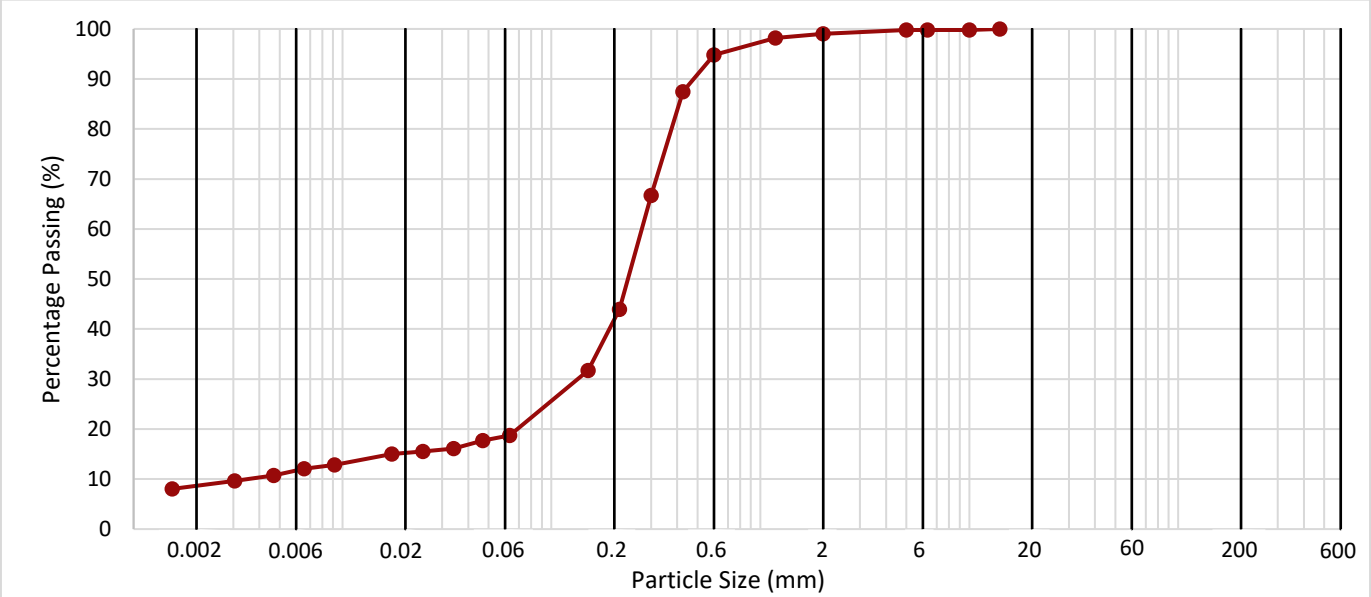
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	30.40 - 30.90	B	65	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0470	18	10	
	0.0340	16		
	0.0242	16		
	0.0172	15		9
	0.0092	13		
	0.0065	12		
	0.0047	11		
	0.0030	10		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	95	
0.425	87	
0.300	67	
0.212	44	
0.150	32	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

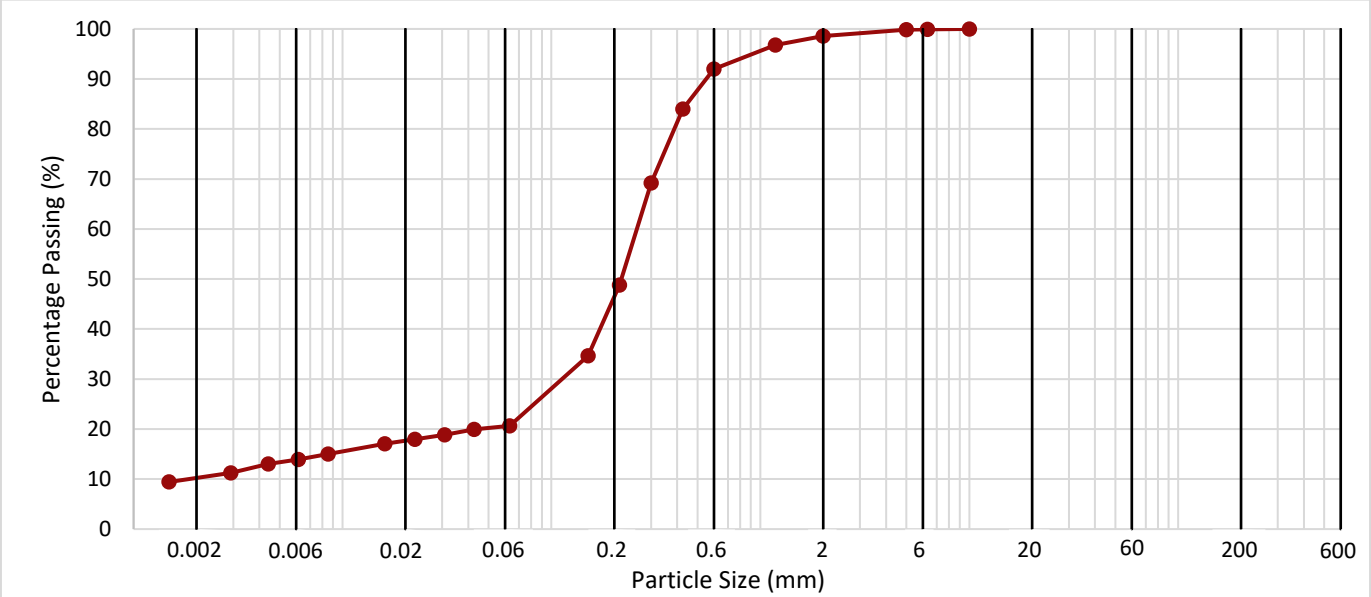
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	33.40 - 33.90	B	71	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0426	20	11	
	0.0308	19		
	0.0222	18		
	0.0160	17		
	0.0085	15		
	0.0062	14		
	0.0044	13		10
	0.0029	11		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	78
1.18	97	
0.600	92	
0.425	84	
0.300	69	
0.212	49	
0.150	35	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

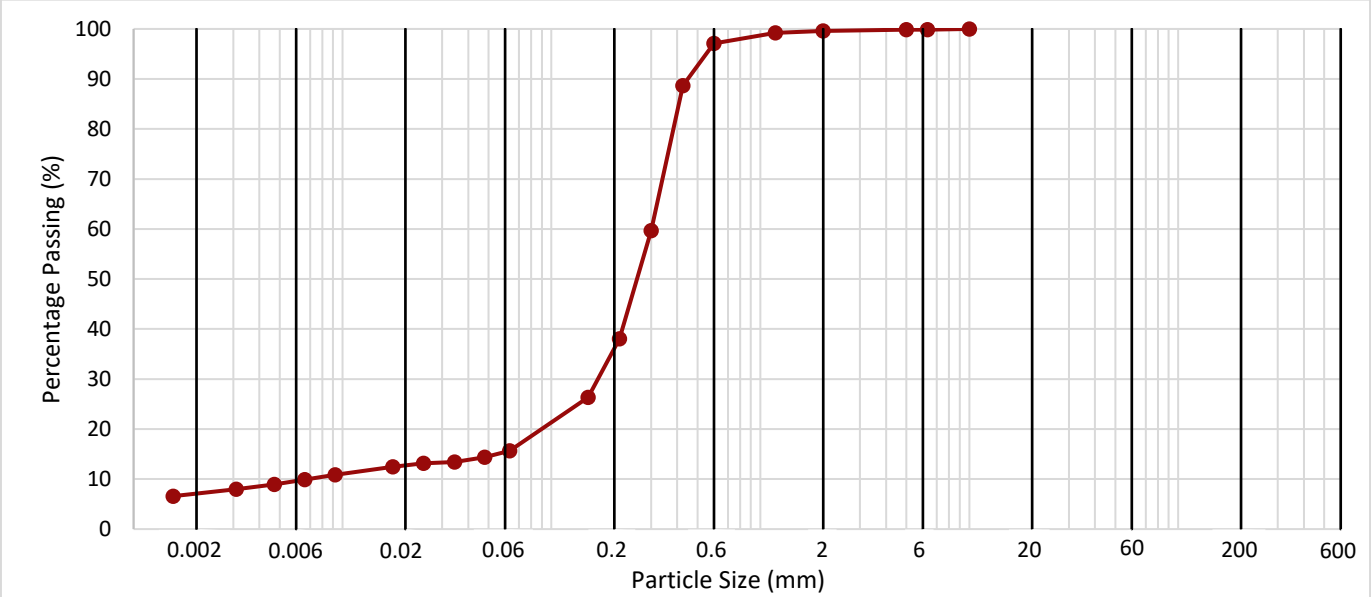
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	36.40 - 36.90	B	77	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0479	14	9	
	0.0344	13		
	0.0244	13		
	0.0174	12		
	0.0092	11		
	0.0066	10		
	0.0047	9		7
	0.0031	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	84
1.18	99	
0.600	97	
0.425	89	
0.300	60	
0.212	38	
0.150	26	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

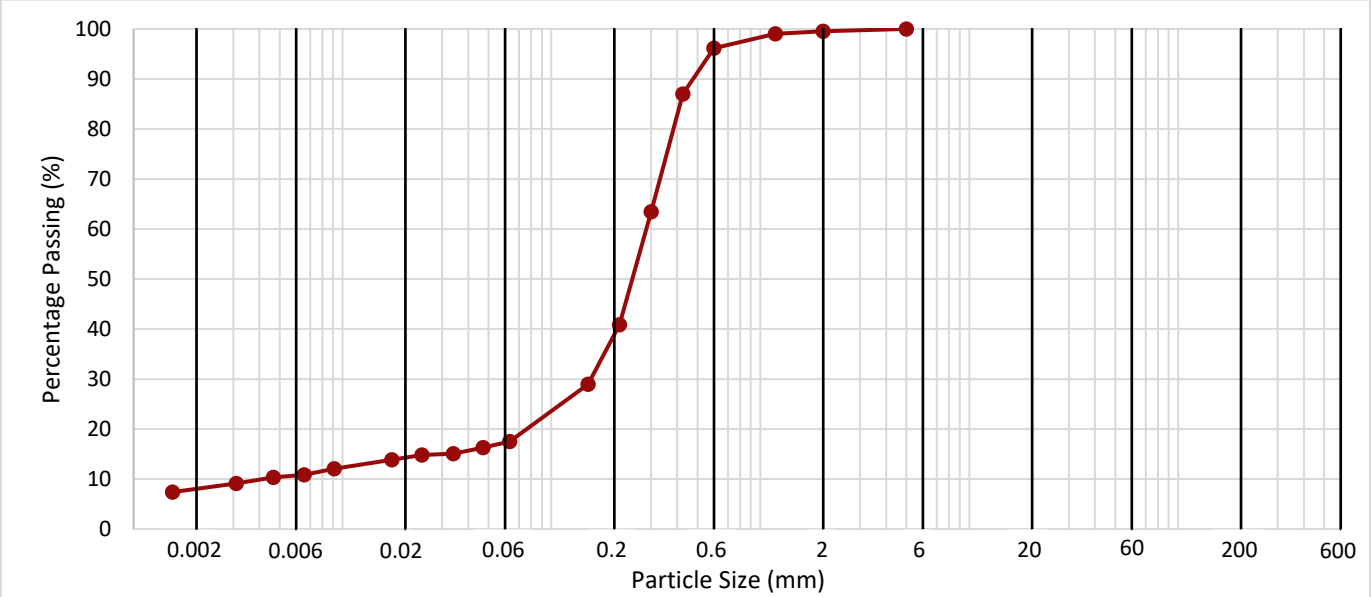
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	39.40 - 39.40	B	83	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0470	16	9	
	0.0339	15		
	0.0240	15		
	0.0172	14		
	0.0091	12		
	0.0066	11		8
	0.0047	10		
	0.0031	9		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	83
1.18	99	
0.600	96	
0.425	87	
0.300	63	
0.212	41	
0.150	29	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

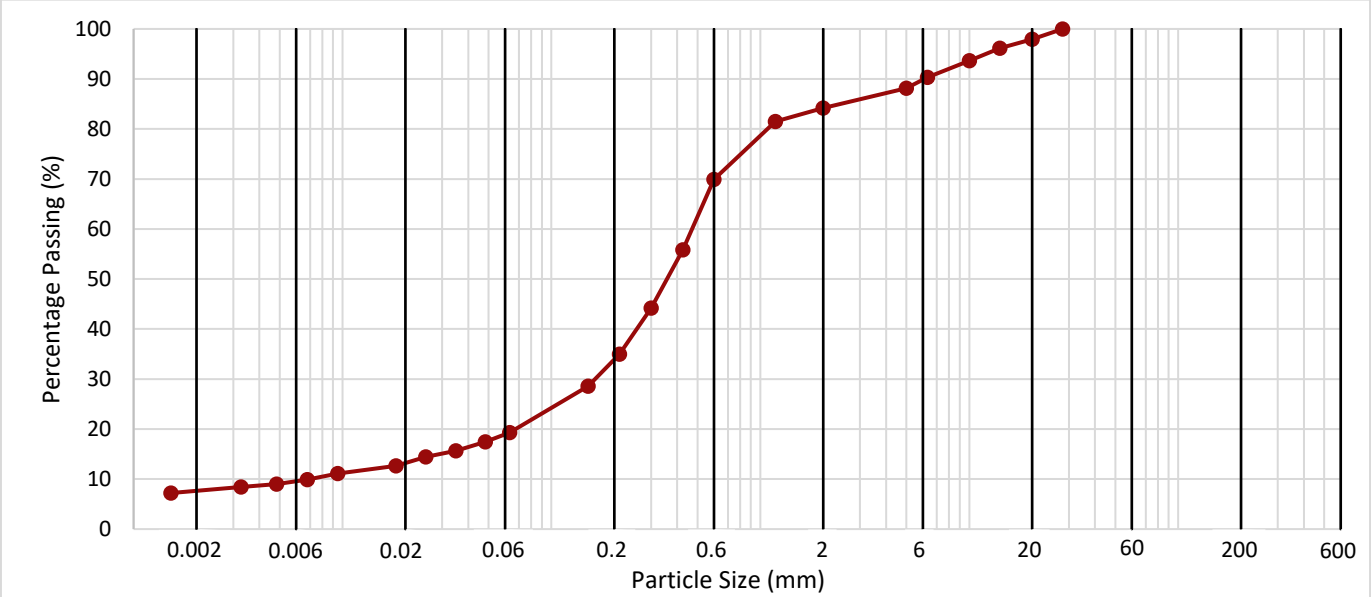
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	0.30	B	1	Dark greyish brown gravelly silty clayey SAND with occasional cinder, brick and concrete fragments. Gravel is brown, white and black angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0483	17	11	
	0.0349	16		
	0.0250	14		
	0.0180	13		8
	0.0095	11		
	0.0068	10		
	0.0048	9		
	0.0033	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	84	65
1.18	81	
0.600	70	
0.425	56	
0.300	44	
0.212	35	
0.150	29	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		16
125		
90		
63		
50		
37.5		
28	100	
20	98	
14	96	
10	94	
6.3	90	
5	88	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

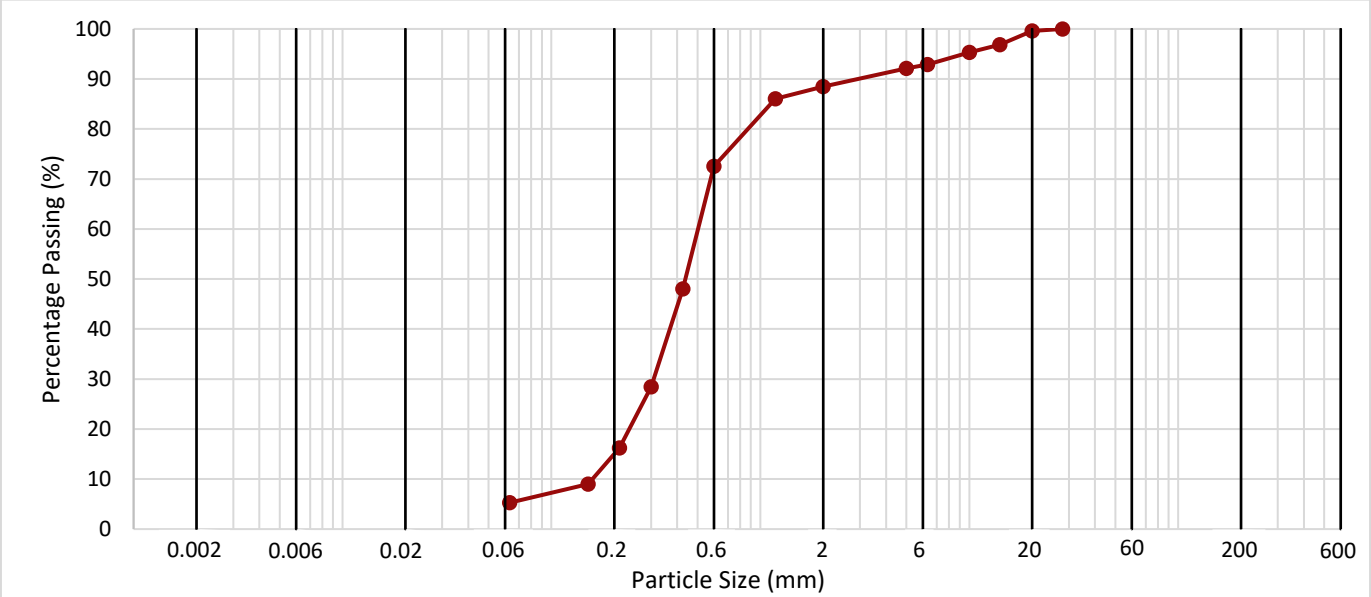
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	0.60 - 1.00	B	2	Yellowish brown gravelly slightly silty SAND with occasional firm greyish brown sandy clay lumps. Gravel is brown, black and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	88	83
1.18	86	
0.600	73	
0.425	48	
0.300	28	
0.212	16	
0.150	9	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		12
125		
90		
63		
50		
37.5		
28	100	
20	100	
14	97	
10	95	
6.3	93	
5	92	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

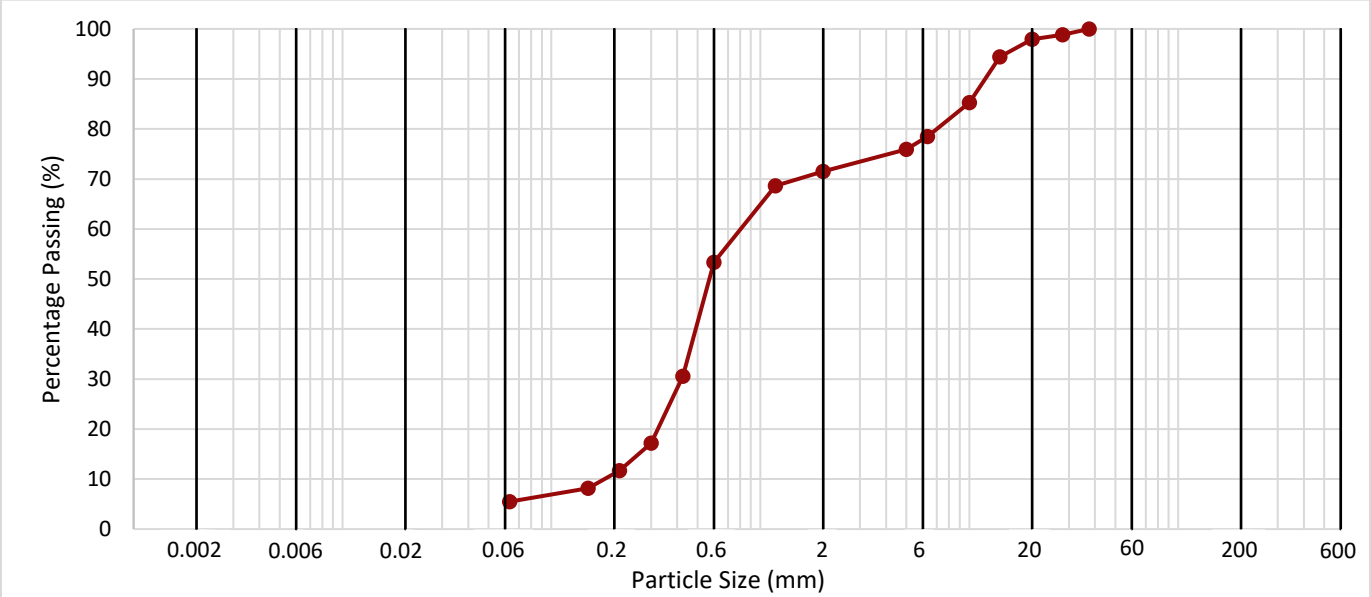
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	2.40 - 2.90	B	6	Brown very gravelly silty SAND with occasional black organic pockets. Gravel is black, white and brown subrounded to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	71	66
1.18	69	
0.600	53	
0.425	31	
0.300	17	
0.212	12	
0.150	8	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		29
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	94	
10	85	
6.3	79	
5	76	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

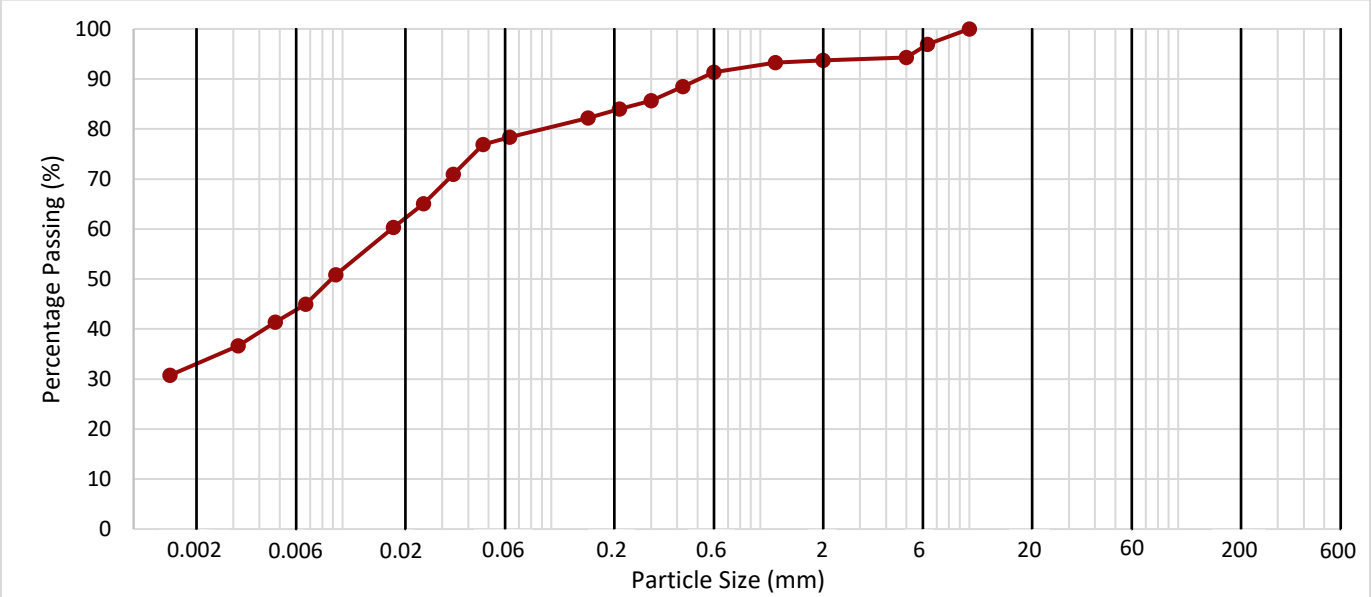
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	3.70 - 4.00	B	9	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is quartzite.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0470	77	45
	0.0339	71	
	0.0244	65	
	0.0175	60	Clay by Dry Mass (%)
	0.0093	51	
	0.0067	45	
	0.0048	41	33
	0.0032	37	
	0.0015	31	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	94	16
1.18	93	
0.600	91	
0.425	88	
0.300	86	
0.212	84	
0.150	82	
0.063	78	

Fines By Dry Mass (%)	
<0.063mm	78

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		6
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	97	
5	94	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

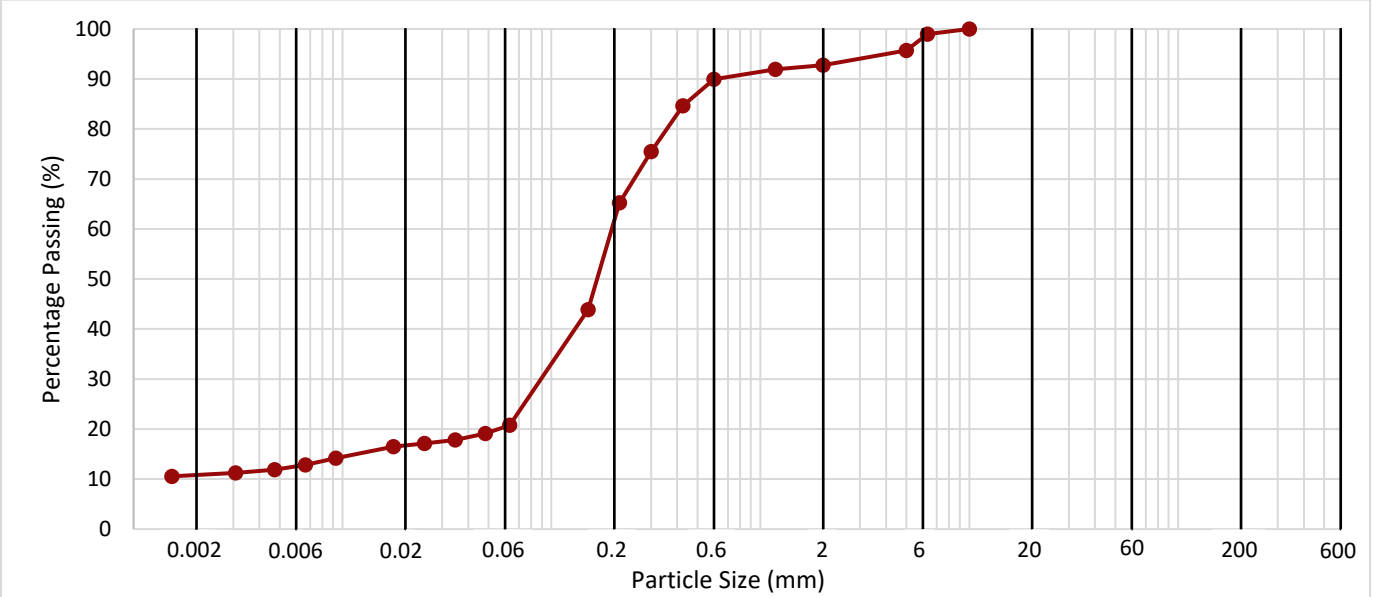
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	7.40 - 7.90	B	19	Very soft light olive brown slightly gravelly very sandy silty organic CLAY. Gravel is flint.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0483	19	10
	0.0346	18	
	0.0246	17	
	0.0176	16	Clay by Dry Mass (%)
	0.0093	14	
	0.0066	13	
	0.0047	12	11
	0.0031	11	
	0.0015	11	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	93	72
1.18	92	
0.600	90	
0.425	85	
0.300	75	
0.212	65	
0.150	44	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		7
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	96	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

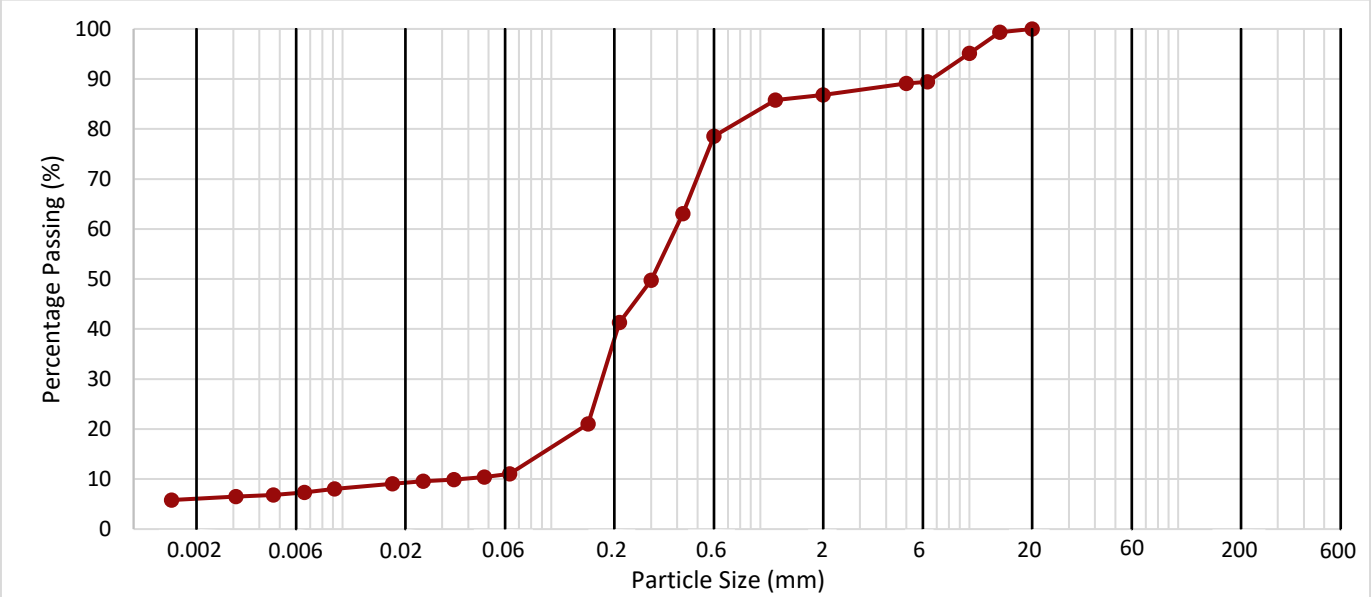
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	11.40 - 11.90	B	27	Yellowish brown and greyish brown gravelly silty clayey SAND. Gravel is black, white and brown angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0477	10	5	
	0.0341	10		
	0.0243	10		
	0.0174	9		
	0.0092	8		
	0.0066	7		6
	0.0047	7		
	0.0031	6		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	87	76
1.18	86	
0.600	79	
0.425	63	
0.300	50	
0.212	41	
0.150	21	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		13
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	95	
6.3	89	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

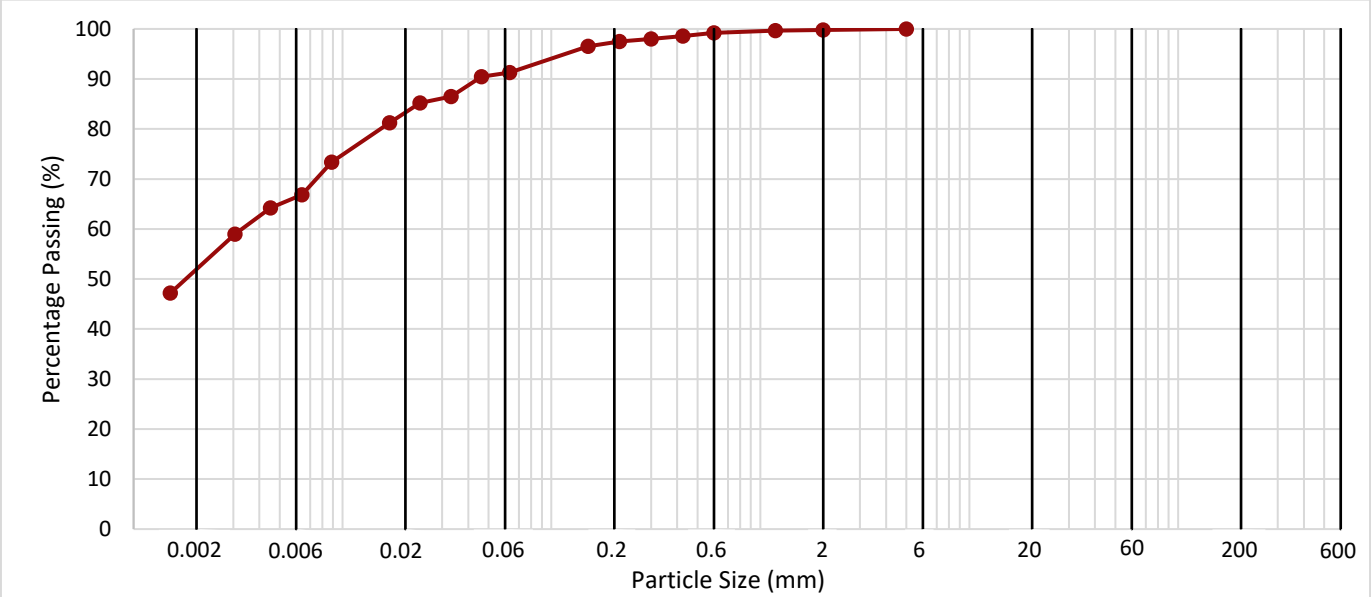
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	14.40 - 15.00	B	33	Soft grey slightly sandy silty organic CLAY with occasional dark grey mottling, and rare orange staining.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0463	90	40
0.0331	86	
0.0235	85	
0.0168	81	Clay by Dry Mass (%)
0.0089	73	
0.0064	67	
0.0045	64	51
0.0031	59	
0.0015	47	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	9
1.18	100	
0.600	99	
0.425	99	
0.300	98	
0.212	97	
0.150	97	
0.063	91	

Fines By Dry Mass (%)	
<0.063mm	91

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

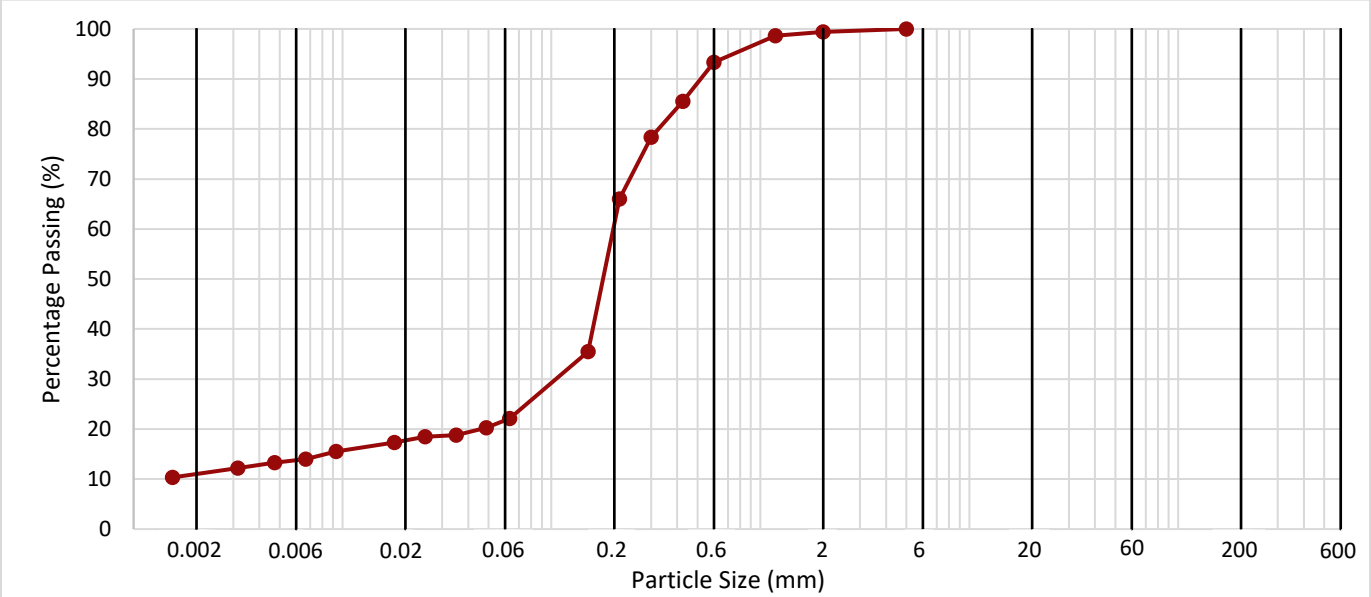
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	17.40 - 17.90	B	39	Dark grey silty clayey slightly organic SAND with rare orange staining.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0488	20	11	
	0.0350	19		
	0.0248	18		
	0.0177	17		
	0.0093	15		
	0.0067	14		
	0.0047	13		11
	0.0032	12		
	0.0015	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	77
1.18	99	
0.600	93	
0.425	86	
0.300	78	
0.212	66	
0.150	35	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

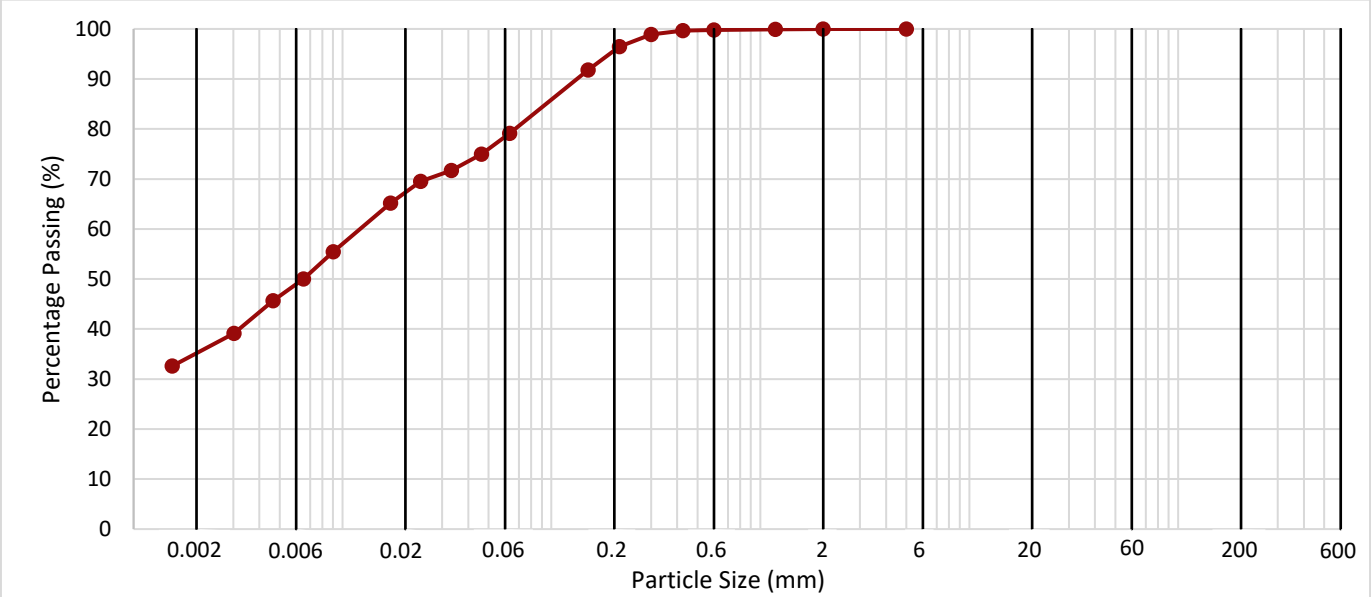
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	19.60 - 19.80	B	43	Firm dark bluish grey slightly sandy silty CLAY with occasional olive mottling, and rare orange staining.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0463	75	44
0.0332	72	
0.0236	70	
0.0170	65	Clay by Dry Mass (%)
0.0090	55	
0.0065	50	
0.0047	46	35
0.0030	39	
0.0015	33	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	21
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	96	
0.150	92	
0.063	79	

Fines By Dry Mass (%)	
<0.063mm	79

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

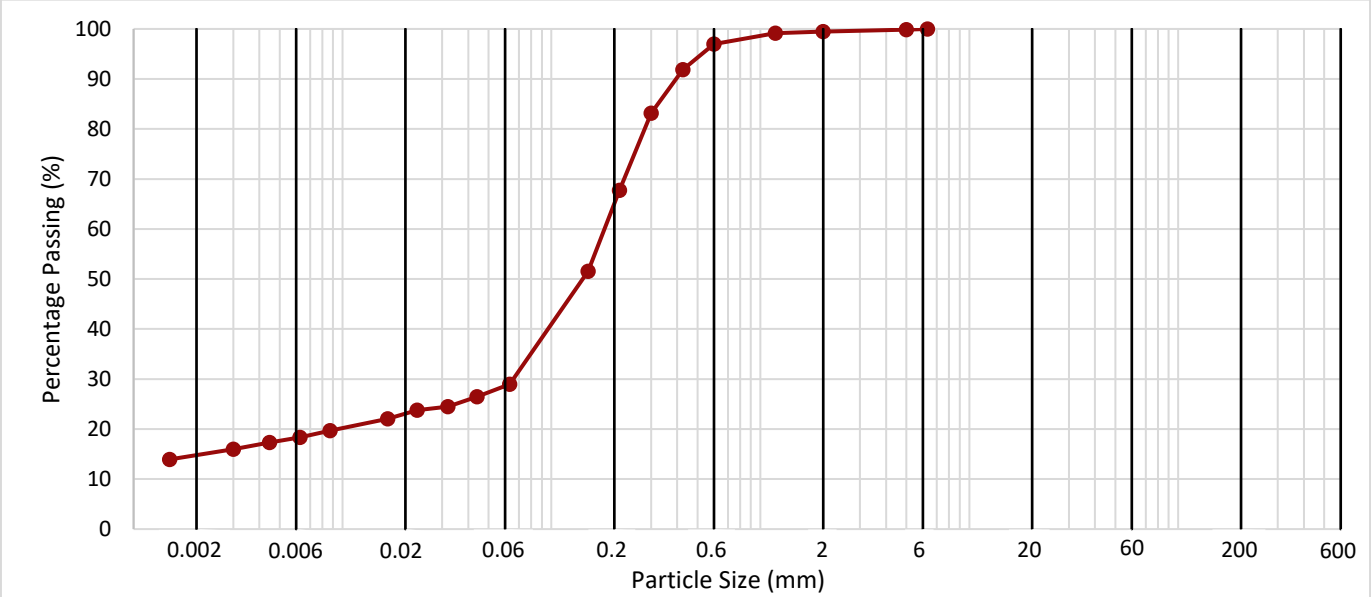
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	22.40 - 22.90	B	50	Very soft dark olive grey very sandy silty organic CLAY.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0441	26	14
	0.0320	24	
	0.0228	24	
	0.0164	22	Clay by Dry Mass (%)
	0.0087	20	
	0.0062	18	
	0.0045	17	15
	0.0030	16	
	0.0015	14	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	71
1.18	99	
0.600	97	
0.425	92	
0.300	83	
0.212	68	
0.150	52	
0.063	29	

Fines By Dry Mass (%)	
<0.063mm	29

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

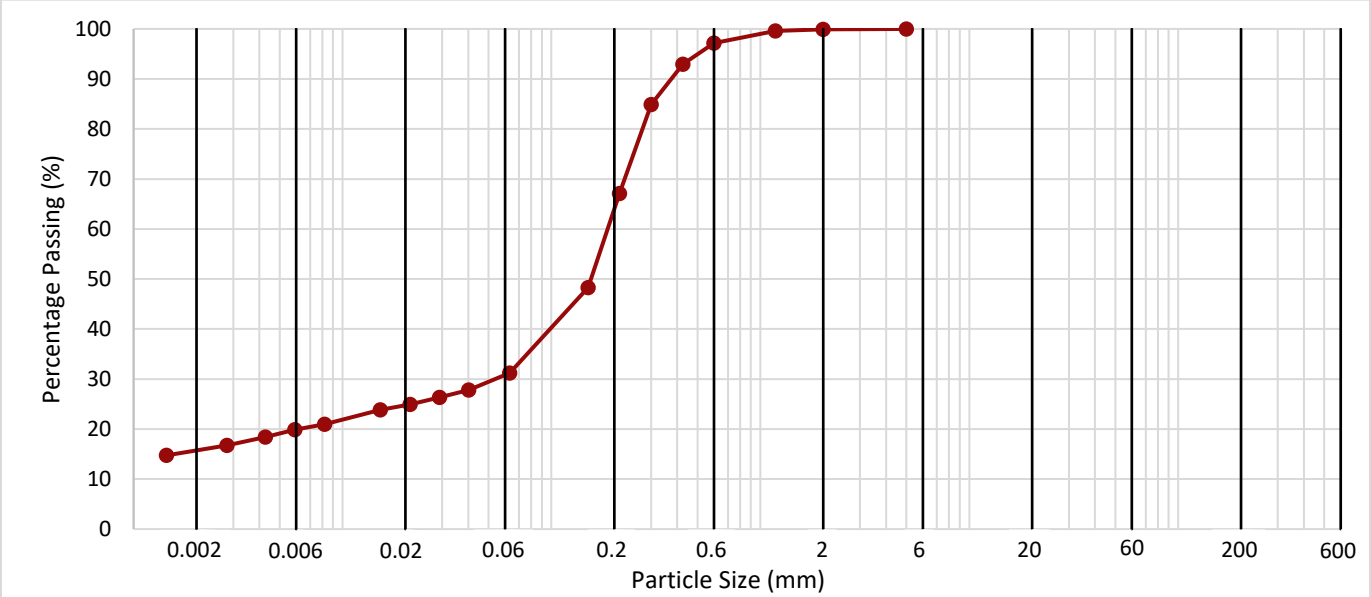
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	24.40 - 24.90	B	54	Dark olive grey very sandy silty organic CLAY.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0402	28	15
	0.0291	26	
	0.0211	25	
	0.0152	24	Clay by Dry Mass (%)
	0.0082	21	
	0.0059	20	
	0.0043	18	16
	0.0028	17	
	0.0014	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	69
1.18	100	
0.600	97	
0.425	93	
0.300	85	
0.212	67	
0.150	48	
0.063	31	

Fines By Dry Mass (%)	
<0.063mm	31

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

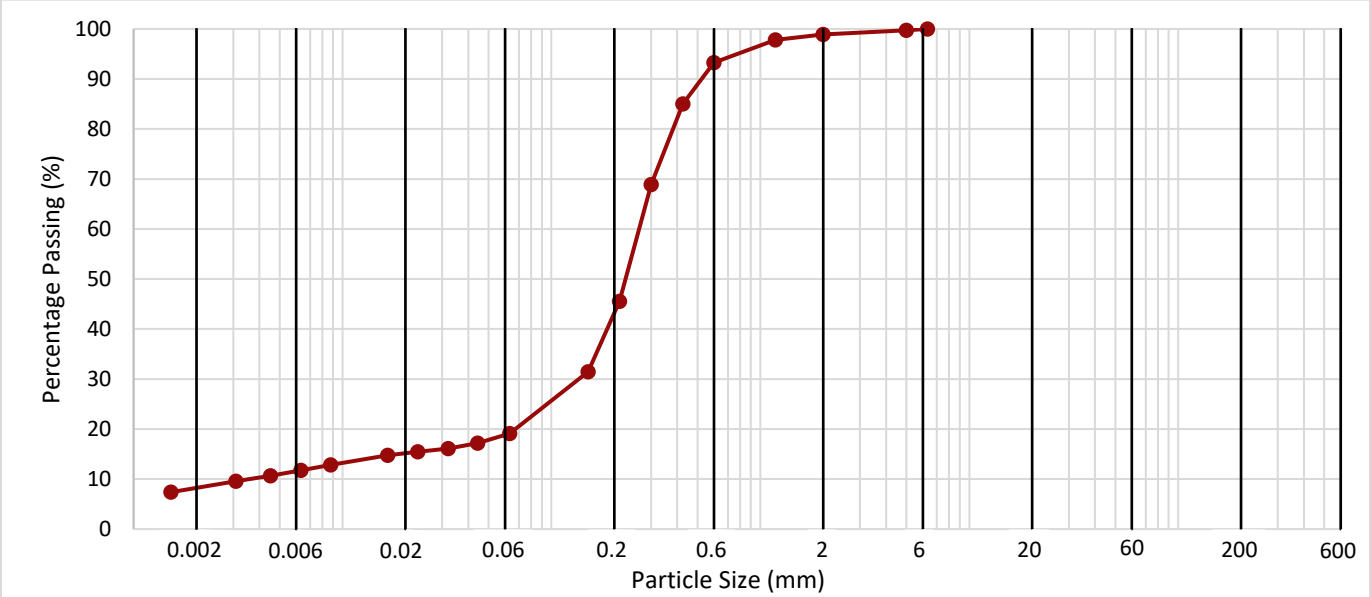
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	27.40 - 27.90	B	60	Dark grey silty clayey organic SAND locally oxidised to olive.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0444	17	11	
0.0321	16		
0.0230	15		
0.0164	15		
0.0088	13		
0.0063	12		8
0.0045	11		
0.0031	10		
0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	93	
0.425	85	
0.300	69	
0.212	46	
0.150	31	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

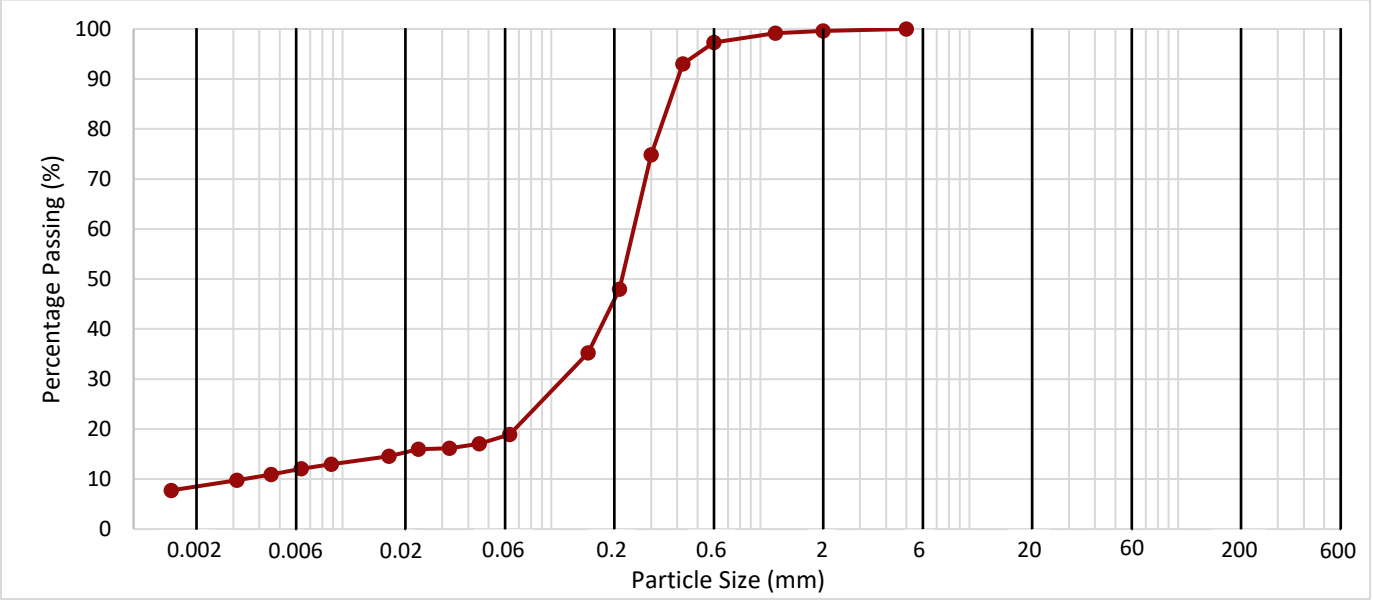
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	30.40 - 30.90	B	66	Dark olive grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0452	17	11	
	0.0325	16		
	0.0231	16		
	0.0167	15		8
	0.0088	13		
	0.0063	12		
	0.0045	11		
	0.0031	10		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	81
1.18	99	
0.600	97	
0.425	93	
0.300	75	
0.212	48	
0.150	35	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

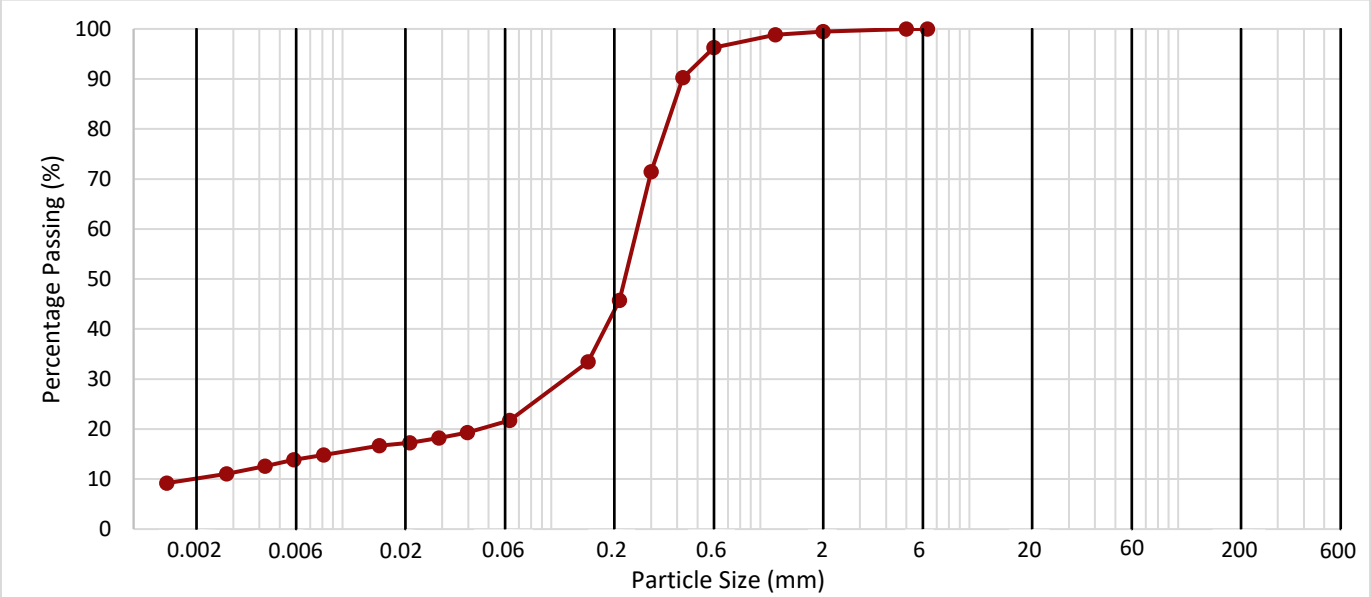
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	33.40 - 33.90	B	72	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0396	19	12	
	0.0289	18		
	0.0210	17		
	0.0150	17		
	0.0081	15		
	0.0059	14		
	0.0043	13		10
	0.0028	11		
	0.0014	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	77
1.18	99	
0.600	96	
0.425	90	
0.300	71	
0.212	46	
0.150	33	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

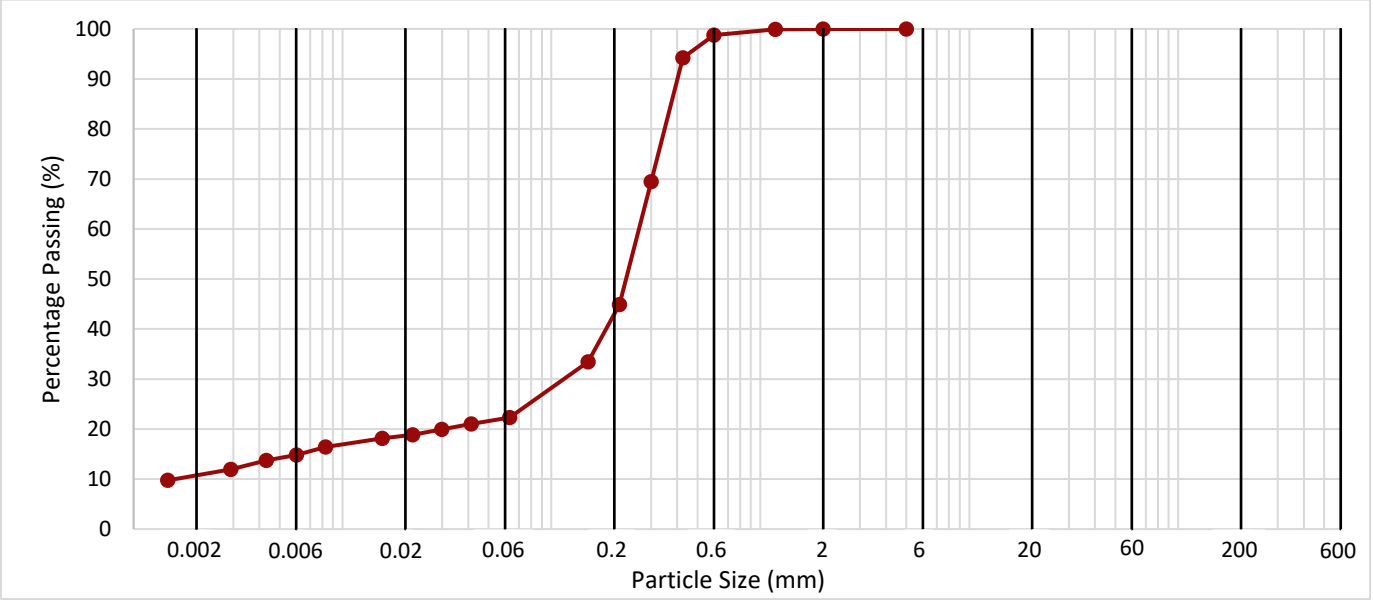
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	36.40 - 36.90	B	78	Dark olive grey silty clayey slighlty organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0413	21	11
	0.0299	20	
	0.0216	19	
	0.0155	18	Clay by Dry Mass (%)
	0.0083	16	
	0.0060	15	
	0.0043	14	11
	0.0029	12	
	0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	78
1.18	100	
0.600	99	
0.425	94	
0.300	69	
0.212	45	
0.150	33	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

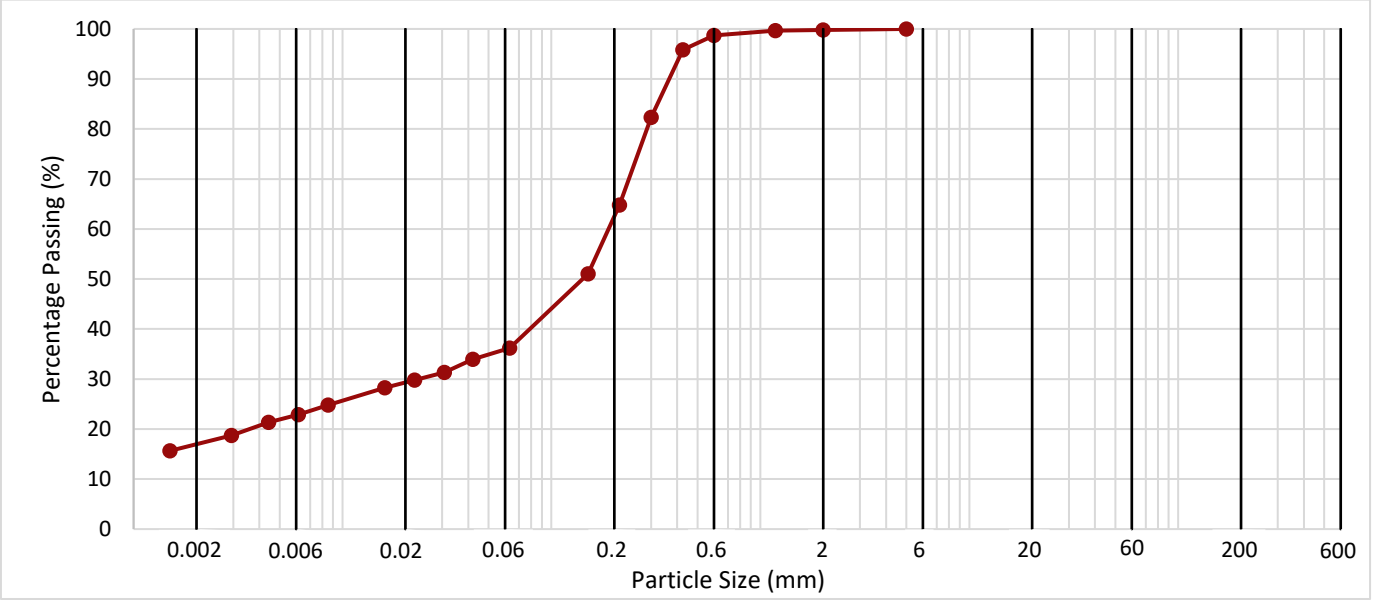
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	39.40 - 39.90	B	84	Dark olive grey sandy silty organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0420	34	19	
0.0307	31		
0.0221	30		
0.0159	28		
0.0085	25		
0.0062	23		
0.0044	21		17
0.0029	19		
0.0015	16		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	64
1.18	100	
0.600	99	
0.425	96	
0.300	82	
0.212	65	
0.150	51	
0.063	36	

Fines By Dry Mass (%)	
<0.063mm	36

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC05	3.00 - 3.45	UT	10	66.6	1.62	0.97	99	32	16			Very soft (Very low strength) very dark grey slightly organic CLAY with black mottling, and rare decayed roots.
BHC05	13.00 - 13.45	UT	30	31.4	2.03	1.54	299	68	34			Soft (Low strength) very dark grey silty CLAY with olive grey and dark yellowish brown mottling, and fine to medium sand pockets, and rare fine to medium flint gravel.
BHC05	18.00 - 18.45	UT	39	21.3	2.26	1.86	399	114	57			Dark grey very sandy silty CLAY.
BHC05	20.00 - 20.45	UT	44	20.7	2.15	1.78	399	197	99			Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.
BHC05	20.00 - 20.45	UT	44	21.5	2.05	1.69	598	282	141			Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.
BHC06B	21.00 - 21.45	UT	44	26.4	2.05	1.62	399	187	94			Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.
BHC06B	21.00 - 21.45	UT	44	27.1	2.05	1.61	598	282	141			Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC07	4.00 - 4.45	UT	10	59.7	1.75	1.10	101	17	9			Very soft (Extremely low strength) very dark grey organic CLAY.
BHC07	20.00 - 20.45	UT	44	22.7	2.10	1.71	598	149	75			Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.
BHC07	20.00 - 20.45	UT	44	22.7	2.10	1.71	598	149	75			Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

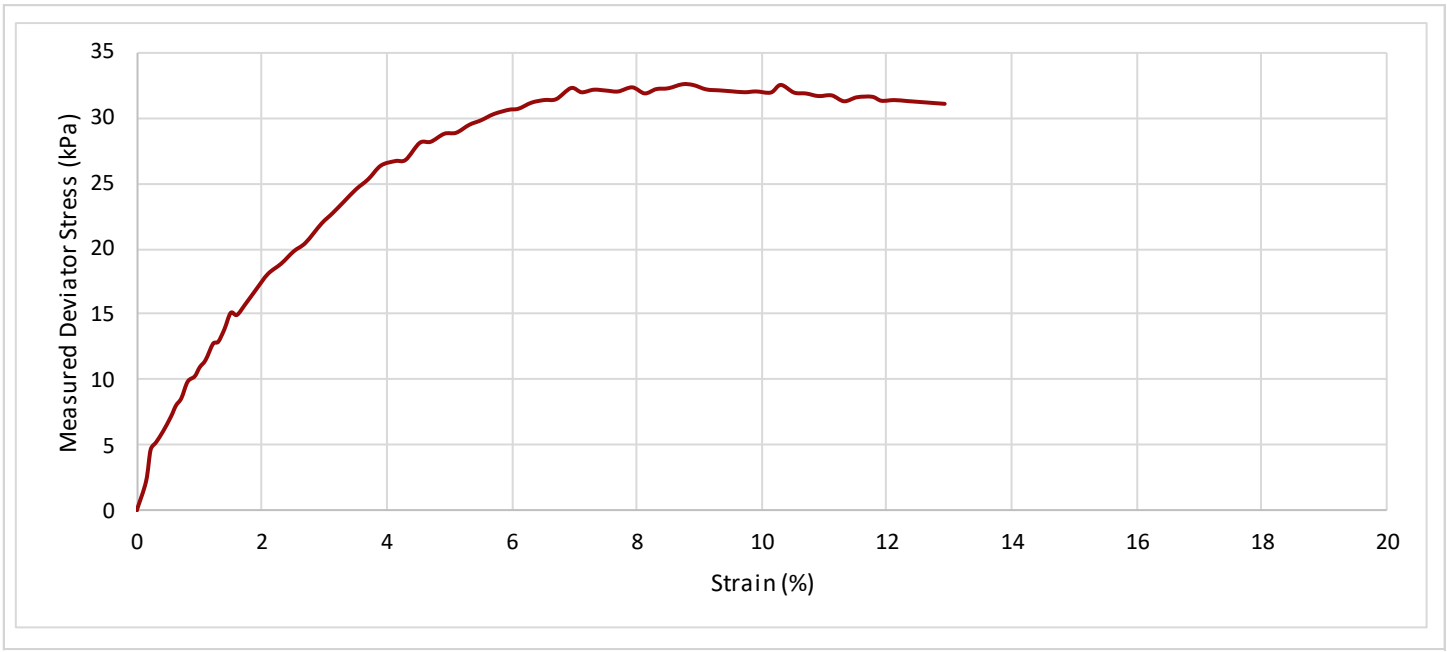
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC05	3.00 - 3.45	UT	10	Very soft (Very low strength) very dark grey slightly organic CLAY with black mottling, and rare decayed roots.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 3.06	200.4	101.4	2628	66.6	1.62	0.97

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	99	8.7	0.6	\	32	16		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

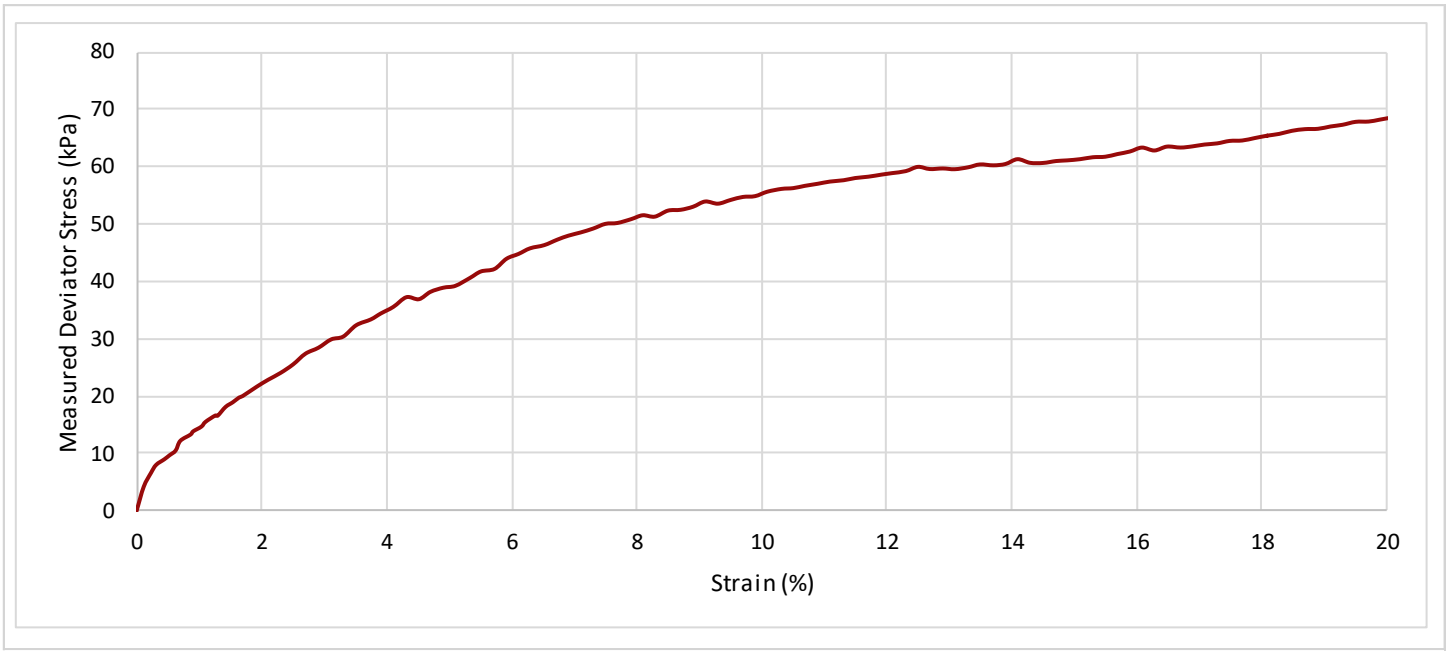
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC05	13.00 - 13.45	UT	30	Soft (Low strength) very dark grey silty CLAY with olive grey and dark yellowish brown mottling, and fine to medium sand pockets, and rare fine to medium flint gravel.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 13.05	162.5	101.4	2656	31.4	2.03	1.54

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	299	20.1	1.1	\	68	34		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

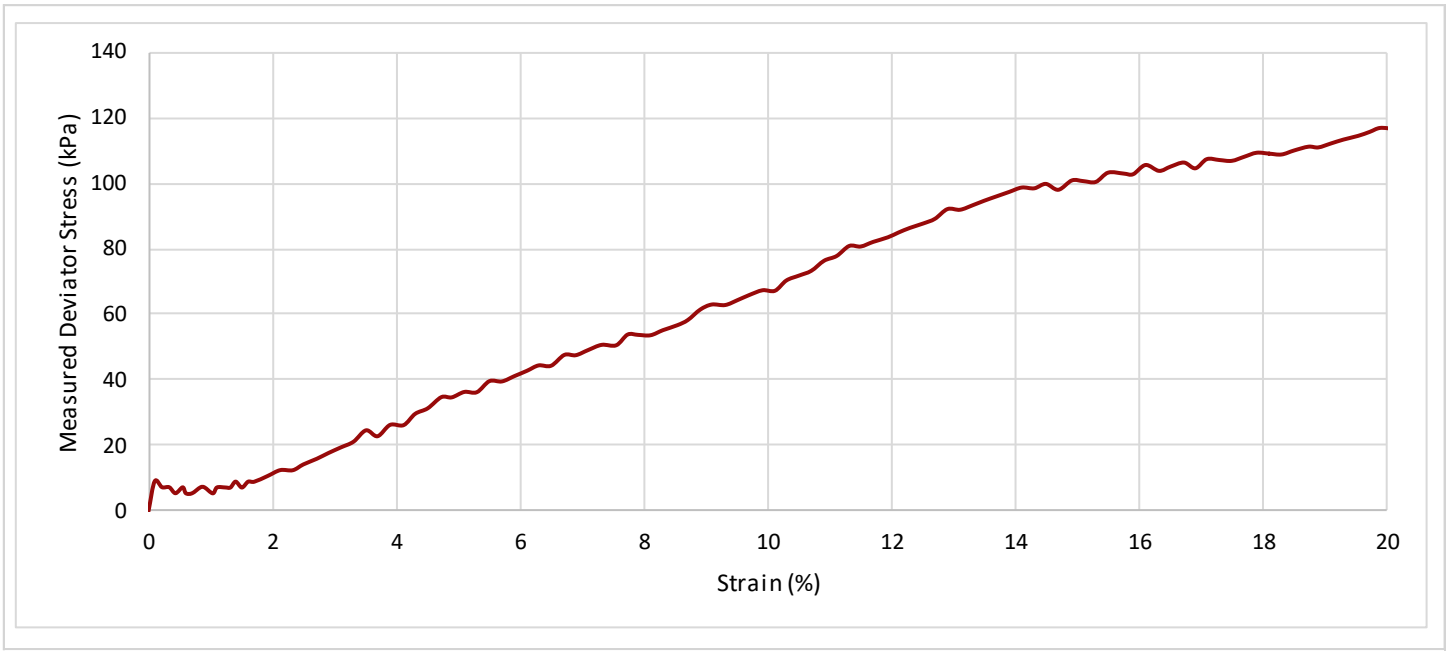
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC05	18.00 - 18.45	UT	39	Dark grey very sandy silty CLAY.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 18.04	75.8	34.9	164	21.3	2.26	1.86

TEST INFORMATION	Rate of Strain	1.2	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	399	19.9	3.3	\	114	57		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

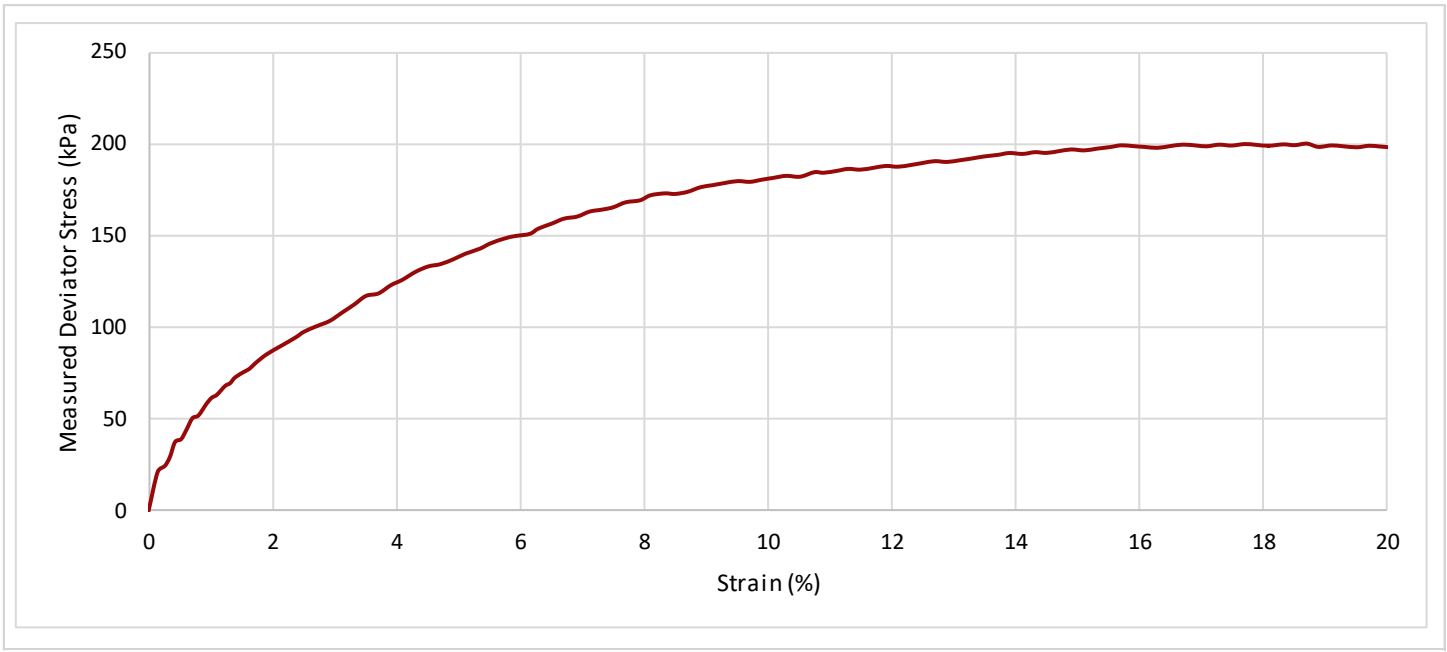
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC05	20.00 - 20.45	UT	44	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	Sample changes from clay to sand - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 18.04	77.0	36.9	177	20.7	2.15	1.78

TEST INFORMATION	Rate of Strain	1.5	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	399	18.7	3.0	\	197	99		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

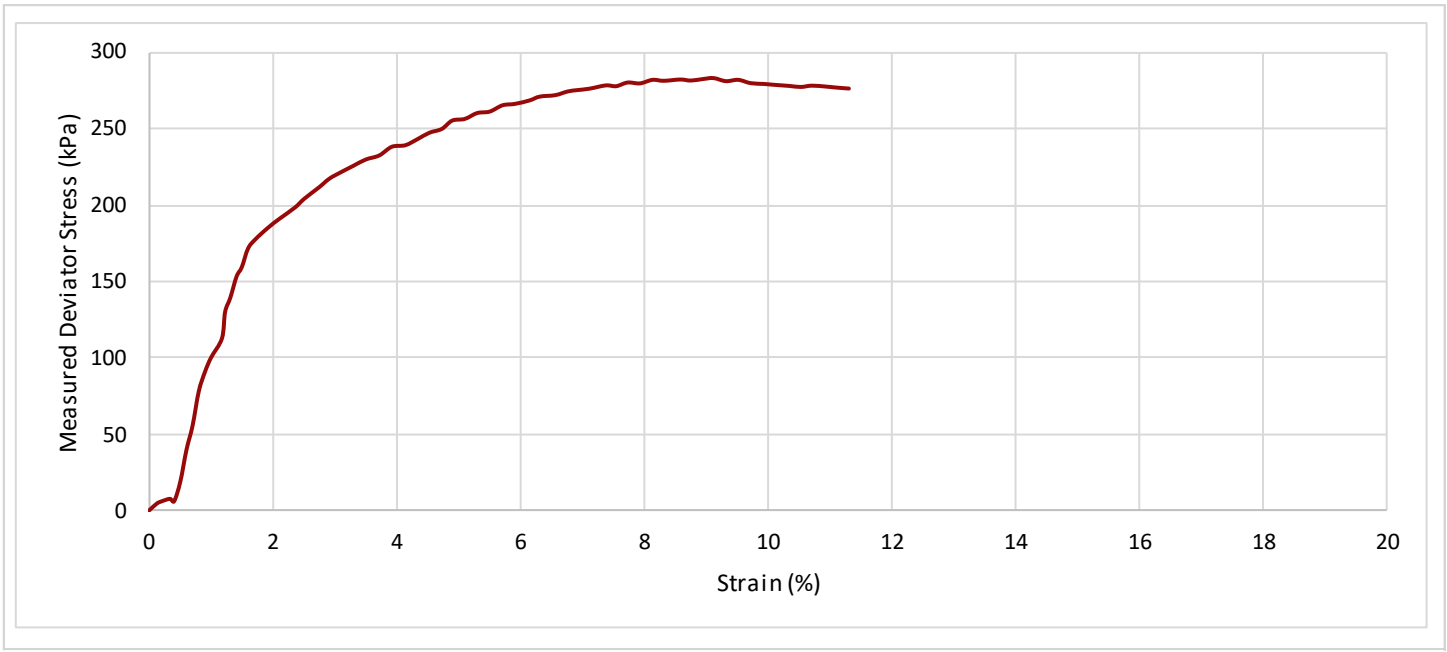
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC05	20.00 - 20.45	UT	44	Stiff (High strength) slightly fissured dark grey sandy silty CLAY with occasional silt/fine sand pockets.	Sample changes from clay to sand - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 20.05	76.7	37.1	170	21.5	2.05	1.69

TEST INFORMATION	Rate of Strain	1.2	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	9.1	1.7	\	282	141		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

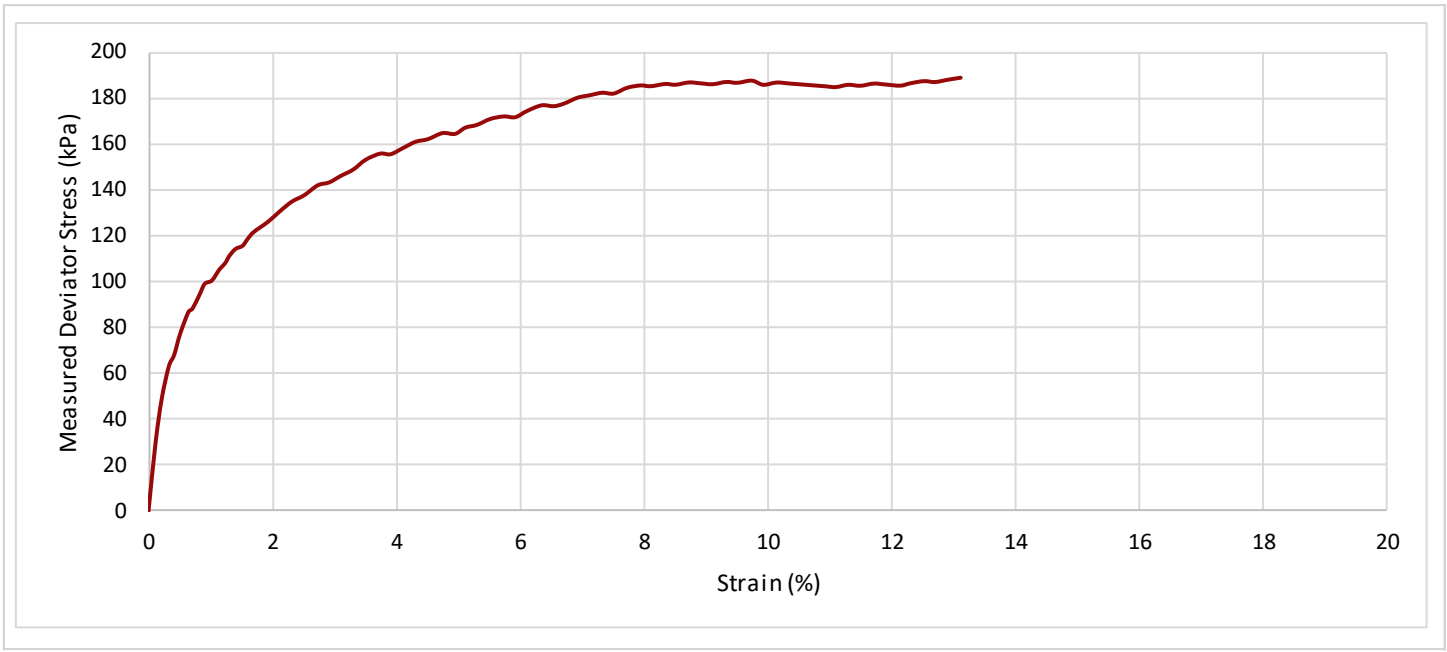
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC06B	21.00 - 21.45	UT	44	Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.	Sample changes from clay to sand. U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 21.03	76.8	37.5	174	26.4	2.05	1.62

TEST INFORMATION	Rate of Strain	1.4	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	399	13.1	2.2	\	187	94		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

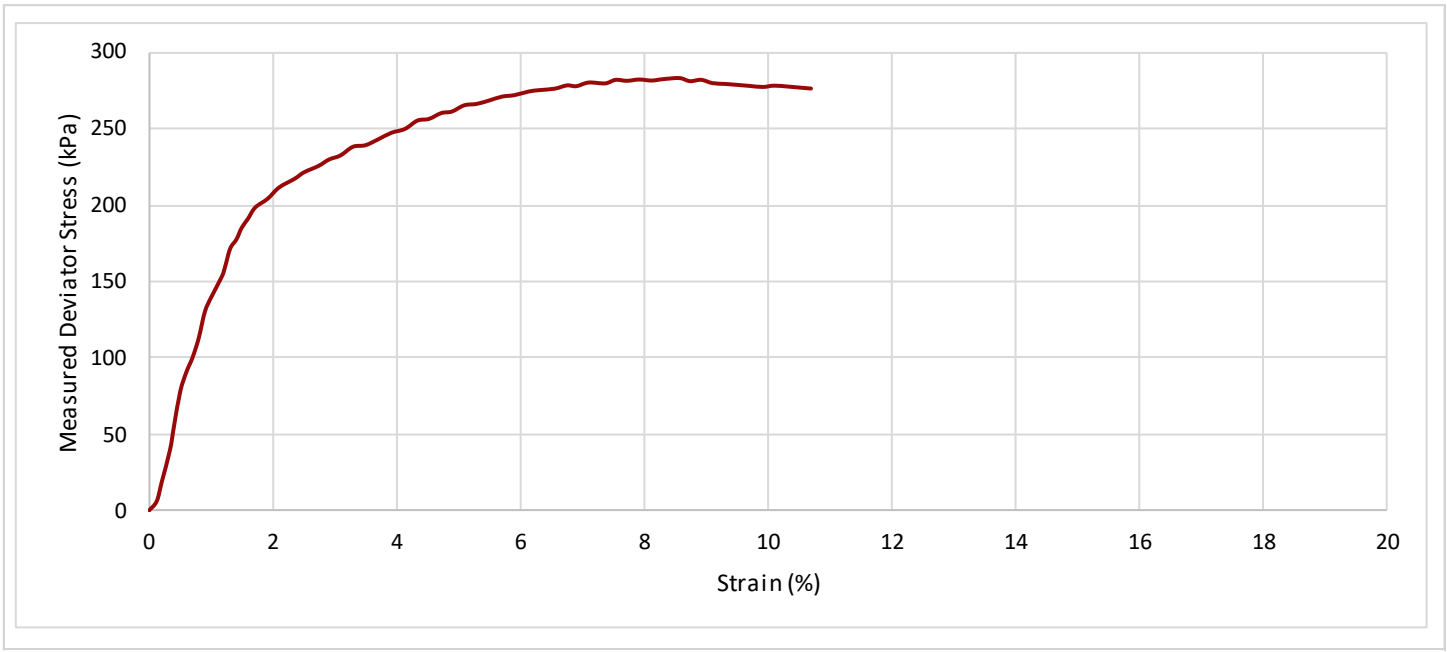
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

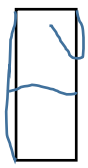
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC06B	21.00 - 21.45	UT	44	Stiff (High strength) bluish grey slightly sandy organic CLAY with occasional olive grey and dark grey mottling. Sand is fine.	Sample changes from clay to sand. U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 21.03	76.7	37.1	170	27.1	2.05	1.61

TEST INFORMATION — Rate of Strain 1.1 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	8.6	1.6	\	282	141		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

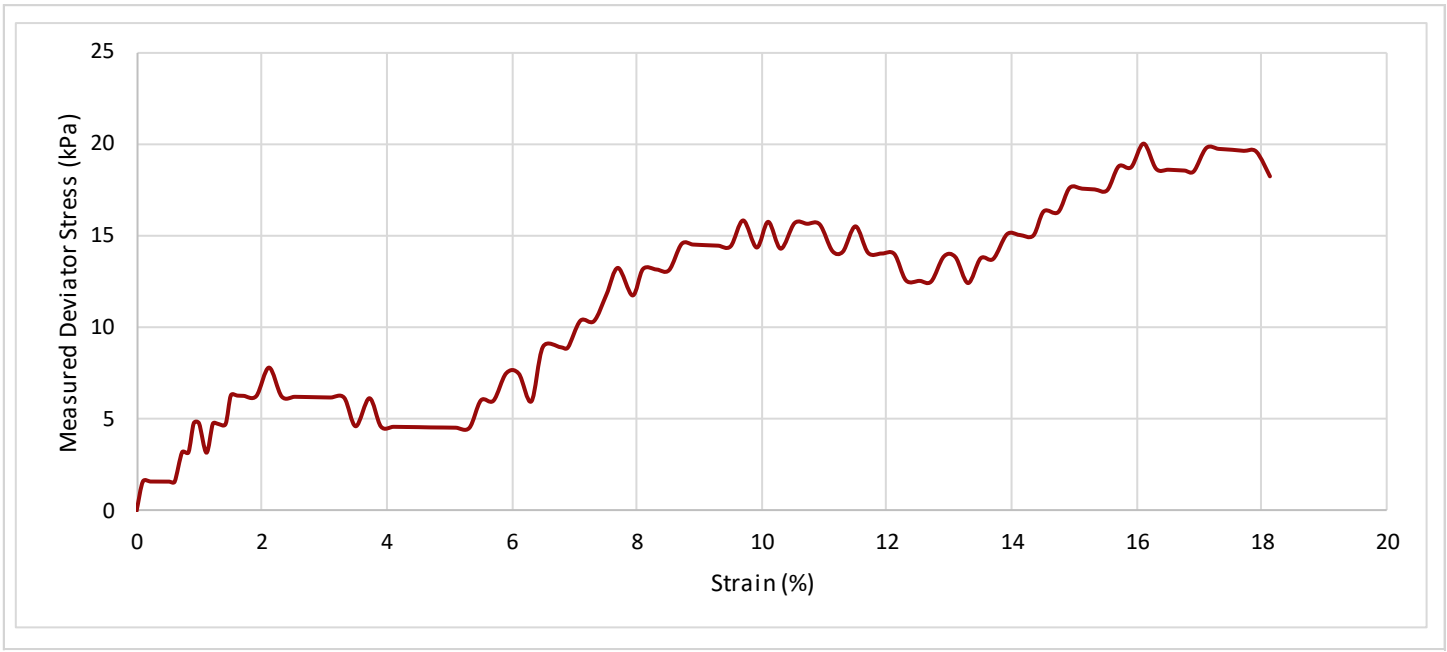
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC07	4.00 - 4.45	UT	10	Very soft (Extremely low strength) very dark grey organic CLAY.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 4.06	76.1	37.0	143	59.7	1.75	1.10

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	101	16.1	2.6	\	17	9		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

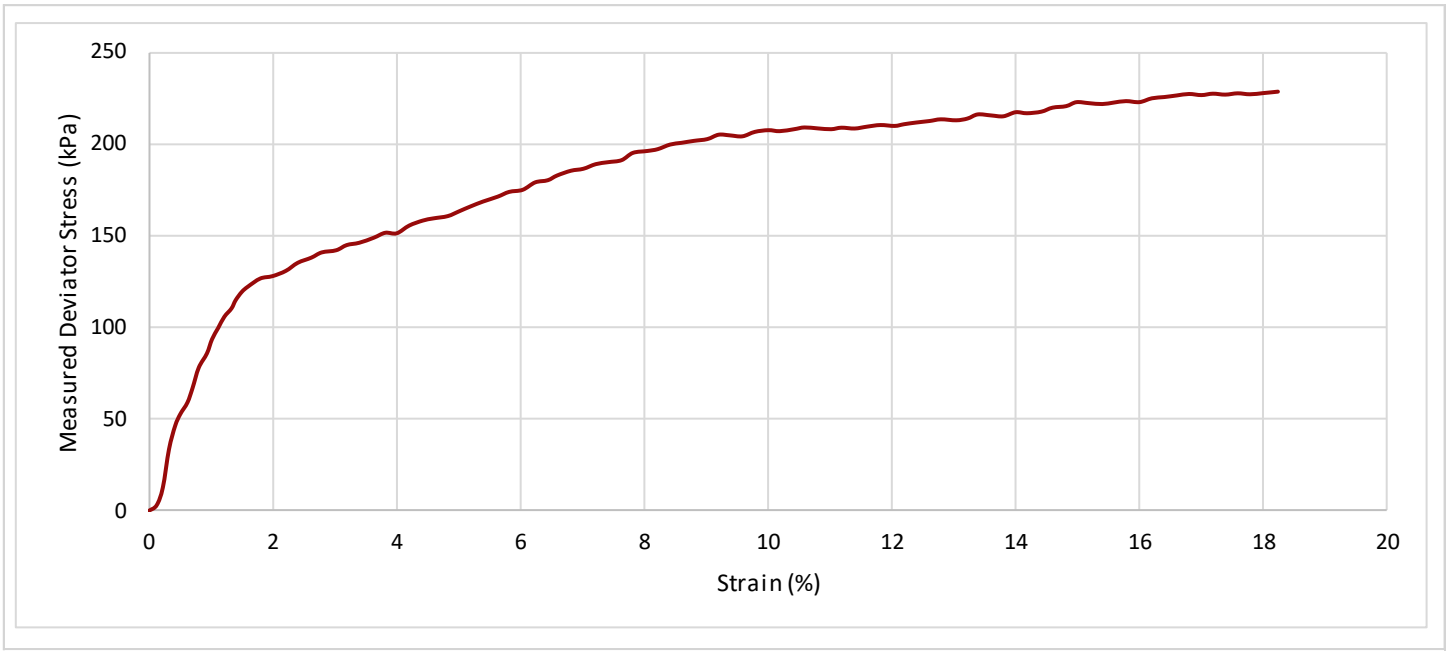
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC07	20.00 - 20.45	UT	44	Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 20.00	76.6	37.0	178	22.9	2.16	1.76

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	399	18.3	2.9	\	226	113		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

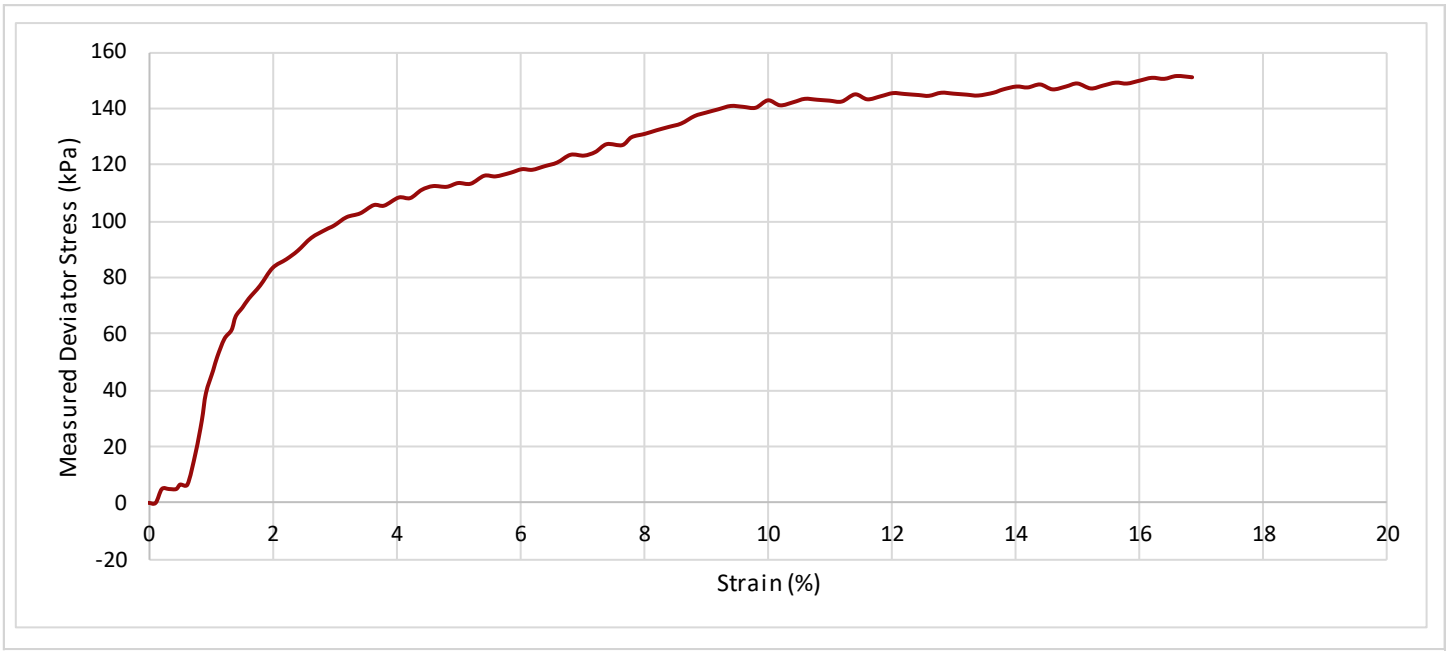
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC07	20.00 - 20.45	UT	44	Stiff (High strength) grey slightly sandy silty organic CLAY with rare dark grey mottling. Sand is fine.	Sample changes from clay to sand - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 20.00	76.6	36.9	172	22.7	2.10	1.71

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	16.6	2.7	\	149	75		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

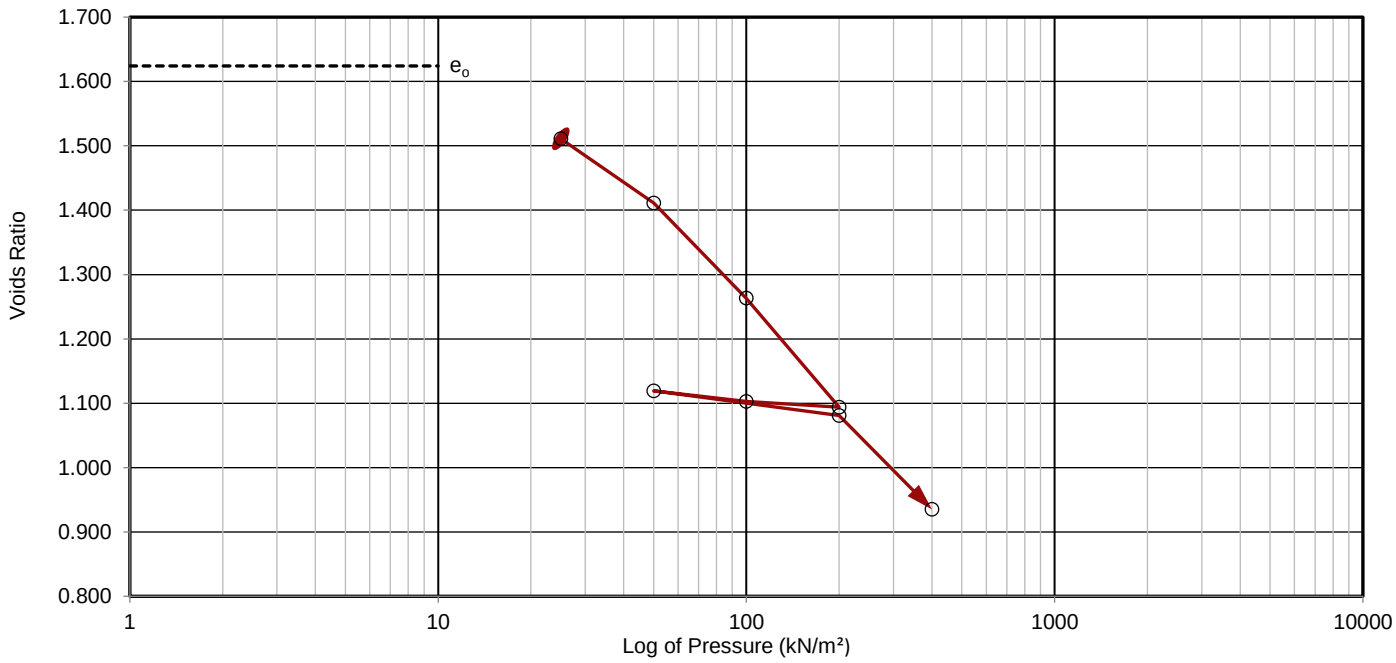
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC05	3.00 - 3.45	UT	10	3.02 3.02	60.6	Very soft (Very low strength) very dark grey slightly organic CLAY with black mottling, and rare decayed roots.	Specimen dried at 50°C due to high organic content.

Initial Conditions			
Height	mm	18.96	
Diameter	mm	75.01	
Wet Weight	g	137.45	
Water Content	%	60.6	
Bulk Density	Mg/m³	1.64	
Particle Density		Assumed	2.68
Voids Ratio		1.624	
Degree of Saturation	%	100	
Swelling Pressure	kN/m²		
Dry Density	Mg/m³	1.02	

Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
1	25	0.819	1.511	0.69	1.70	22	0.65
2	50	1.541	1.411	0.26	1.60	22	0.25
3	100	2.609	1.263	0.28	1.20	22	0.27
4	200	3.831	1.094	0.28	0.75	22	0.27
5	100	3.765	1.103		0.04	22	
6	50	3.650	1.119		0.15	22	
7	200	3.928	1.081	0.94	0.12	21	0.91
8	400	4.982	0.935	0.29	0.35	21	0.28



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

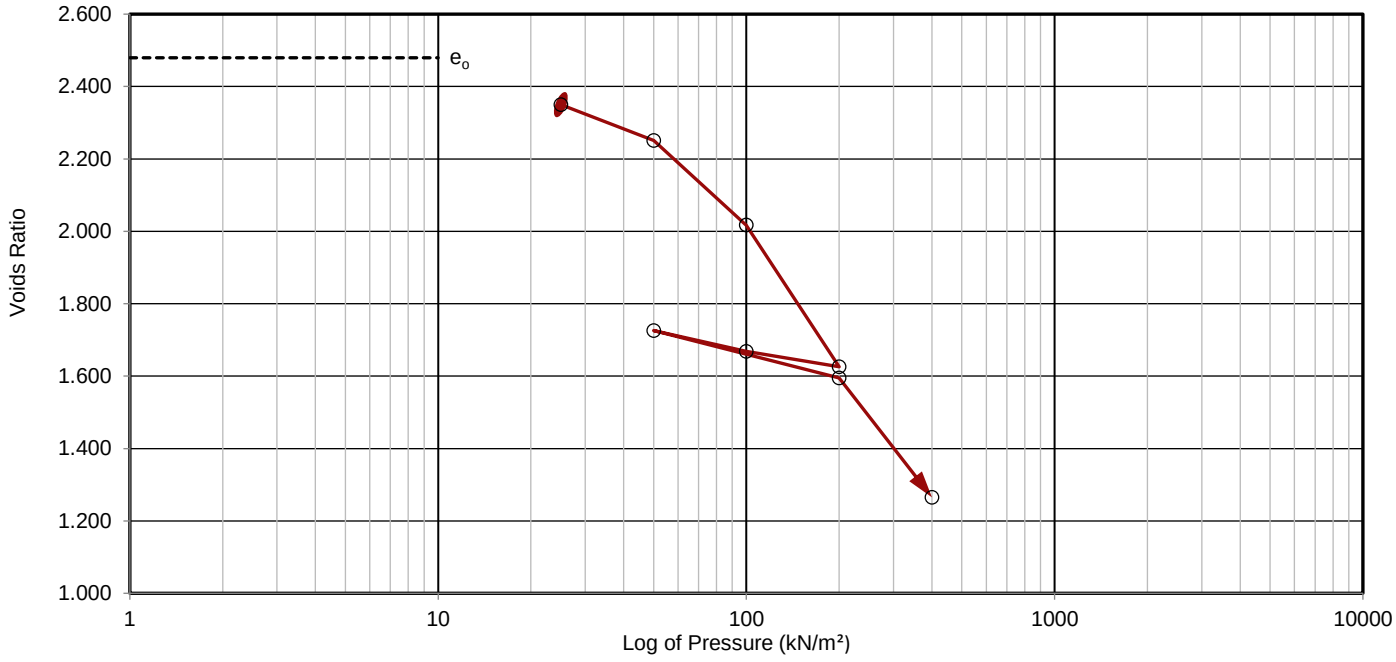
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
BHC07	4.00 - 4.45	UT	10	4.02 Horizontal	123	Very soft very dark grey slightly sandy slightly clayey amorphous PEAT with occasional grey mottling, and rare shell debris.	

Initial Conditions			
Height	mm	19.01	
Diameter	mm	75.02	
Wet Weight	g	108.86	
Water Content	%	123	
Bulk Density	Mg/m³	1.30	
Particle Density		Assumed	2.02
Voids Ratio		2.479	
Degree of Saturation	%	100	
Swelling Pressure	kN/m²		
Dry Density	Mg/m³	0.58	

Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
1	25	0.705	2.350	1.90	1.50	22	1.80
2	50	1.247	2.251	0.13	1.20	22	0.12
3	100	2.525	2.017	0.06	1.40	22	0.06
4	200	4.664	1.626	0.07	1.30	22	0.07
5	100	4.433	1.668		0.16	22	
6	50	4.119	1.726		0.43	22	
7	200	4.832	1.595	0.81	0.32	21	0.78
8	400	6.637	1.265	0.14	0.64	21	0.14



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

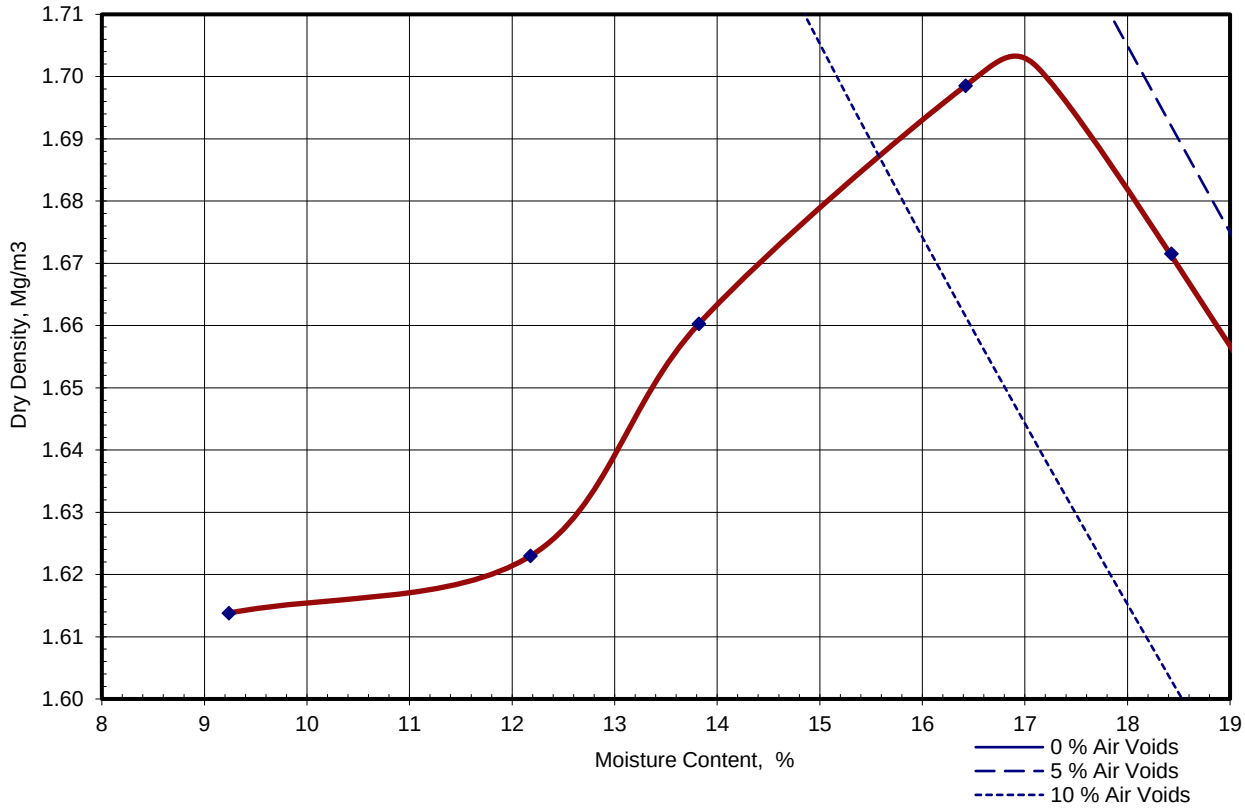
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC05	0.40 - 0.60	B	1	9.2	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular lightweight, degradeable gravel sized fragments, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	3.5 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	9.8 %	Single or Separate Samples	Single
Grading Zone	4	Particle Density (Assumed)	2.65
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**1.70 Mg/m³**	**Optimum Water Content**	**17 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

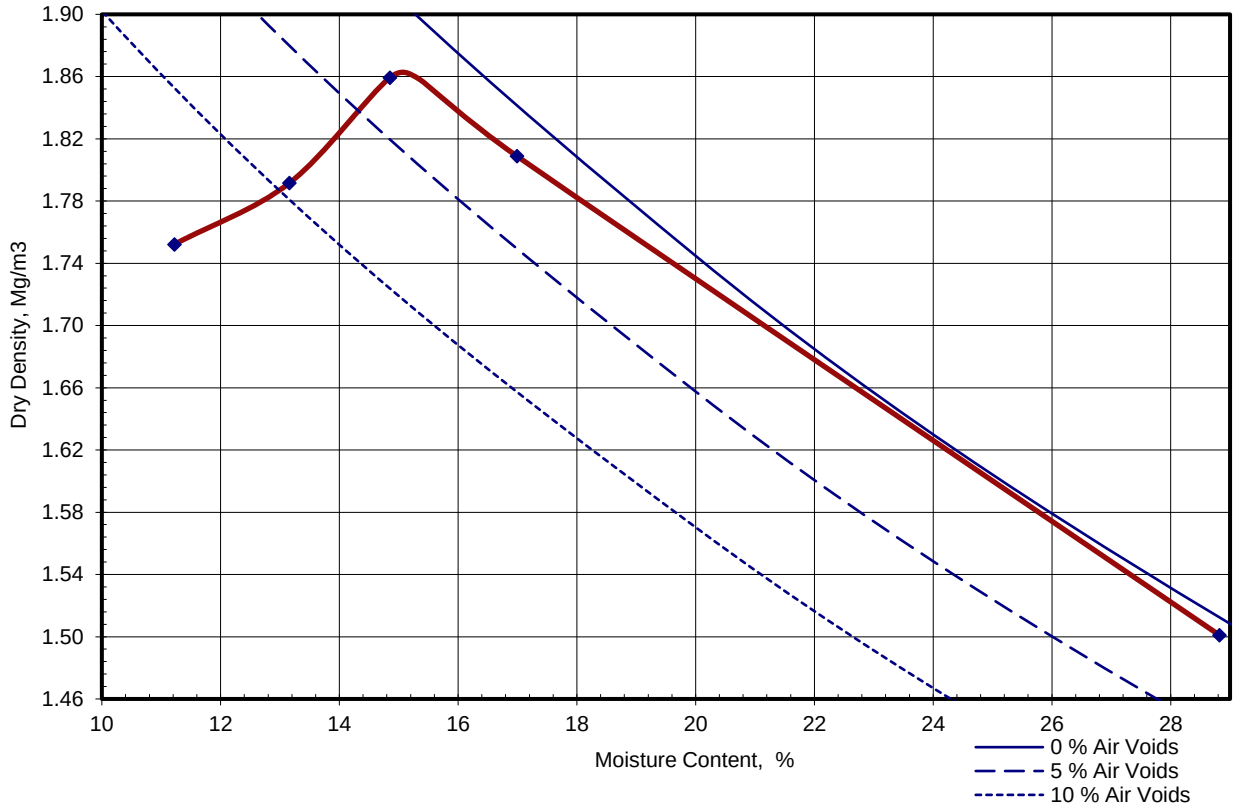
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC06B	1.10	B	2	28.8	Very soft olive brown silty CLAY with occasional yellowish brown sand pockets, and rare fine to coarse flint gravel.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	0.4 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density (Assumed)	2.68
Mould Type	1 Litre	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.86 Mg/m³**	**Optimum Water Content**	**15 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

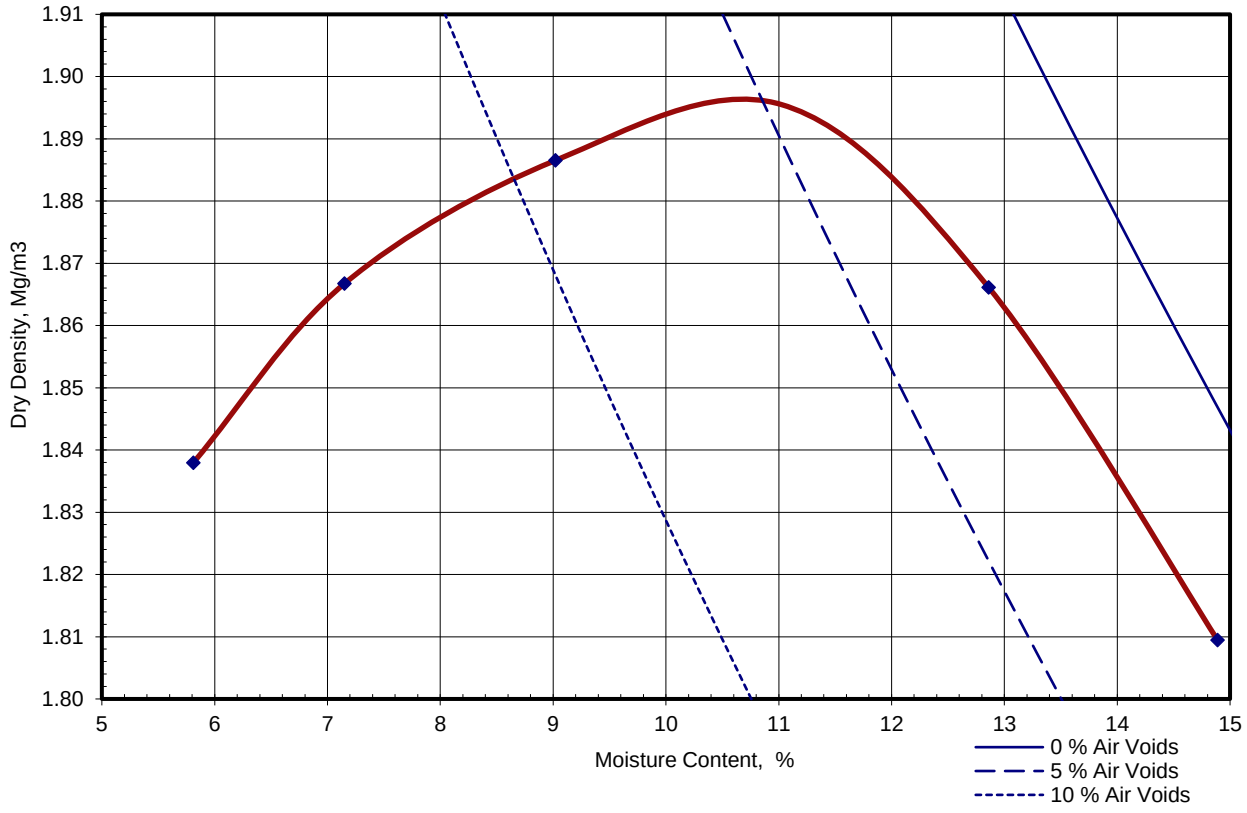
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC07	0.60 - 1.00	B	2	12.9	Yellowish brown gravelly slightly silty SAND with occasional firm greyish brown sandy clay lumps. Gravel is brown, black and white angular to subangular flint.	

Percentage Retained 37.5mm	0.0 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	0.4 %	Single or Separate Samples	Single
Grading Zone	2	Particle Density (Assumed)	2.55
Mould Type	1 Litre	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.3)
Maximum Dry Density	**1.90 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC05	0.40 - 0.60	B	1	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular lightweight, degradeable gravel sized fragments, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		9.8	%
Intitial Specimen Details:	Bulk Density	1.79	Mg/m³
	Dry Density	1.56	Mg/m³

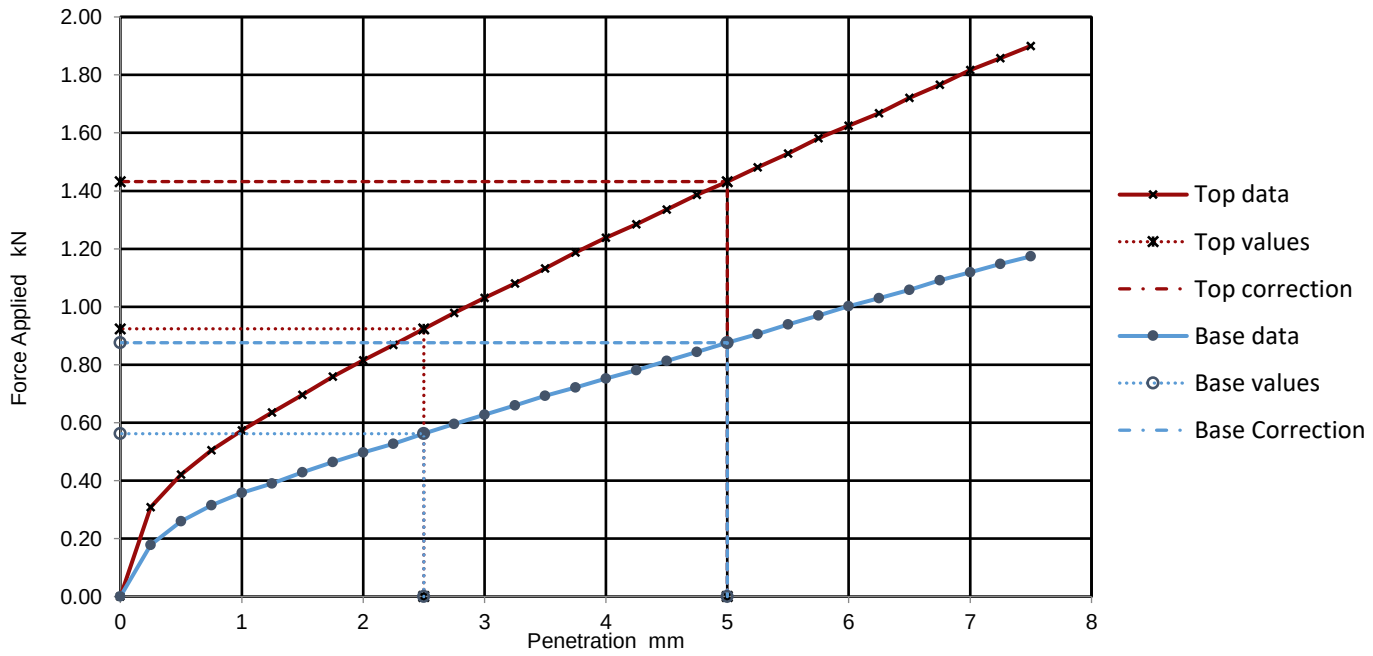
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	3	mins
Amount of Swell Recorded	0.038	mm
Initial Water Content	14.9	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	7.0	7.2	7.2		19.3
BASE	No	4.3	4.4	4.4		18.7

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

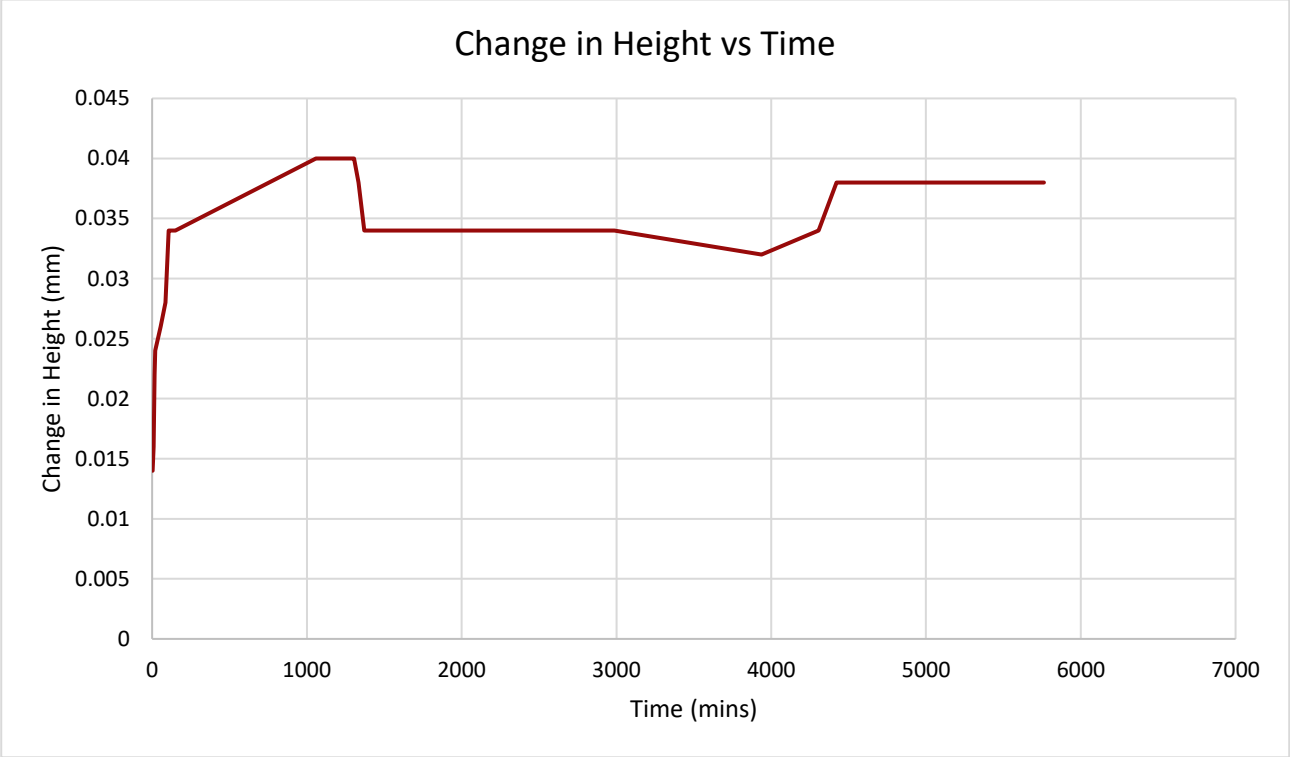
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC05	0.40 - 0.60	B	1	Dark brownish grey very gravelly silty slightly clayey SAND with frequent greyish white angular (lightweight, degradeable, man made) rock, and rare concrete and metal fragments. Gravel is brown, black and white subangular to subrounded flint.	

After Soaking

Water Contents	Top	(%)	19.3	Bulk Density	1.93	Dry Density	1.56
	Bottom	(%)	18.7				

Surcharge Weights	(kg)	18	
Total Change in Height	**(mm)**	**0.038**	



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC06B	1.10	B	2	Very soft olive brown silty CLAY with occasional yellowish brown sand pockets, and rare fine to coarse flint gravel.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed			%
Intitial Specimen Details:	Bulk Density	1.92	Mg/m³
	Dry Density	1.67	Mg/m³

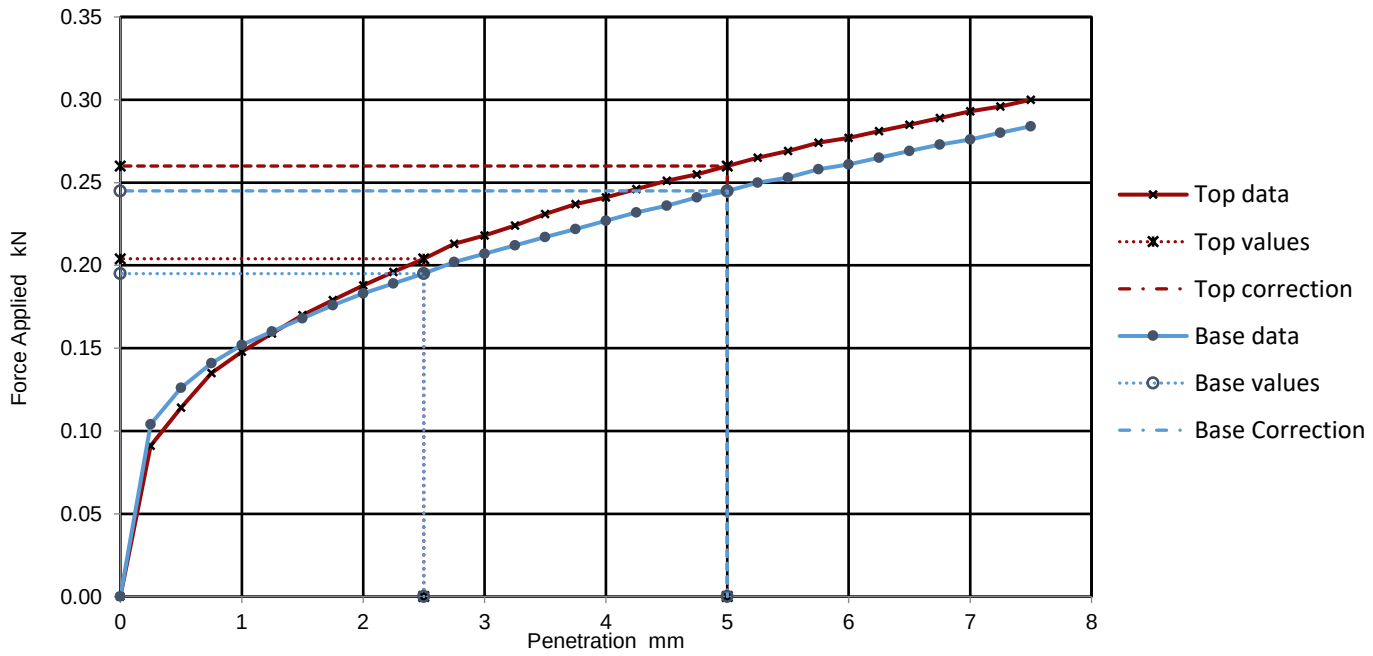
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	2	mins
Amount of Swell Recorded	0.864	mm
Initial Water Content	14.9	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	1.5	1.3	1.5	1.5	19.3
BASE	No	1.5	1.2	1.5		18.7

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

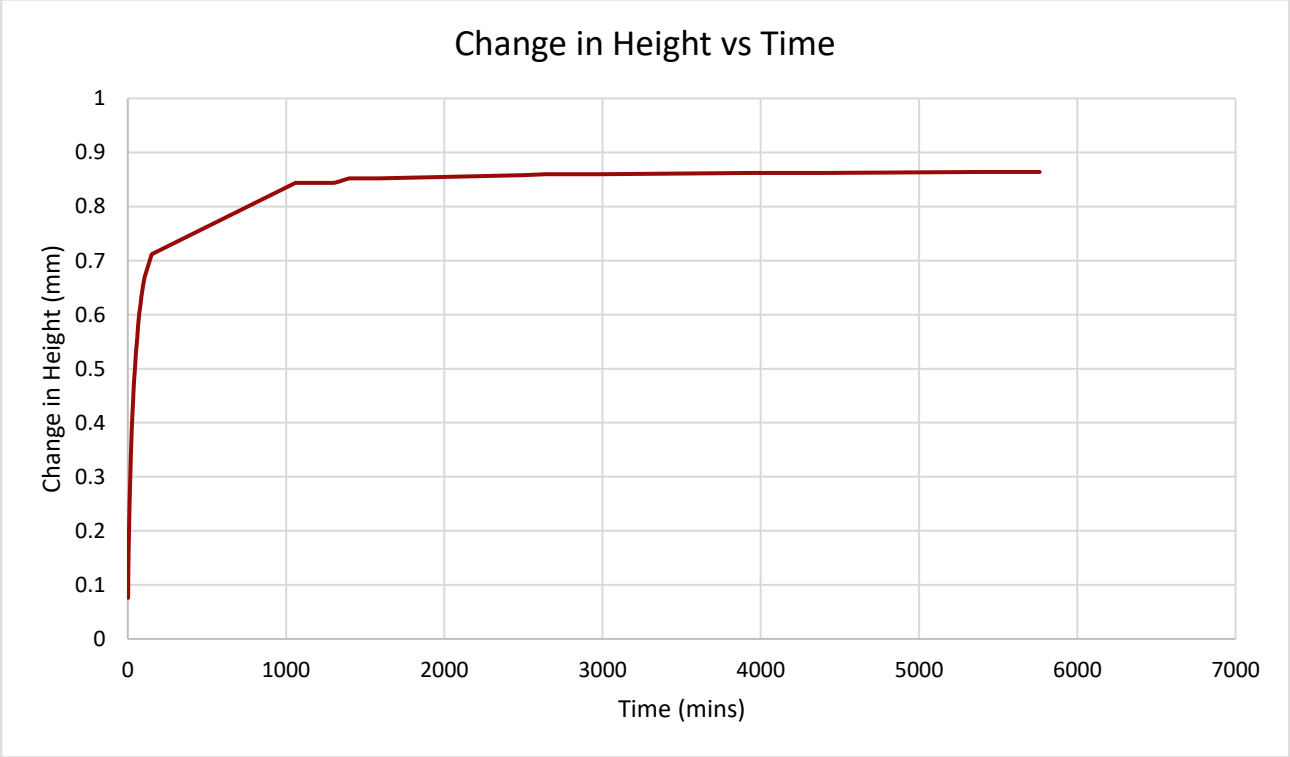
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC06B	1.1	B	2	Very soft olive brown silty CLAY with occcasional yellowish brown sand pockets, and rare fine to coarse flint gravel.	

After Soaking

Water Contents	Top (%)	19.3	Bulk Density	1.93	Dry Density	1.66
	Bottom (%)	18.7				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**0.864**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC07	0.60 - 1.00	B	2	Yellowish brown gravelly slightly silty SAND with occasional firm greyish brown sandy clay lumps. Gravel is brown, black and white angular to subangular flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		0.4	%
Intitial Specimen Details:	Bulk Density	1.89	Mg/m³
	Dry Density	1.70	Mg/m³

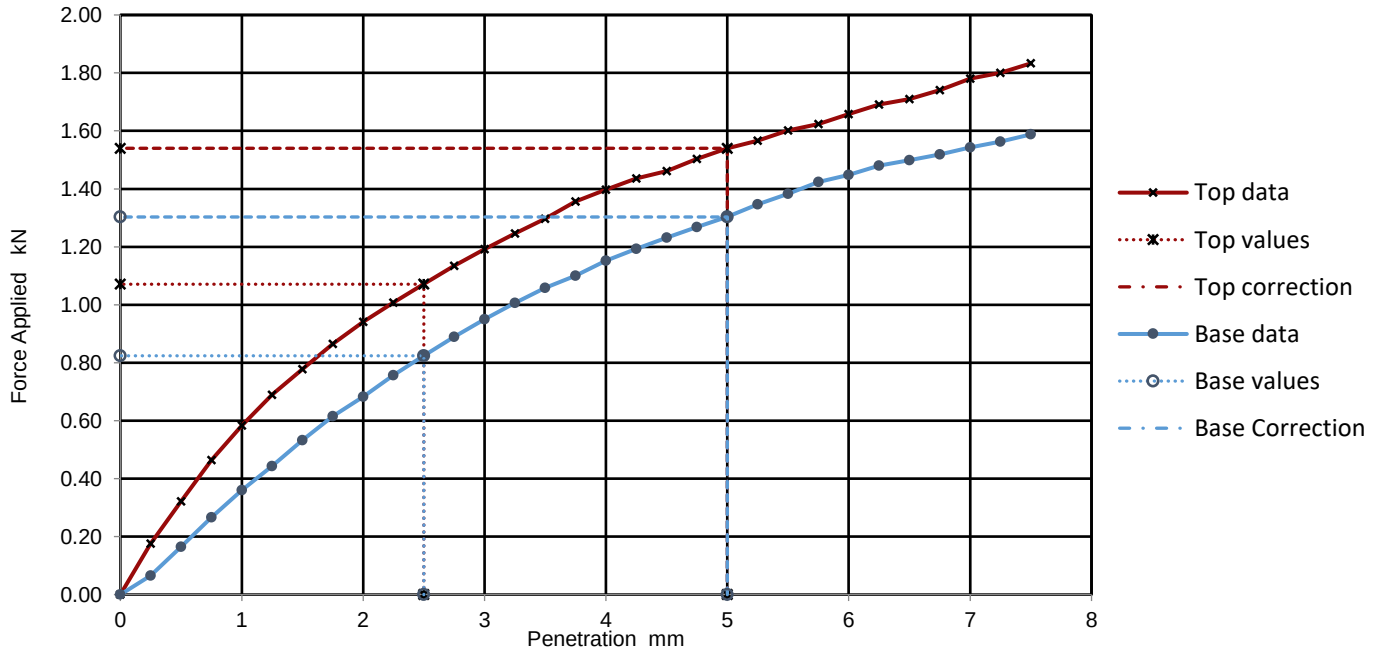
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	8	mins
Amount of Swell Recorded	0	mm
Initial Water Content	11.1	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	8.1	7.7	8.1		14.3
BASE	No	6.2	6.5	6.5		14.7

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/07/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-10**

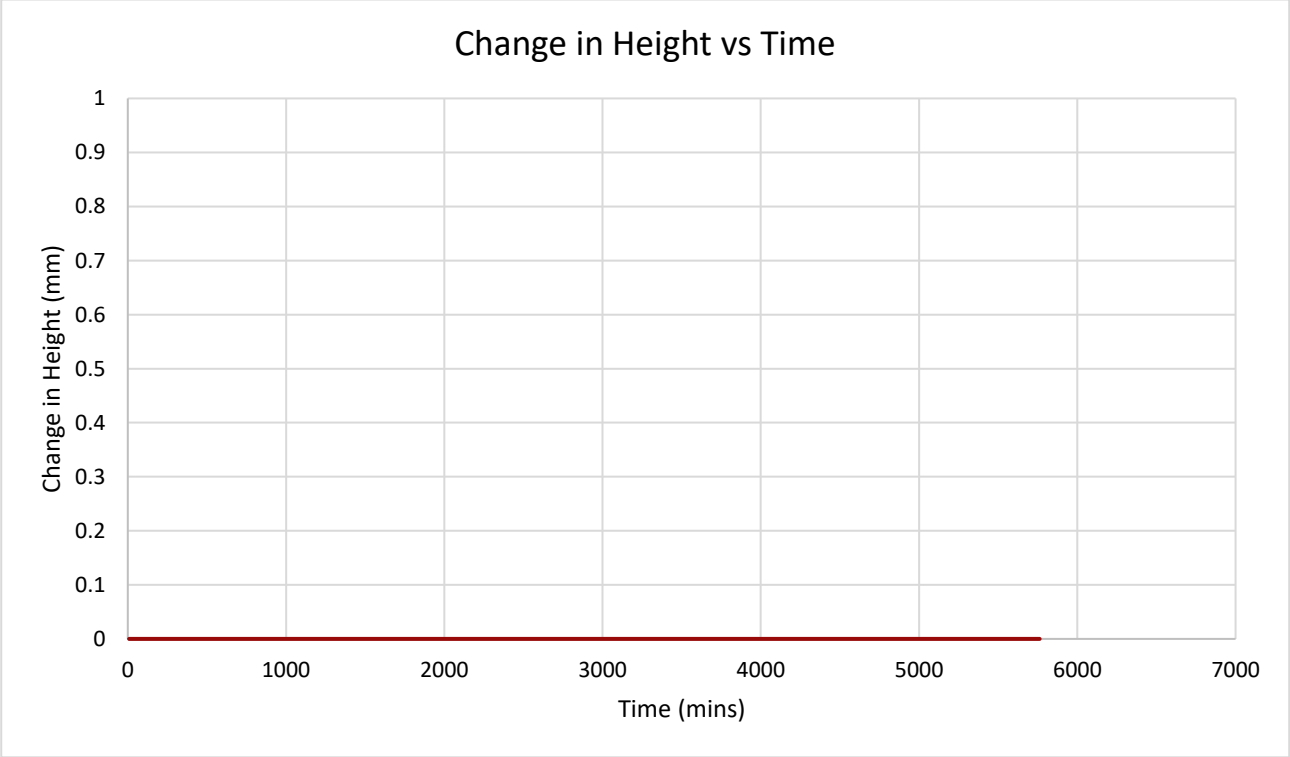
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC07	0.60 - 1.00	B	2	Yellowish brown gravelly slightly silty SAND with occasional firm greyish brown sandy clay lumps. Gravel is brown, black and white angular to subangular flint.	

After Soaking

Water Contents	Top	(%)	14.3	Bulk Density	1.93	Dry Density	1.70
	Bottom	(%)	14.7				

Surcharge Weights	(kg)	18	**Total Change in Height** **(mm)**	**0.000**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report No.:	18-21046-1
Initial Date of Issue:	20-Jul-2018
Client	Soil Property Testing
Client Address:	18 Halycon Court St Margarets Way Stukeley Meadows Huntingdon Cambridgeshire PE29 6DG
Contact(s):	Jon Garner
Project	S31644-10 Lake Lothing

Quotation No.:	Q17-10468	**Date Received:**	17-Jul-2018
Order No.:	S31644-10	**Date Instructed:**	17-Jul-2018
No. of Samples:	22		
Turnaround (Wkdays):	5	**Results Due:**	23-Jul-2018
Date Approved:	20-Jul-2018		

Approved By:

[redacted]

Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-10 Lake Lothing

Client: Soil Property Testing				**Chemtest Job No.:**	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	655405	655406	655407	655408	655409	655410	655411	655412	655413	655414	655415
Order No.: S31644-10				Client Sample Ref.:	BHC05	BHC05	BHC05	BHC05	BHC05	BHC05	BHC05	BHC05	BHC05	BHC06B	BHC06B
				Client Sample ID.:	B3	B7	B12	D11	D14	B19	B33	B48	D78	B2	B8
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.90	2.00	3.00	3.60	4.60	7.00	14.00	21.00	36.50	1.10	3.40
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020	13	23	25	13	15	16	14	15	26	7.6	27
pH (2.5:1)	N	2010		N/A	[A] 11.2			[A] 8.1		[A] 8.6	[A] 6.3	[A] 9.1	[A] 8.6	[A] 8.3	[A] 8.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.42			0.11		0.092	0.17	0.21	0.27	0.019	0.40
Total Sulphur	U	2175	%	0.010	[A] 0.032			[A] 0.062		[A] < 0.010	[A] 0.096	[A] 0.34	[A] 0.17	[A] 0.017	[A] 0.26
Chloride (Water Soluble)	U	2220	g/l	0.010											
Nitrate (Water Soluble)	N	2220	g/l	0.010											
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.087			[A] 0.15		[A] 0.019	[A] 0.029	[A] 0.032	[A] 0.047	[A] < 0.010	[A] 0.12
Organic Matter BS1377	N	2930	%	0.10		[A] < 0.10	[A] 1.4		[A] < 0.10					[A] 0.70	[A] 2.2

Chemtest
The right chemistry to deliver results

Results - Soil

Project: S31644-10 Lake Lothing

Client: Soil Property Testing				**Chemtest Job No.:**	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046	18-21046
Quotation No.: Q17-10468				**Chemtest Sample ID.:**	655416	655417	655418	655419	655420	655421	655422	655423	655424	655425	655426
Order No.: S31644-10				Client Sample Ref.:	BHC06B	BHC06B	BHC07	BHC07	BHC07	BHC07	BHC07	BHC07	BHC07	BHC07	BHC07
				Client Sample ID.:	B39	DS64	B1	B2	B6	B8	B9	D11	DS24	B50	B72
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	18.40	30.00	0.30	0.60	2.40	3.00	3.70	4.60	10.00	22.40	33.40
Determinand	**Accred.**	**SOP**	**Units**	**LOD**											
Moisture	N	2030	%	0.020	16	16	8.1	8.8	9.9	10	27	14	15	21	19
pH (2.5:1)	N	2010		N/A	[A] 8.0	[A] 8.0		[A] 8.6		[A] 8.3			[A] 5.4	[A] 7.8	[A] 8.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.082	0.19		0.011		0.17			< 0.010	0.48	0.22
Total Sulphur	U	2175	%	0.010	[A] 0.16	[A] 0.023		[A] 0.025		[A] 0.047			[A] < 0.010	[A] 0.63	[A] 0.21
Chloride (Water Soluble)	U	2220	g/l	0.010									[A] 0.055		
Nitrate (Water Soluble)	N	2220	g/l	0.010									< 0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.021	[A] 0.050		[A] 0.064		[A] 0.045			[A] < 0.010	[A] 0.12	[A] 0.048
Organic Matter BS1377	N	2930	%	0.10			[A] 0.20		[A] 0.40		[A] 1.1	[A] 2.1			

Chemtest
The right chemistry to deliver results

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
655405	BHC05	B3		A	Plastic Bag
655406	BHC05	B7		A	Plastic Bag
655407	BHC05	B12		A	Plastic Bag
655408	BHC05	D11		A	Plastic Tub 500g
655409	BHC05	D14		A	Plastic Tub 500g
655410	BHC05	B19		A	Plastic Bag
655411	BHC05	B33		A	Plastic Bag
655412	BHC05	B48		A	Plastic Bag
655413	BHC05	D78		A	Plastic Tub 500g
655414	BHC06B	B2		A	Plastic Bag
655415	BHC06B	B8		A	Plastic Bag
655416	BHC06B	B39		A	Plastic Bag
655417	BHC06B	DS64		A	Plastic Tub 500g
655418	BHC07	B1		A	Plastic Bag
655419	BHC07	B2		A	Plastic Bag
655420	BHC07	B6		A	Plastic Bag
655421	BHC07	B8		A	Plastic Bag
655422	BHC07	B9		A	Plastic Bag
655423	BHC07	D11		A	Plastic Tub 500g
655424	BHC07	DS24		A	Plastic Tub 500g
655425	BHC07	B50		A	Plastic Bag
655426	BHC07	B72		A	Plastic Bag

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2620	LOI 440	LOI 440	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Lake Lothing, Lowestoft

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

[redacted]

Date Received: 29/05/2018

Samples Tested Between: 29/05/2018 **and** 31/08/2018

Remarks:

For the attention of Mr J Glenwright
Your Reference No: 2543,GI

Chemical testing subcontracted to Chemtest - results included as Appendix A to this Test Report

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-11**	**Target Date**	13/07/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR Test	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite presen	Organic Content (Dichromate	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage							Sample Remarks
BHC01	B	1	0.20	1	1			1	1	1												
BHC01	B	3	1.00	1	1						1												
BHC01	B	5	1.50	1	1																		
BHC01	B	8	3.00	1	1																		
BHC01	B	11	5.50	1			1																
BHC01	B	15	7.50	1			1																
BHC01	B	18	9.00	1			1																
BHC01	B	23	11.00	1			1																
BHC01	B	27	12.50	1			1					1											
BHC01	B	30	14.30	1			1						1	1									
BHC01	UT	31	14.50	1									1		2								
BHC01	B	32	14.50	1	1																		
BHC09	B	1	0.30	1	1			1	1	1													
BHC09	B	3	1.10	1		1					1												
BHC09	B	5	1.60	1		1																	
BHC09	B	7	2.20	1			1						1	1									
BHC09	B	9	3.40	1							1	1	1										
BHC09	B	11	4.40	1			1						1										
BHC09	B	13	5.40	1			1					1											
BHC09	B	15	6.40	1			1						1	1									
BHC09	DS	16	7.00									1											
BHC09	B	17	7.40	1			1						1	1									
BHC09	B	19	8.40	1			1																
BHC09	B	21	9.40	1			1																
BHC09	B	25	11.40	1	1																		
BHC09	B	29	13.40	1									1	1									
BHC09	B	31	14.40	1			1																
BHC09	B	35	16.40	1			1																
BHC09	B	39	18.40	1			1						1	1									
BHC09	UT	40	19.00	1									1	1	2								
BHC09	B	42	19.60	1									1	1									
BHC09	B	44	20.00	1			1						1										
BHC09	UT	45	21.00	1									1		2								
BHC09	B	47	21.60	1			1						1	1									
BHC09	D	46	21.60								1												

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-11**	**Target Date**	13/07/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR Test	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite presen	Organic Content (Dichromate	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage							Sample Remarks
BHC09	UT	50	23.00	1									1		2								
BHC09	B	53	24.40	1			1																
BHC09	B	57	26.40	1			1																
BHC09	B	61	28.40	1			1																
BHC09	B	65	30.40	1			1																
BHC09	B	69	32.40				1																
BHC09	B	73	34.40	1			1																
BHC09	B	77	36.40				1																
BHC09	B	81	38.40	1			1				1												
BHC09	B	87	41.40				1																
BHC09	B	93	44.40	1			1																
BHC09	B	99	47.40				1																
BHC09	B	103	49.40	1			1																
BHC10	B	1	1.00	1		1		1	1	1	1												
BHC10	B	3	1.20	1		1																	
BHC10	D	4	1.70	1								1											
BHC10	B	5	1.80				1				1												
BHC10	B	7	2.00	1								1	1	1									
BHC10	B	8	2.50				1																
BHC10	UT	9	3.00	1									1	1	2								
BHC10	B	12	3.00	1								1	1										
BHC10	B	14	4.00				1				1												
BHC10	UT	15	5.00	1									1		2								
BHC10	B	18	6.00	1	1																		
BHC10	B	23	8.00	1		1					1												
BHC10	UT	25	10.00	1									1	1									
BHC10	B	27	10.00	1			1																
BHC10	B	31	12.50	1	1						1												
BHC10	B	35	13.00	1			1						1	1									
BHC10	UT	33	13.10	1									1		2								
BHC10	B	37	14.00	1			1																
BHC10	B	41	16.00	1			1																
BHC10	UT	44	18.00	1			1						1	1	2								
BHC10	B	46	18.00	1			1																
BHC10	B	48	19.00				1																

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-11**	**Target Date**	13/07/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR Test	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite preser	Organic Content (Dichromate	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage							Sample Remarks
BHC10	UT	49	20.00	1									1		2							
BHC10	B	51	20.00	1									1									
BHC10	B	53	21.50				1															
BHC10	UT	54	22.00	1									1		2							
BHC10	B	58	23.00	1			1															
BHC10	UT	59	24.00	1			1						1		2							
BHC10	B	63	25.00	1			1															
BHC10	B	67	27.00	1			1															
BHC10	B	71	29.00	1			1				1											
BHC10	B	75	31.00	1			1															
BHC10	UT	78	33.00	1	1																	
BHC10	B	82	34.00	1			1															
BHC10	B	86	36.00	1			1															
BHC10	B	90	38.00	1			1															
BHC10	B	94	40.00	1			1															
BHC10	B	102	44.00	1			1															
BHC10	B	104	45.00	1			1															
BHC10	B	106	46.00	1			1															
BHC10	B	110	48.00				1															
BHC20	B	1	0.50	1	1			1	1	1		1										
BHC20	B	3	1.00	1	1																	
BHC20	D	4	1.20									1										
BHC20	B	6	1.80	1	1						1											
BHC20	B	10	3.80	1	1																	
BHC20	B	14	5.70	1	1																	
BHC20	B	18	7.70	1	1																	
BHC20	B	22	9.70	1	1																	
BHC20	B	26	11.70	1			1				1		1									
BHC20	D	27	12.00	1									1									
BHC20	B	30	13.70	1			1															
BHC20	B	34	15.70	1			1															
BHC20	B	38	17.60	1			1															
BHC20	B	42	19.70	1			1				1											
BHC20	B	46	21.70	1			1															
BHC20	UT	48	23.00	1			1						1	1	2							

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**		
Serial No.	**S31644-11**	**Target Date**	13/07/2018
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content BSEN	PSD by Wet Sieve: BS1377	PSD by Wet Sieve + Hydro	PSD by Hydro + Pre-sieve	CBR Test	Soaked CBR Swelling Measure	Compaction 2.5kg	Brownfield Site - Pyrite presen	Organic Content (Dichromate	Liquid/Plastic Limits	Wet Sieve Preparation	Triaxial Test Single Stage							Sample Remarks
BHC20	D	49	23.00	1									1	1								
BHC20	B	53	24.60	1			1															
BHC20	B	57	26.70	1	1																	
BHC20	B	61	28.70	1			1															
BHC20	B	65	30.70	1	1																	
BHC20	B	69	32.70	1			1															
BHC20	B	73	34.70	1			1															
BHC20	B	77	36.70	1			1															
BHC20	B	81	38.70	1	1																	
Totals				**101**	**20**	**5**	**67**	**4**	**4**	**4**	**14**	**9**	**31**	**16**	**24**							**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC01	0.20 - 0.50	B	1	**4.8**	Yellowish brown very gravelly slightly silty SAND with rare concrete fragments. Gravel is brown, black and white angular to rounded flint.	
BHC01	1.00 - 1.50	B	3	**5.7**	Brown and greyish brown very gravelly silty SAND with occasional brick and concrete fragments. Gravel is brown and black rounded to subangular flint.	
BHC01	1.50 - 2.00	B	5	**14.0**	Brown gravelly slightly silty SAND with rare concrete fragments. Gravel is black, brown and white angular to rounded flint and rare reddish brown and black granite.	
BHC01	3.00 - 3.50	B	8	**19.5**	Light olive brown gravelly slightly silty SAND with rare soft light grey clay lumps. Gravel is black and white angular to subangular flint.	
BHC01	5.50 - 6.00	B	11	**26.5**	Greyish brown slightly gravelly silty clayey organic SAND. Gravel is fine flint	
BHC01	7.50 - 8.00	B	15	**28.4**	Very soft brownish yellow sandy silty CLAY with rare fine flint gravel	
BHC01	9.00 - 9.50	B	18	**25.5**	Brownish yellow silty clayey SAND.	
BHC01	11.00 - 11.50	B	23	**23.6**	Brownish yellow silty clayey SAND with rare fine flint gravel	
BHC01	12.50 - 13.00	B	27	**21.8**	Olive brown silty clayey organic SAND with rare shell debris.	
BHC01	14.30	B	30	**18.4**	Olive silty clayey organic SAND locally oxidised to brown with rare fine flint gravel	
BHC01	14.50 - 14.95	UT	31	**21.2**	Firm (Medium strength) grey slightly sandy silty CLAY with rare dark grey mottling, and sandy pockets. Sand is fine.	
BHC01	14.50 - 14.95	UT	31	**34.6**	Firm (Medium strength) grey slightly sandy silty CLAY with rare dark grey mottling, and sandy pockets. Sand is fine.	
BHC01	14.50 - 15.10	B	32	**17.8**	Olive grey slightly silty clayey organic SAND with rare fine flint gravel	
BHC09	0.30 - 0.50	B	1	**12.0**	MADE GROUND comprising crushed CONCRETE fragments with occasional brick, brown, black and white angular to subrounded flint gravel, dark brown silty sand and rare metal fragments.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC09	1.10 - 1.60	B	3	**18.5**	Dark greyish brown gravelly silty SAND with occasional firm brown and grey sandy clay lumps. Gravel is black, brown and white angular to subrounded flint.	
BHC09	1.60 - 2.00	B	5	**32.1**	Soft black slightly gravelly slightly sandy silty organic CLAY with occasional brown mottling. Gravel is black, white and brown angular to rounded flint.	
BHC09	2.20 - 2.70	B	7	**34.0**	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown. Gravel is fine flint	
BHC09	3.40 - 3.80	B	9	**56.6**	Very soft very dark grey organic CLAY locally oxidised to brown.	
BHC09	4.40 - 4.90	B	11	**51.4**	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown.	
BHC09	5.40 - 5.90	B	13	**18.4**	Pale olive and bluish grey silty clayey SAND with rare fine flint gravel	
BHC09	6.40 - 6.90	B	15	**31.0**	Very soft olive grey slightly gravelly sandy silty organic CLAY with rare shell debris. Gravel is fine flint.	
BHC09	7.40 - 7.90	B	17	**24.2**	Very soft olive yellow organic slightly gravelly very sandy silty CLAY/silty clayey SAND with occasional olive grey mottling. Gravel is fine flint.	
BHC09	8.40 - 8.90	B	19	**25.6**	Very soft yellowish brown very sandy silty organic CLAY with occasional olive mottling and rare fine flint gravel	
BHC09	9.40 - 9.90	B	21	**23.6**	Very soft yellowish brown very sandy silty organic CLAY with occasional olive mottling and rare fine flint gravel	
BHC09	11.40 - 11.90	B	25	**16.3**	Olive slightly gravelly silty slightly clayey SAND. Gravel is flint.	
BHC09	13.40 - 13.90	B	29	**39.8**	Very soft light bluish grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	
BHC09	14.40 - 14.90	B	31	**20.6**	Olive grey slightly gravelly silty clayey slightly organic SAND. Gravel is fine and medium flint	
BHC09	16.40 - 16.90	B	35	**16.4**	Olive grey slightly gravelly silty clayey slightly organic SAND.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC09	18.40 - 18.90	B	39	**17.3**	Dark bluish grey slightly gravelly silty clayey organic SAND locally oxidised to brown. Gravel is fine	
BHC09	19.00 - 19.45	UT	40	**17.4**	Grey slightly gravelly sandy silty CLAY with rare yellowish brown and dark grey mottling. Gravel is fine flint	
BHC09	19.00 - 19.45	UT	40	**19.0**	Grey slightly gravelly sandy silty CLAY with rare yellowish brown and dark grey mottling. Gravel is fine flint	
BHC09	19.60 - 19.90	B	42	**18.3**	Grey slightly organic slightly gravelly silty clayey SAND/very sandy silty CLAY locally oxidised to brown. Gravel is fine flint	
BHC09	20.00 - 20.50	B	44	**23.5**	Firm grey slightly sandy silty organic CLAY locally oxidised to brown with occasional fine sand/silt partings.	
BHC09	21.00 - 21.45	UT	45	**25.8**	Stiff (High strength) fissured grey CLAY with rare fine sand laminations.	
BHC09	21.00 - 21.45	UT	45	**24.5**	Stiff (High strength) fissured grey CLAY with rare fine sand laminations.	
BHC09	21.60 - 21.90	B	47	**17.4**	Olive grey silty clayey organic SAND locally oxidised to brown.	
BHC09	23.00 - 23.45	UT	50	**30.3**	Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.	
BHC09	23.00 - 23.45	UT	50	**34.0**	Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.	
BHC09	24.40 - 24.90	B	53	**42.4**	Very soft dark grey sandy silty organic CLAY locally oxidised to brown.	
BHC09	26.40 - 26.90	B	57	**29.6**	Very soft dark grey very sandy silty organic CLAY locally oxidised to brown with rare shell debris.	
BHC09	28.40 - 28.90	B	61	**27.5**	Very soft dark olive very sandy silty organic CLAY locally oxidised to brown with rare shell debris	
BHC09	30.40 - 30.90	B	65	**25.4**	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC09	34.40 - 34.90	B	73	**20.6**	Dark olive grey silty clayey SAND with occasional shell debris.	
BHC09	38.40 - 38.90	B	81	**22.4**	Dark olive grey silty clayey SAND with rare shell debris.	
BHC09	44.40 - 44.90	B	93	**27.0**	Dark olive grey silty clayey SAND.	
BHC09	49.40 - 49.90	B	103	**41.3**	Dark olive grey silty clayey SAND	
BHC10	1.00 - 1.20	B	1	**20.5**	Firm brown and grey CLAY and dark brownish grey gravelly silty SAND pockets with occasional brick and cinder fragments. Gravel is white and black flint.	
BHC10	1.20 - 1.50	B	3	**20.2**	Firm dark greyish brown slightly gravelly sandy silty CLAY with occasional brown, grey and yellowish brown pockets, dark greyish brown silty clayey sand pockets, and rare brick and glass fragments. Gravel is black, brown and white angular to subrounded flint.	
BHC10	1.70	D	4	**3.8**	Pale yellow fine to medium SAND with rare fine quartz gravel.	
BHC10	2.00 - 2.50	B	7	**40.1**	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	
BHC10	3.00 - 3.50	B	12	**32.5**	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown with rare fossil and shell fragments. Gravel is fine to medium flint.	
BHC10	3.00 - 3.45	UT	9	**27.6**	Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.	
BHC10	3.00 - 3.45	UT	9	**25.8**	Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.	
BHC10	5.00 - 5.45	UT	15	**78.4**	Soft (Low strength) brown silty organic CLAY with occasional grey mottling.	
BHC10	5.00 - 5.45	UT	15	**54.6**	Soft (Low strength) brown silty organic CLAY with occasional grey mottling.	
BHC10	6.00 - 6.50	B	18	**8.8**	Black, brown and white very sandy slightly silty slightly clayey angular to rounded flint GRAVEL with occasional dark grey organic pockets. Sand is brown.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC10	8.00 - 8.50	B	23	**13.3**	Yellowish brown slightly gravelly silty SAND with occasional firm grey sandy clay lumps. Gravel is black angular to subangular flint.	
BHC10	10.00 - 10.45	UT	25	**19.1**	Soft yellowish brown sandy silty CLAY with occasional bluish grey mottling. Sand is fine to medium.	
BHC10	10.00 - 10.50	B	27	**22.0**	Olive grey silty clayey organic SAND locally oxidised to brown with rare fine flint gravel	
BHC10	12.50 - 12.90	B	31	**19.5**	Olive slightly silty clayey organic SAND locally oxidised to brown.	
BHC10	13.00 - 13.50	B	35	**32.7**	Very soft dark bluish grey sandy silty organic CLAY with occasional olive and brown mottling.	
BHC10	13.10 - 13.55	UT	33	**32.5**	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.	
BHC10	13.10 - 13.55	UT	33	**31.5**	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.	
BHC10	14.00 - 14.50	B	37	**18.7**	Olive grey silty clayey organic SAND.	
BHC10	16.00 - 16.50	B	41	**23.4**	Dark grey silty clayey organic SAND locally oxidised to brown.	
BHC10	18.00 - 18.45	UT	44	**21.7**	Grey sandy silty organic CLAY with occasional laminations. Sand is fine to medium.	
BHC10	18.00 - 18.45	UT	44	**22.1**	Grey sandy silty organic CLAY with occasional laminations. Sand is fine to medium.	
BHC10	18.00 - 18.70	B	46	**18.8**	Dark grey silty clayey slightly organic SAND.	
BHC10	20.00 - 20.45	UT	49	**23.9**	Stiff (High strength) grey slightly sandy organic CLAY with rare dark grey mottling changing to grey organic CLAY with occasional silt/fine sand laminations changing to fissured clay with occasional olive grey mottling.	
BHC10	20.00 - 20.45	UT	49	**22.2**	Stiff (High strength) grey slightly sandy organic CLAY with rare dark grey mottling changing to grey organic CLAY with occasional silt/fine sand laminations changing to fissured clay with occasional olive grey mottling.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC10	20.00 - 20.50	B	51	**23.3**	Firm brown slightly sandy silty slightly organic CLAY with occasional bluish grey and orange mottling, and rare fine to coarse flint. Sand is fine.	
BHC10	22.00 - 22.45	UT	54	**29.7**	Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.	
BHC10	22.00 - 22.45	UT	54	**28.9**	Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.	
BHC10	23.00 - 23.50	B	58	**41.0**	Very soft dark grey sandy silty slightly organic CLAY.	
BHC10	24.00 - 24.45	UT	59	**34.4**	Firm (Medium strength) grey slightly sandy silty organic CLAY. Sand is fine.	
BHC10	24.00 - 24.45	UT	59	**31.8**	Firm (Medium strength) grey slightly sandy silty organic CLAY. Sand is fine.	
BHC10	25.00 - 25.50	B	63	**22.5**	Dark grey silty clayey slightly organic SAND locally oxidised to brown with occasional shell debris.	
BHC10	27.00 - 27.50	B	67	**29.5**	Dark olive grey silty clayey slightly organic SAND locally oxidised to brown, with occasional shell debris.	
BHC10	29.00 - 29.50	B	71	**21.1**	Dark grey silty clayey slightly organic SAND locally oxidised to brown, with occasional shell debris.	
BHC10	31.00 - 31.50	B	75	**24.0**	Olive grey silty clayey SAND with occasional shell and fossil fragments.	
BHC10	33.00 - 33.45	UT	78	**15.3**	Light olive brown silty slightly clayey SAND with occasional shell debris.	
BHC10	34.00 - 34.50	B	82	**21.0**	Dark olive grey silty clayey SAND with occasional shell debris.	
BHC10	36.00 - 36.50	B	86	**21.5**	Olive grey silty clayey SAND with occasional shell and fossil debris.	
BHC10	38.00 - 38.50	B	90	**21.6**	Dark olive grey silty clayey SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC10	40.00 - 40.50	B	94	**20.6**	Dark olive grey silty clayey SAND with occasional shell debris.	
BHC10	44.00 - 44.50	B	102	**54.4**	Dark olive grey silty clayey SAND with occasional shell debris.	Excess water noted within sample bag - as much as possible decanted off before test
BHC10	45.00 - 45.50	B	104	**184**	Dark olive grey sandy silty CLAY.	Excess water noted in sample bag - as much as possible decanted off before test
BHC10	46.00 - 46.50	B	106	**36.7**	Dark olive grey silty clayey SAND with occasional shell debris.	
BHC20	0.50 - 0.70	B	1	**5.9**	Orangish brown very gravelly silty SAND. Gravel is brown, black and white angular to rounded flint.	
BHC20	1.00 - 1.20	B	3	**5.4**	Dark orangish brown and brown gravelly slightly silty SAND. Gravel is brown, white and black angular to subrounded flint and occasional dark orangish brown angular ferruginous sandstone (occasionally very weak and degradeable).	
BHC20	1.80	B	6	**13.8**	Orangish brown very gravelly silty SAND. Gravel is black, white and brown angular to rounded flint.	
BHC20	3.80	B	10	**11.2**	Orangish brown very gravelly slightly silty SAND. Gravel is black, white and brown angular to rounded flint.	
BHC20	5.70	B	14	**12.8**	Orangish brown very gravelly slightly silty SAND. Gravel is black, brown and white subangular to rounded flint.	
BHC20	7.70	B	18	**18.4**	Yellowish brown slightly gravelly slightly silty SAND. Gravel is brown, black and white angular to subangular flint.	
BHC20	9.70	B	22	**17.4**	Pale yellow slightly gravelly silty slightly clayey SAND. Gravel is fine to medium flint.	
BHC20	11.70	B	26	**36.5**	Soft light bluish grey slightly sandy silty slightly organic CLAY with rare dark grey mottling.	
BHC20	12.00 - 12.45	D	27	**32.7**	Firm brown slightly sandy slightly organic CLAY with occasional bluish grey and orange mottling. Sand is fine.	
BHC20	13.70	B	30	**25.3**	Olive brown slightly gravelly silty clayey slightly organic SAND with occasional dark olive grey mottling.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC20	15.70	B	34	**20.8**	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	
BHC20	17.60	B	38	**22.7**	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	
BHC20	19.70	B	42	**18.8**	Dark grey silty clayey slightly organic SAND locally oxidised to brown.	
BHC20	21.70	B	46	**19.1**	Olive grey silty clayey possibly slightly organic SAND.	
BHC20	23.00	UT	48	**15.9**	Dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	
BHC20	23.00	UT	48	**17.5**	Dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	
BHC20	23.00 - 23.45	D	49	**18.2**	Olive silty clayey possibly slightly organic fine to medium SAND with occasional dark bluish grey mottling, and soft clayey lumps.	
BHC20	24.60	B	53	**15.9**	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	
BHC20	26.70	B	57	**14.7**	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	
BHC20	28.70	B	61	**22.9**	Olive grey silty clayey possibly slightly organic SAND.	
BHC20	30.70	B	65	**18.3**	Olive grey silty slightly clayey possibly slightly organic SAND.	
BHC20	32.70	B	69	**24.2**	Olive grey silty clayey possibly slightly organic SAND with occasional shell debris.	
BHC20	34.70	B	73	**60.7**	Olive silty clayey possibly slightly organic SAND.	Excess water noted in sample bag - as much decanted off as possible before test
BHC20	36.70	B	77	**20.6**	Dark grey silty clayey slightly organic SAND locally oxidised to brown with rare shell debris	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
BHC20	38.70	B	81	**17.6**	Olive grey silty slightly clayey possibly slightly organic SAND with occasional shell debris.	

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF THE PLASTIC LIMIT

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content	Description	Remarks
BHC09	21.60 - 21.90	B	47	**17.4**	Olive grey silty clayey organic SAND locally oxidised to brown.	

Preparation:	Wet Sieved	Percentage of mass passing 0.425mm sieve:	95

TEST CONDITIONS

1	Can a 20g ball be formed and dried between the palms of the hands?	YES
2	Do slight cracks appear on its surface as it is being hand dried?	NO
3	Is it possible to form 5g subsamples into a thread of approximately 6mm diameter?	NO
4	Is it possible to reduce 6mm threads to 3mm diameter in between 5-10 complete rolls (10-15 for heavy clays)?	NO
5	After alternately forming into threads and rolling out is it possible to shear the thread both longitudinally and transversely when it is rolled to about 3mm?	NO

	NOTE:	DIFFICULT
	For soils that are marginally plastic it is often difficult to obtain the correct crumbling conditions (if "difficult" define as non-plastic)	n/a

NON-PLASTIC BY BS1377: PART 1: 1990: 2.2.10

A soil with a plasticity of zero, or one on which the plastic limit cannot be determined

All conditions 1-5 must be achievable for material to be deemed plastic; if achieved, measure water content.

Plastic Limit (%)	
Non-Plastic	**YES**

If plastic limit is obtainable, does *liquid limit - plastic limit = zero* : if so material is defined as non-plastic.

Liquid Limit (%)	
Liquid Limit - Plastic Limit (%)	

Method of Preparation:	BS1377: Part 1: 1990: 7.4.3 & BS1377: Part 2: 1990:4.2
Method of Test:	BS1377: Part 2: 1990: 5.3
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C= Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC01	14.30	B	30	**18.4**	22	17	5	0.28	Wet Sieved	17 (M)	22.2*	24	Olive silty clayey organic SAND locally oxidised to brown with rare fine flint gravel	MLO
BHC01	14.50 - 14.95	UT	31	**21.2**	43	21	22	0.01	From Natural	0 (A)		24	Firm (Medium strength) grey slightly sandy silty CLAY with rare dark grey mottling, and sandy pockets. Sand is fine.	CIO
BHC09	2.20 - 2.70	B	7	**34.0**	22	17	5	3.40	Wet Sieved	10 (M)	38.0*	24	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown. Gravel is fine flint	MLO
BHC09	3.40 - 3.80	B	9	**56.6**	56	24	32	1.02	From Natural	0 (A)		52	Very soft very dark grey organic CLAY locally oxidised to brown.	CHO
BHC09	4.40 - 4.90	B	11	**51.4**	58	26	32	0.79	From Natural	0 (A)		23	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown.	CHO
BHC09	6.40 - 6.90	B	15	**31.0**	28	16	12	1.25	Wet Sieved	11 (M)	35.0*	24	Very soft olive grey slightly gravelly sandy silty organic CLAY with rare shell debris. Gravel is fine flint.	CLO
BHC09	7.40 - 7.90	B	17	**24.2**	23	17	6	1.20	Wet Sieved	10 (M)	26.8*	24	Very soft olive yellow organic slightly gravelly very sandy silty CLAY/silty clayey SAND with occasional olive grey mottling. Gravel is fine flint.	CLO/MLO
BHC09	13.40 - 13.90	B	29	**39.8**	42	19	23	0.90	Wet Sieved	10 (M)	44.2*	73	Very soft light bluish grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	CIO

Method Of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	*Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)	Description	CLASS
BHC09	18.40 - 18.90	B	39	**17.3**	21	16	5	0.26	Wet Sieved	15 (M)	20.4*	24	Dark bluish grey slightly gravelly silty clayey organic SAND locally oxidised to brown. Gravel is fine	MLO
BHC09	19.00 - 19.45	UT	40	**17.4**	22	14	8	0.43	Wet Sieved	4 (M)	18.1*	25	Grey slightly gravelly sandy silty CLAY with rare yellowish brown and dark grey mottling. Gravel is fine flint	CL
BHC09	19.60 - 19.90	B	42	**18.3**	21	15	6	0.55	Wet Sieved	15 (M)	21.5*	24	Grey slightly organic slightly gravelly silty clayey SAND/very sandy silty CLAY locally oxidised to brown. Gravel is fine flint	CLO/MLO
BHC09	20.00 - 20.50	B	44	**23.5**	47	18	29	0.19	From Natural	0 (A)		24	Firm grey slightly sandy silty organic CLAY locally oxidised to brown with occasional fine sand/silt partings.	CIO
BHC09	21.00 - 21.45	UT	45	**25.8**	51	20	31	0.19	From Natural	0 (A)		26	Stiff (High strength) fissured grey CLAY with rare fine sand laminations.	CH
BHC09	21.60 - 21.90	B	47	**17.4**	Non-plastic				Wet Sieved	5 (M)		n/a	Olive grey silty clayey organic SAND locally oxidised to brown.	
BHC09	23.00 - 23.45	UT	50	**30.3**	58	23	35	0.21	From Natural	0 (A)		23	Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.	CH
BHC10	2.00 - 2.50	B	7	**40.1**	43	23	20	0.86	Wet Sieved	7 (M)	43.1*	74	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	CIO

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC10	3.00 - 3.50	B	12	**32.5**	35	16	19	0.87	Wet Sieved	9 (M)	35.7*	24	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown with rare fossil and shell fragments. Gravel is fine to medium flint.	CLO/CIO
BHC10	3.00 - 3.45	UT	9	**27.6**	28	17	11	0.96	Wet Sieved	9 (M)	30.3*	72	Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.	CLO
BHC10	5.00 - 5.45	UT	15	**78.4**	88	37	51	0.81	From Natural	0 (A)		24	Soft (Low strength) brown silty organic CLAY with occasional grey mottling.	CVO
BHC10	10.00 - 10.45	UT	25	**19.1**	26	16	10	0.31	Wet Sieved	1 (M)	19.3*	24	Soft yellowish brown sandy silty CLAY with occasional bluish grey mottling. Sand is fine to medium.	CL
BHC10	13.00 - 13.50	B	35	**32.7**	38	18	20	0.74	Wet Sieved	12 (M)	37.0*	67	Very soft dark bluish grey sandy silty organic CLAY with occasional olive and brown mottling.	CIO
BHC10	13.10 - 13.55	UT	33	**32.5**	59	25	34	0.22	From Natural	0 (A)		24	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.	CH
BHC10	18.00 - 18.45	UT	44	**21.7**	22	13	9	0.97	Wet Sieved	1 (M)	21.8*	67	Grey sandy silty organic CLAY with occasional laminations. Sand is fine to medium.	CLO
BHC10	20.00 - 20.45	UT	49	**23.9**	46	22	24	0.08	From Natural	0 (A)		24	Stiff (High strength) grey slightly sandy organic CLAY with rare dark grey mottling changing to grey organic CLAY with occasional silt/fine sand laminations changing to fissured clay with occasional olive grey mottling.	CI

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.3, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
BHC10	20.00 - 20.50	B	51	**23.3**	48	19	29	0.15	From Natural	<1% (A)		24	Firm brown slightly sandy silty slightly organic CLAY with occasional bluish grey and orange mottling, and rare fine to coarse flint. Sand is fine.	CIO
BHC10	22.00 - 22.45	UT	54	**29.7**	46	21	25	0.35	From Natural	0 (A)		24	Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.	CI
BHC10	24.00 - 24.45	UT	59	**34.4**	44	18	26	0.63	From Natural	0 (A)		28	Firm (Medium strength) grey slightly sandy silty organic CLAY. Sand is fine.	CI
BHC20	11.70	B	26	**36.5**	53	25	28	0.41	From Natural	0 (A)		19	Soft light bluish grey slightly sandy silty slightly organic CLAY with rare dark grey mottling.	CHO
BHC20	12.00 - 12.45	D	27	**32.7**	63	26	37	0.18	From Natural	0 (A)		24	Firm brown slightly sandy slightly organic CLAY with occasional bluish grey and orange mottling. Sand is fine.	CHO
BHC20	23.00	UT	48	**15.9**	22	16	6	-0.02	Wet Sieved	8 (M)	16.6*	73	Dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	CL/ML
BHC20	23.00 - 23.45	D	49	**18.2**	23	19	4	-0.20	Wet Sieved	11 (M)	20.4*	24	Olive silty clayey possibly slightly organic fine to medium SAND with occasional dark bluish grey mottling, and soft clayey lumps.	MLO

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.3, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1.

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

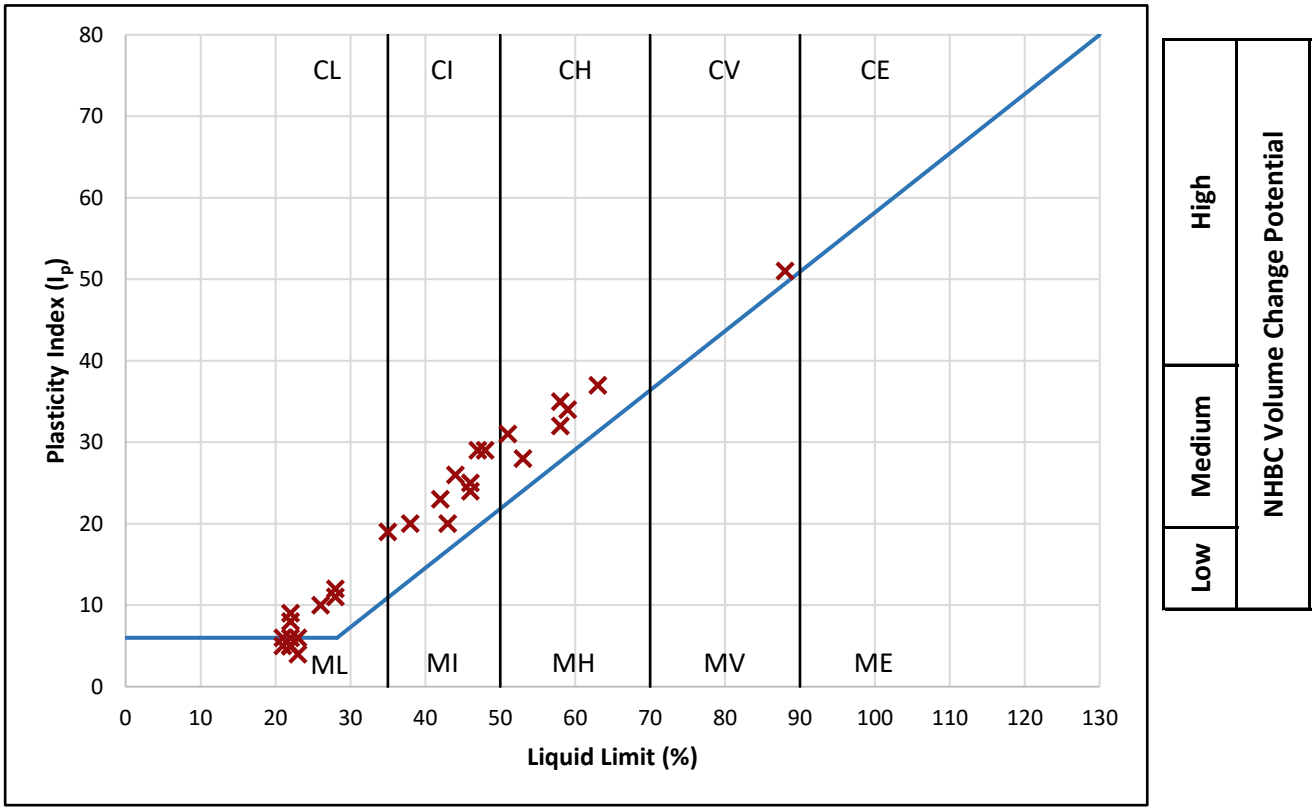
DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 4.3/4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

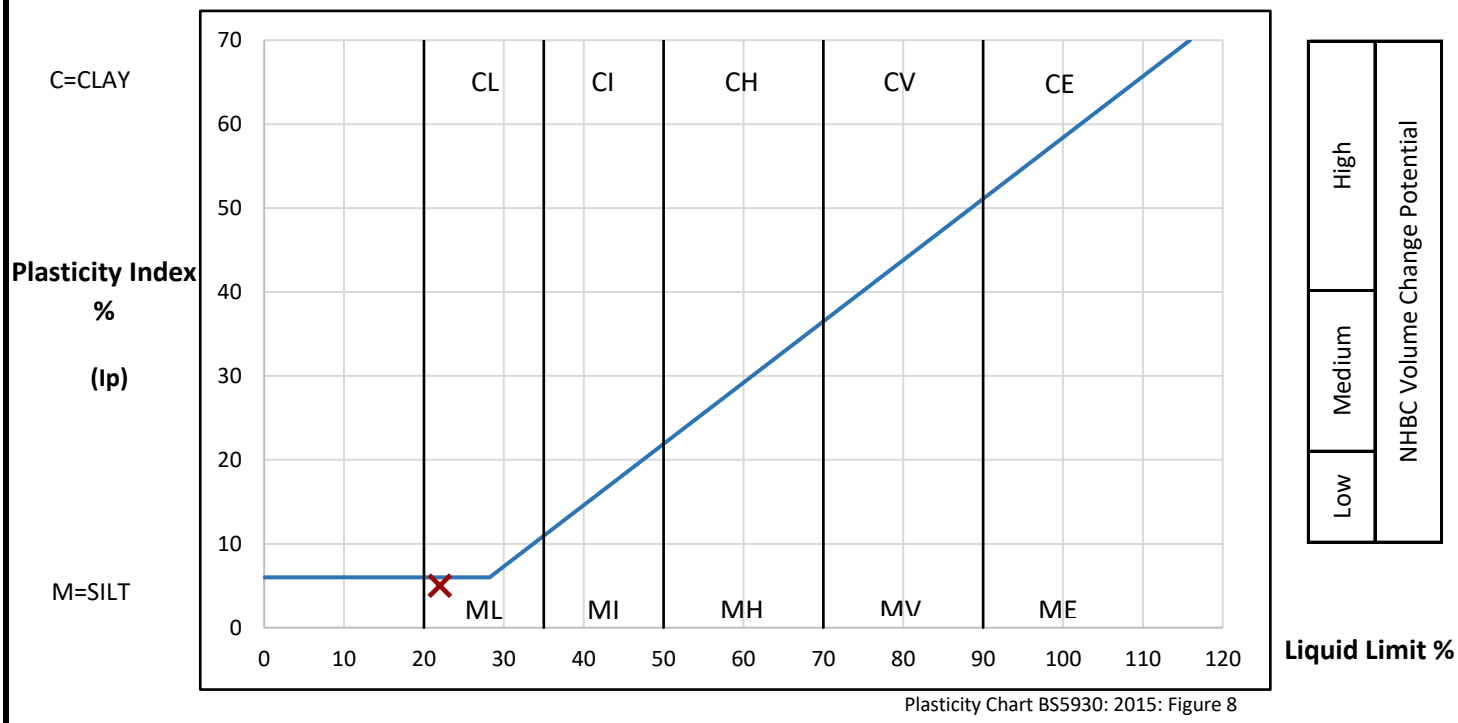
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC01	14.30	B	30	18.4	Olive silty clayey organic SAND locally oxidised to brown with rare fine flint gravel	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	17 %		Plasticity Index	5 %
Corrected water content for material passing 0.425mm		22.2 %		Liquidity Index	0.28
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	4 %
Curing time	24 hrs	Clay Content	7 %	Derived Activity	0.71



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

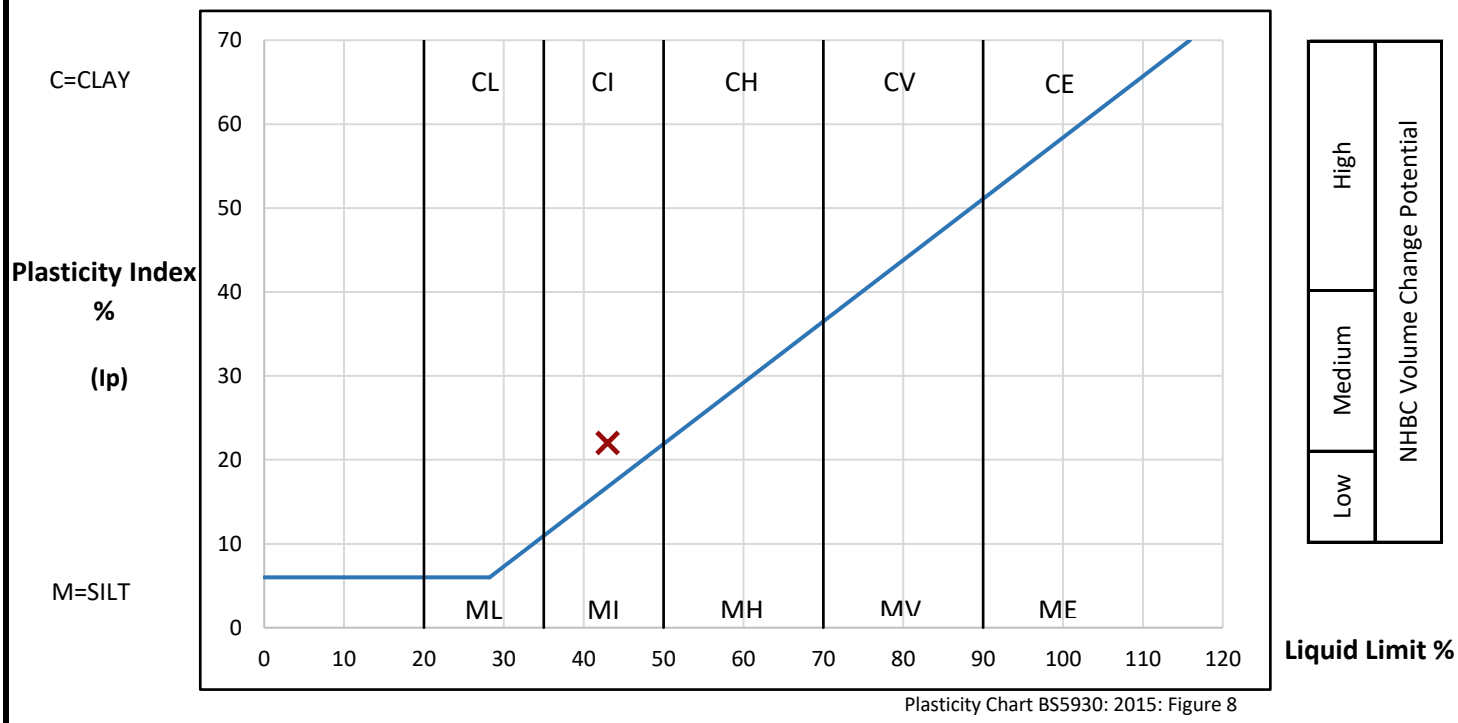
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC01	14.50 - 14.95	UT	31	21.2	Firm (Medium strength) grey slightly sandy silty organic CLAY with rare dark grey mottling and sandy pockets. Sand is fine.	

PREPARATION				Liquid Limit	43 %
Method of preparation		From natural		Plastic Limit	21 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	22 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.01
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

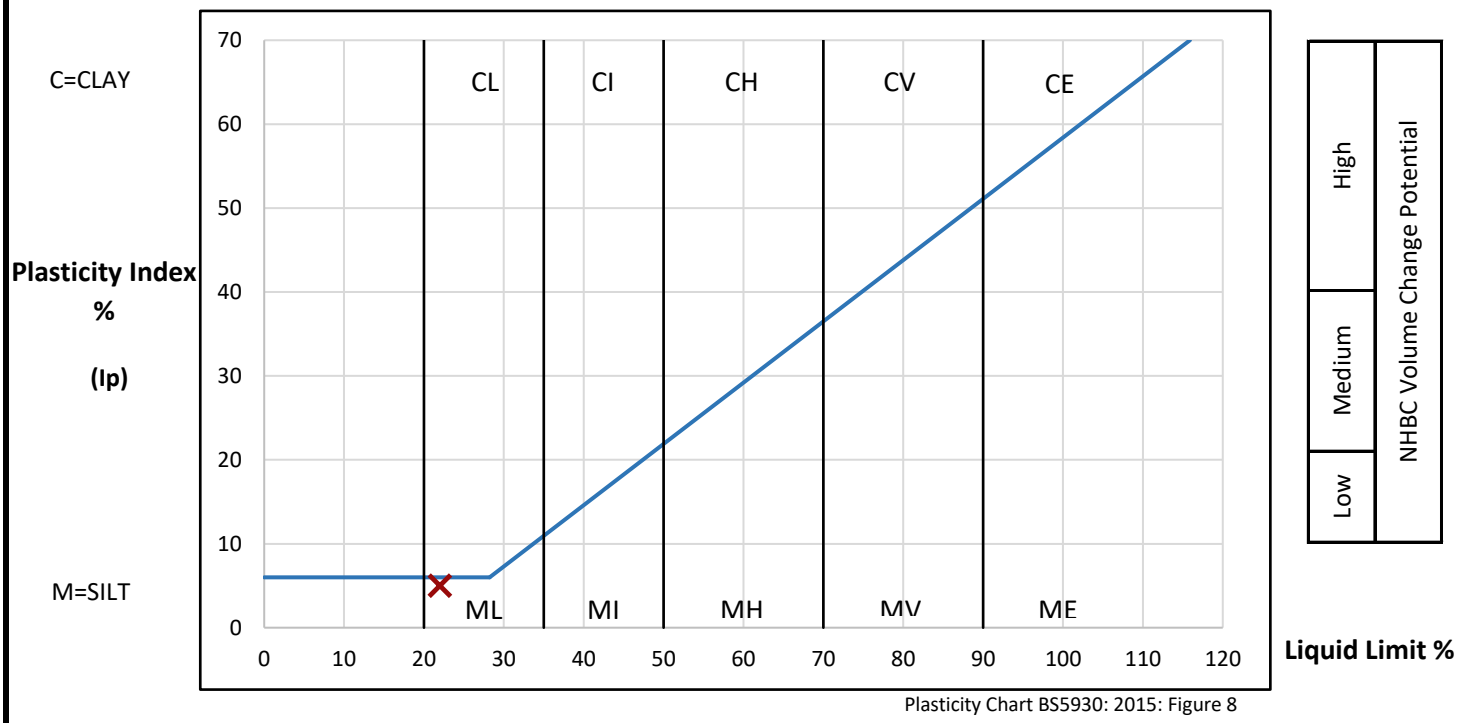
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	2.20 - 2.70	B	7	34.0	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown. Gravel is fine flint	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	10 %		Plasticity Index	5 %
Corrected water content for material passing 0.425mm		38.0 %		Liquidity Index	3.40
Sample retained 2mm sieve	(Measured)	5 %		NHBC Modified (I'p)	4 %
Curing time	24 hrs	Clay Content	18 %	Derived Activity	0.28



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

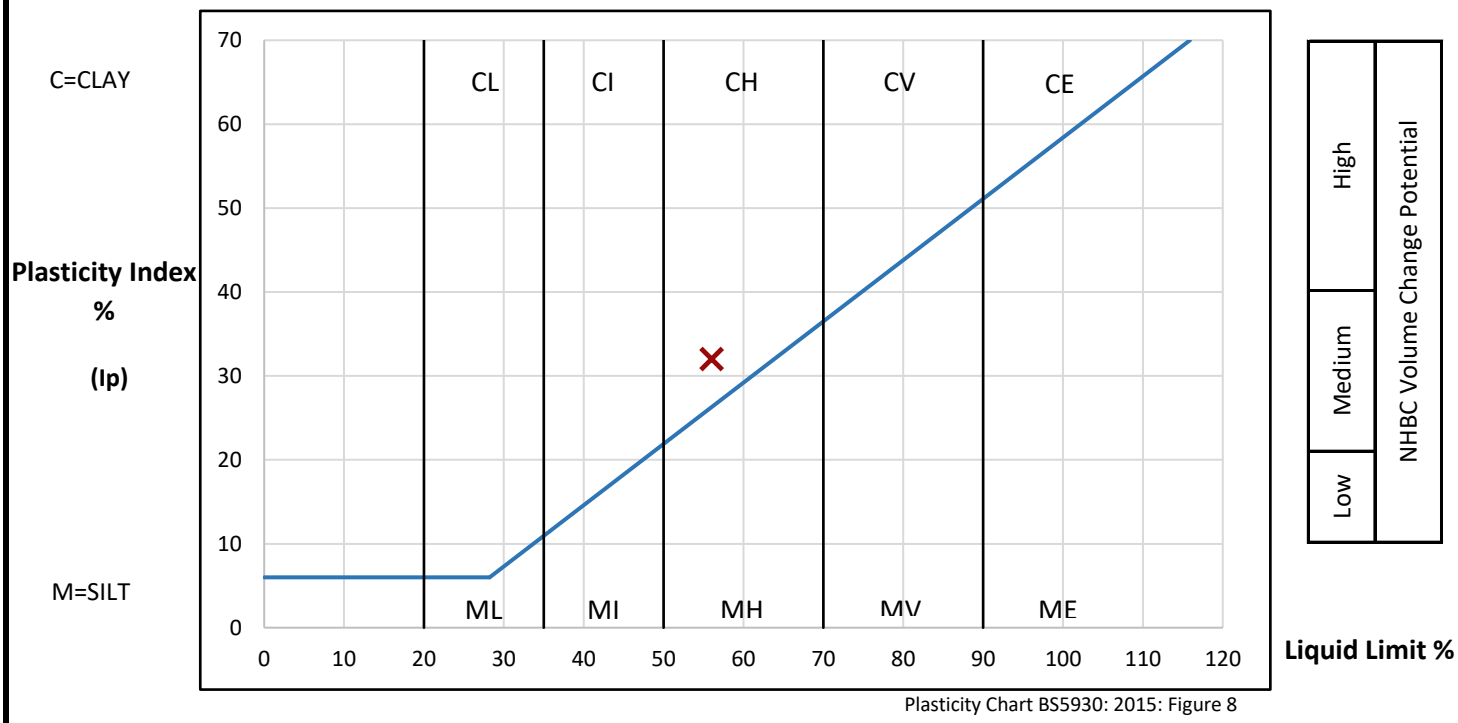
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	3.40 - 3.80	B	9	56.6	Very soft very dark grey organic CLAY locally oxidised to brown.	

PREPARATION				Liquid Limit	56 %
Method of preparation		From natural		Plastic Limit	24 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	32 %
Corrected water content for material passing 0.425mm				Liquidity Index	1.02
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	52 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

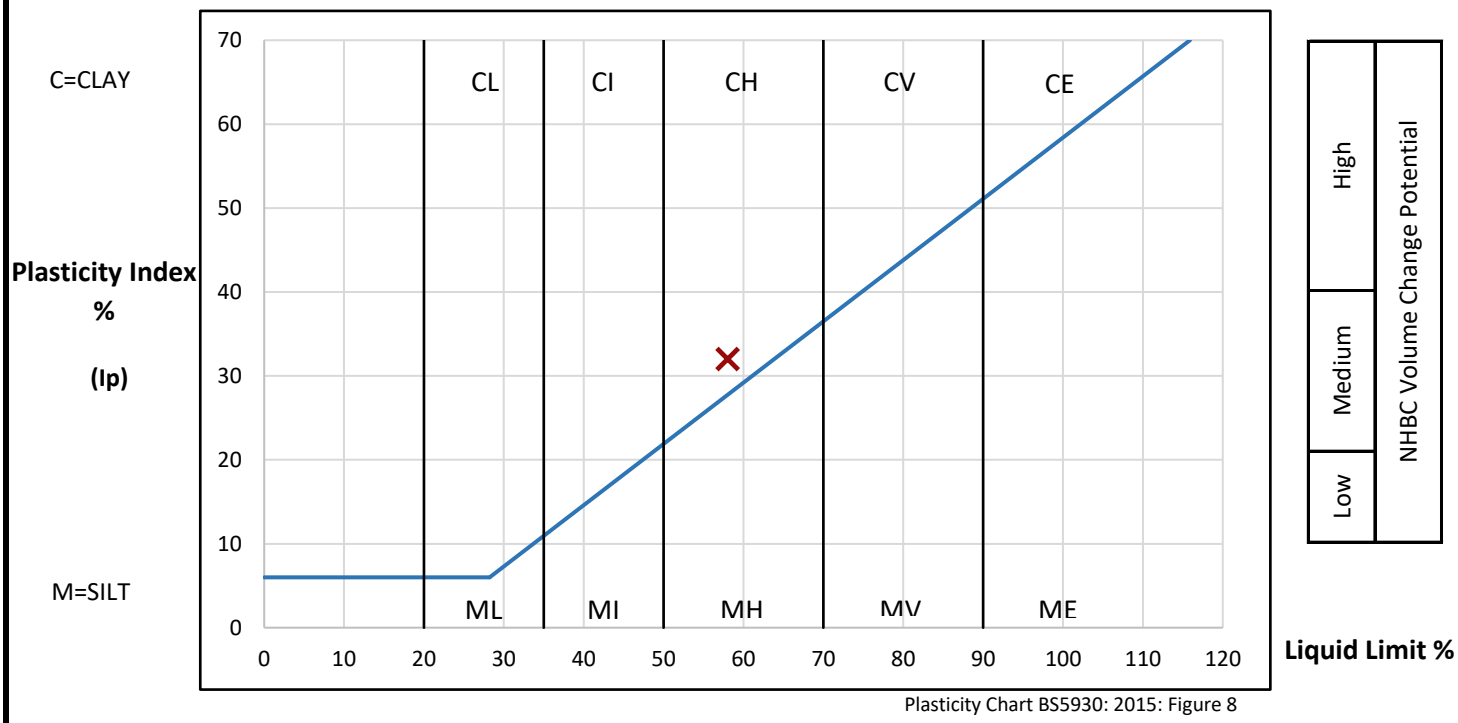
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	4.40 - 4.90	B	11	51.4	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown.	

PREPARATION				Liquid Limit	58 %
Method of preparation		From natural		Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	32 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.79
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	23 hrs		Clay Content 30 %	Derived Activity	1.07



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

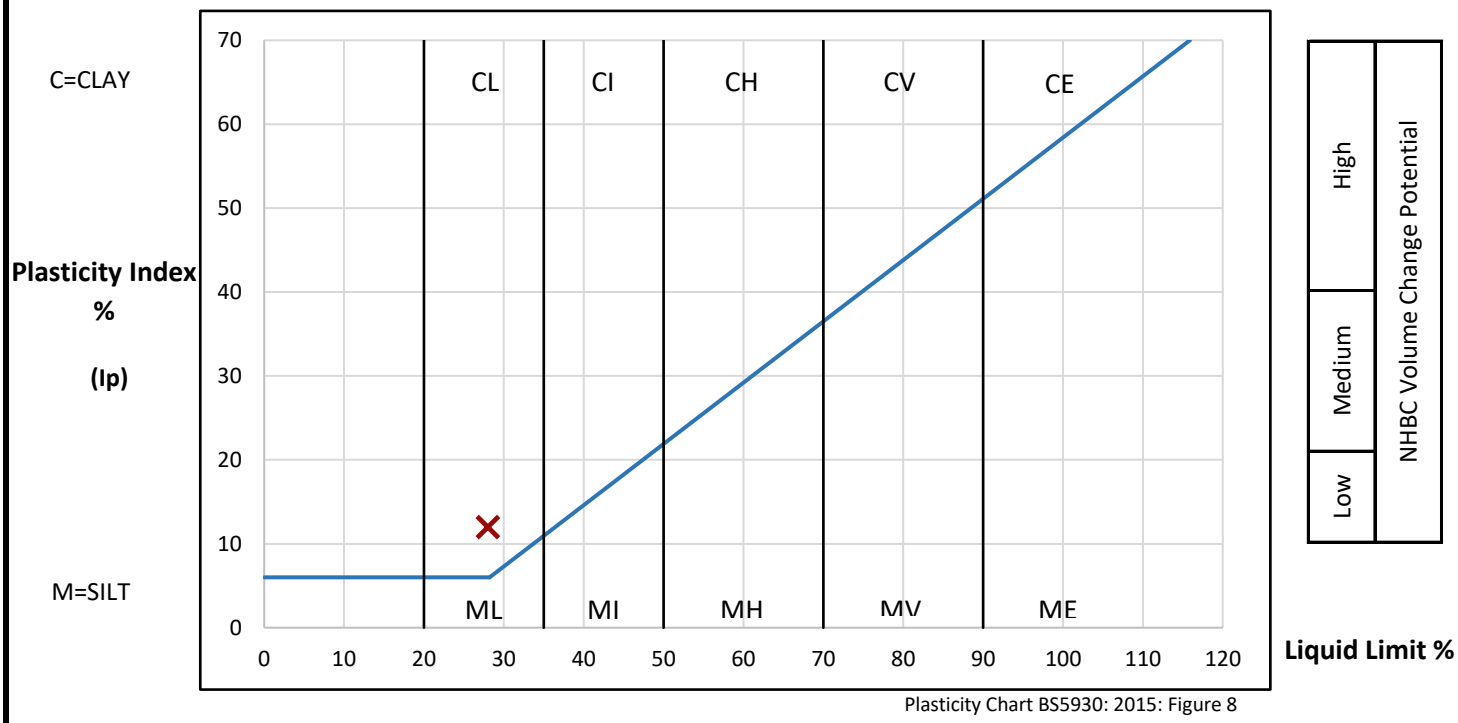
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	6.40 - 6.90	B	15	31.0	Very soft olive grey slightly gravelly sandy silty organic CLAY with rare shell debris. Gravel is fine flint.	

PREPARATION				Liquid Limit	28 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	11 %		Plasticity Index	12 %
Corrected water content for material passing 0.425mm		35.0 %		Liquidity Index	1.25
Sample retained 2mm sieve	(Measured)	4 %		NHBC Modified (I'p)	11 %
Curing time	24 hrs	Clay Content	14 %	Derived Activity	0.86



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

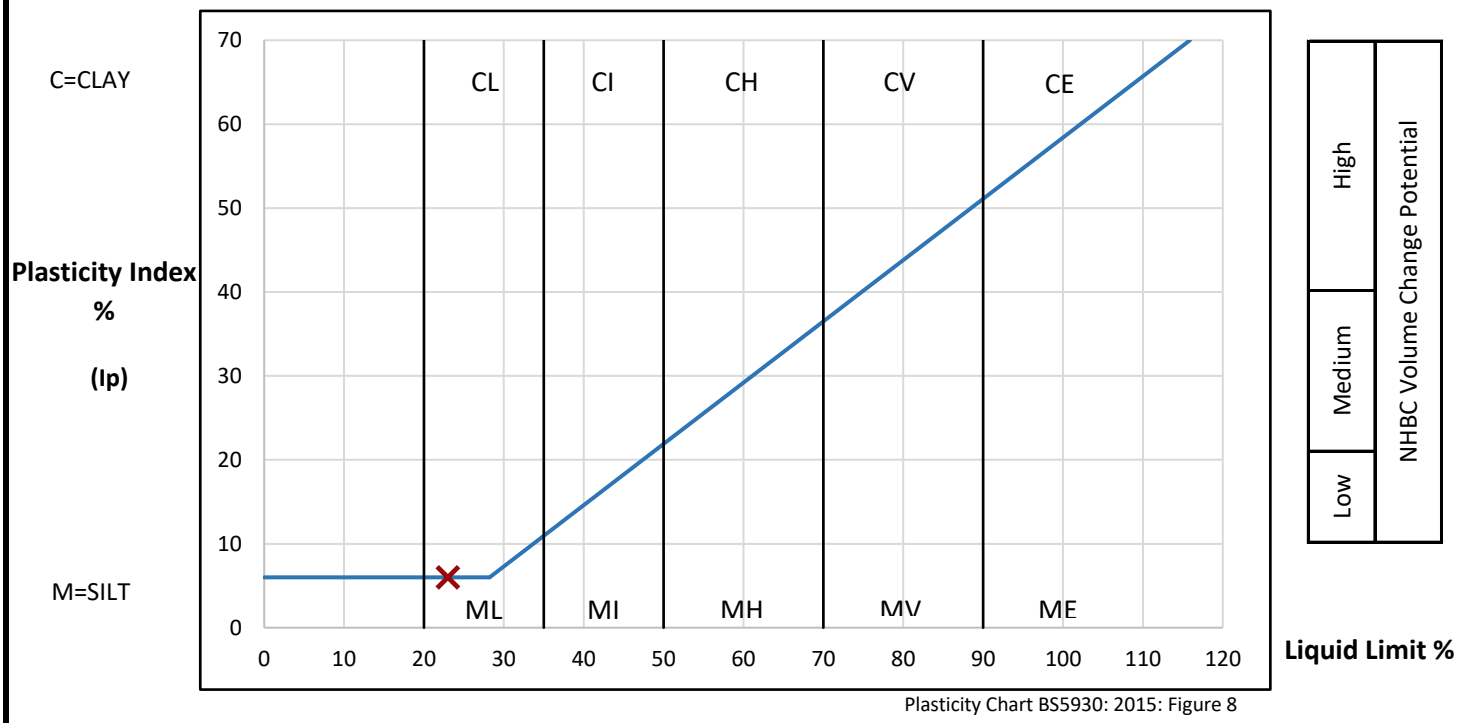
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	7.40 - 7.90	B	17	24.2	Very soft olive yellow organic slightly gravelly very sandy silty CLAY/silty clayey SAND with occasional olive grey mottling. Gravel is fine flint.	

PREPARATION				Liquid Limit	23 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	10 %		Plasticity Index	6 %
Corrected water content for material passing 0.425mm		26.8 %		Liquidity Index	1.20
Sample retained 2mm sieve	(Measured)	2 %		NHBC Modified (I'p)	5 %
Curing time	24 hrs	Clay Content	11 %	Derived Activity	0.55



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

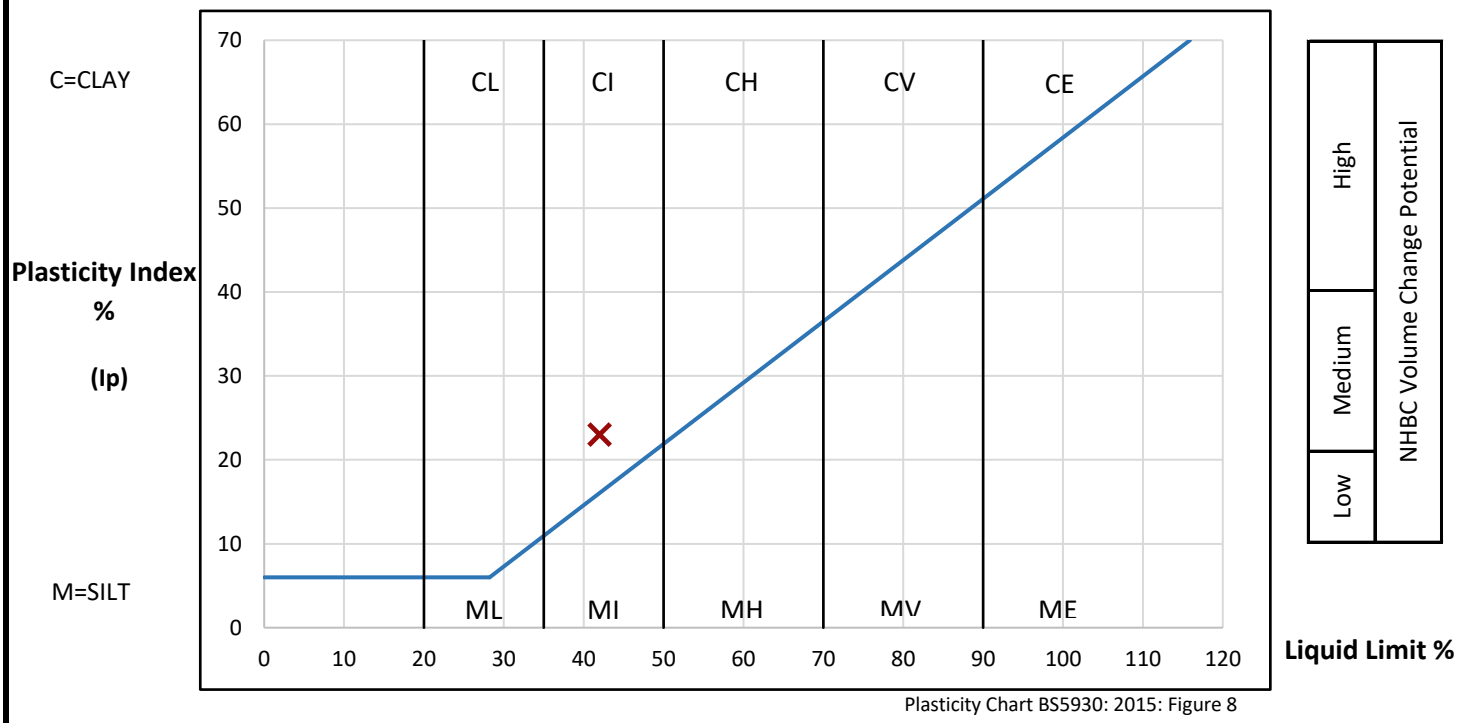
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	13.40 - 13.90	B	29	39.8	Very soft light bluish grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	

PREPARATION				Liquid Limit	42 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	19 %
Sample retained 0.425mm sieve	(Measured)	10 %		Plasticity Index	23 %
Corrected water content for material passing 0.425mm		44.2 %		Liquidity Index	0.90
Sample retained 2mm sieve	(Measured)	2 %		NHBC Modified (I'p)	21 %
Curing time	73 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

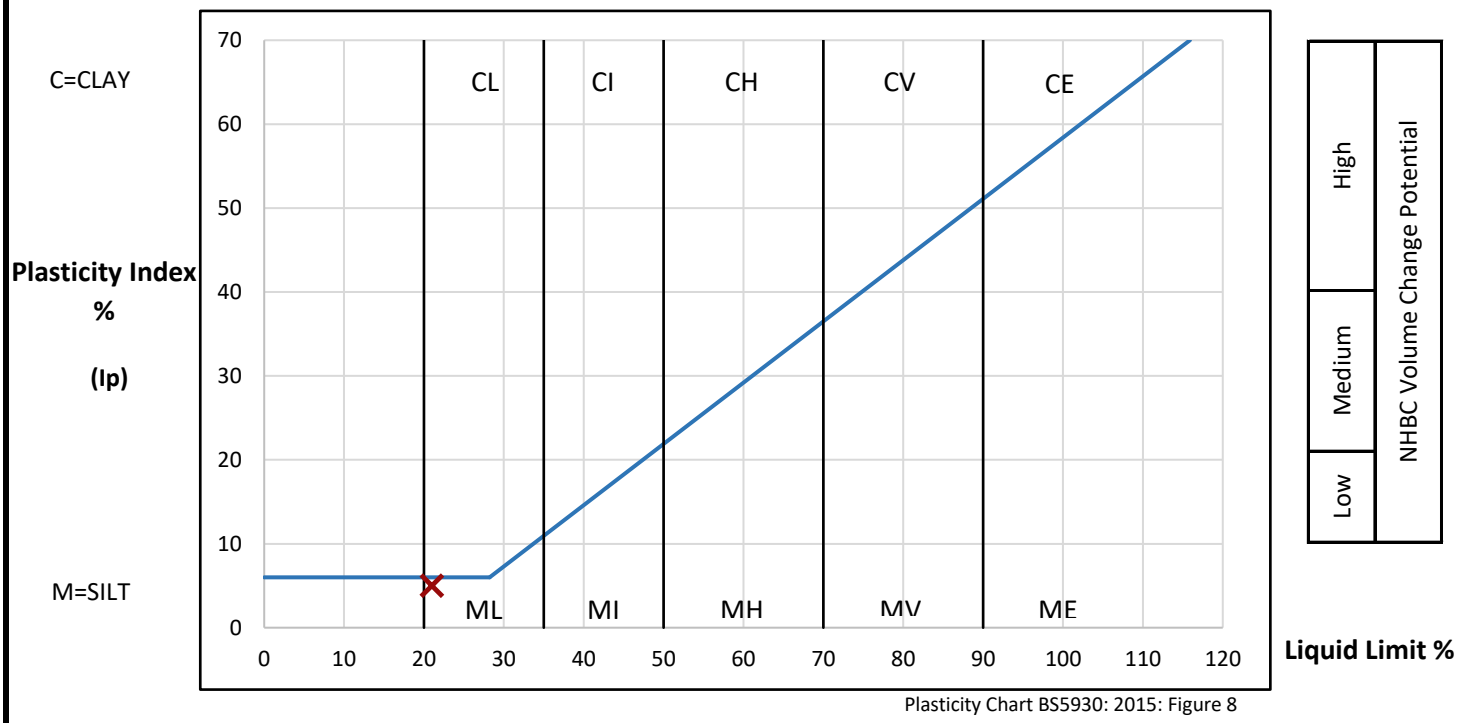
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	18.40 - 18.90	B	39	17.3	Dark bluish grey slightly gravelly silty clayey organic SAND locally oxidised to brown. Gravel is fine	

PREPARATION				Liquid Limit	21 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	15 %		Plasticity Index	5 %
Corrected water content for material passing 0.425mm		20.4 %		Liquidity Index	0.26
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	4 %
Curing time	24 hrs	Clay Content	9 %	Derived Activity	0.56



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

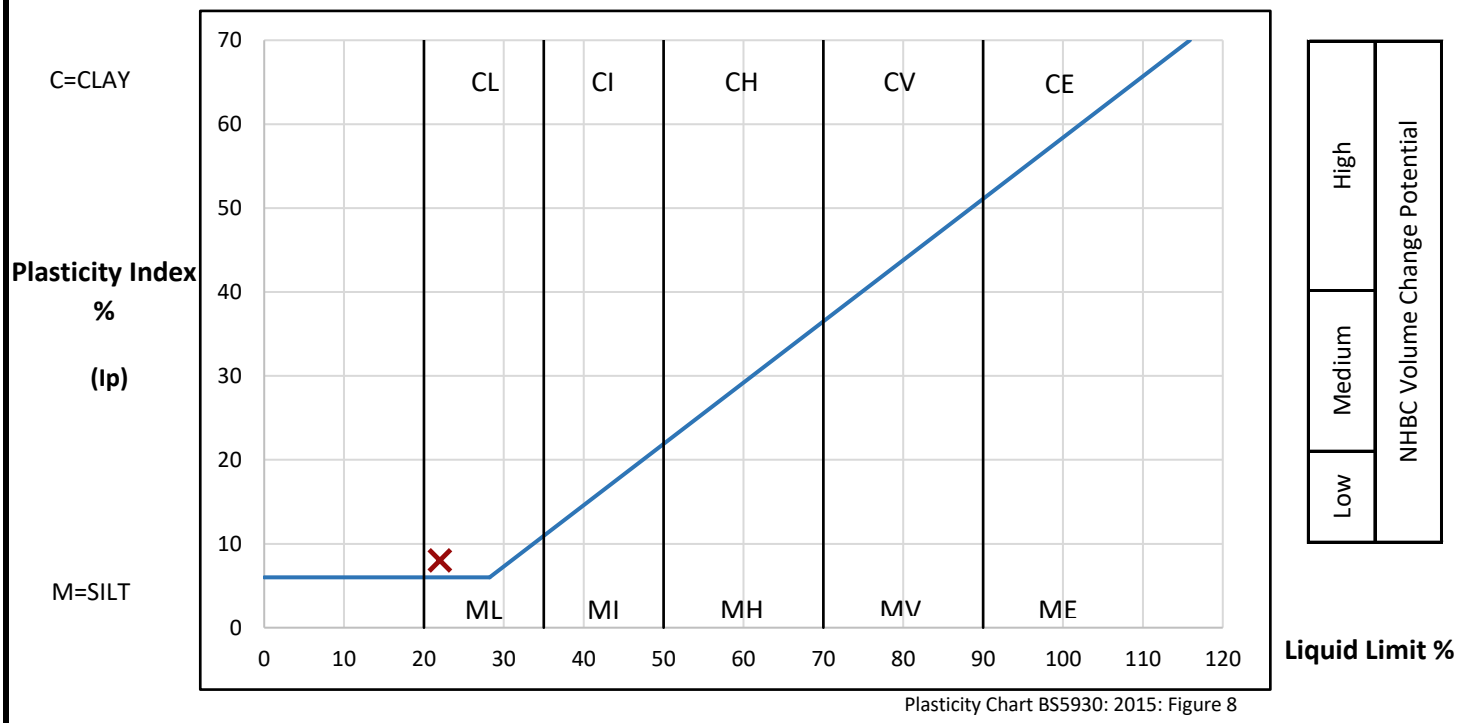
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	19.00 - 19.45	UT	40	17.4	Grey slightly gravelly sandy silty CLAY with rare yellowish brown and dark grey mottling. Gravel is fine flint	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	14 %
Sample retained 0.425mm sieve	(Measured)	4 %		Plasticity Index	8 %
Corrected water content for material passing 0.425mm		18.1 %		Liquidity Index	0.43
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	8 %
Curing time	25 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

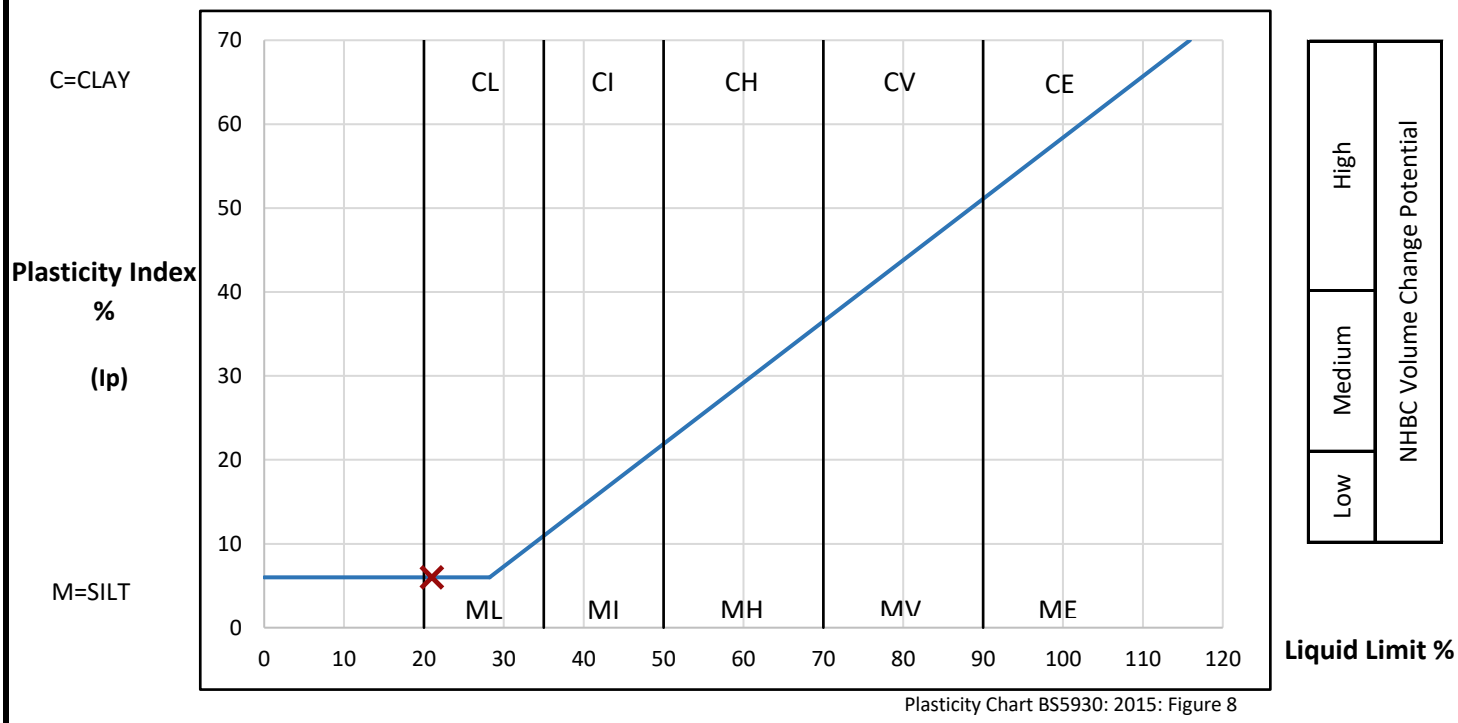
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	19.60 - 19.90	B	42	18.3	Grey slightly organic slightly gravelly silty clayey SAND/very sandy silty CLAY locally oxidised to brown. Gravel is fine flint	

PREPARATION				Liquid Limit	21 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	15 %
Sample retained 0.425mm sieve	(Measured)	15 %		Plasticity Index	6 %
Corrected water content for material passing 0.425mm		21.5 %		Liquidity Index	0.55
Sample retained 2mm sieve	(Measured)	1 %		NHBC Modified (I'p)	5 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

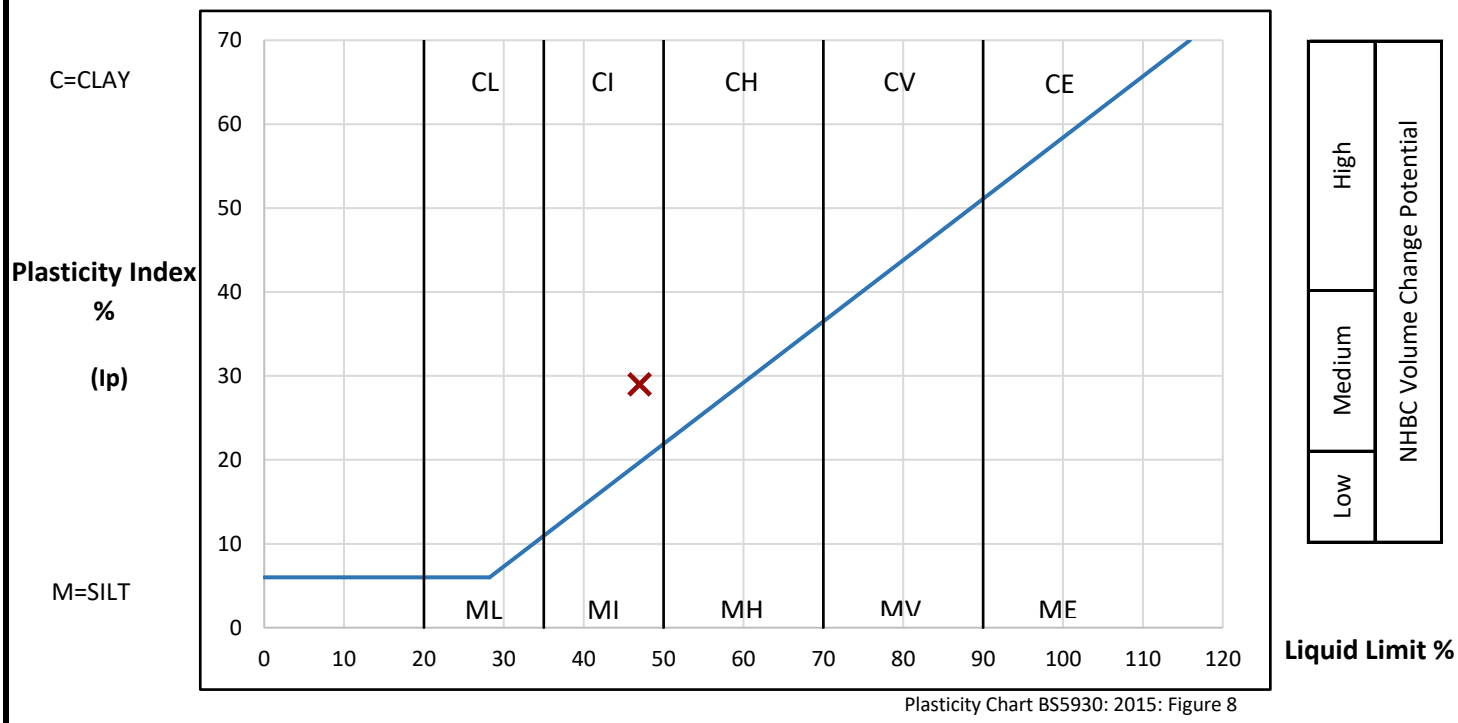
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	20.00 - 20.50	B	44	23.5	Firm grey slightly sandy silty organic CLAY locally oxidised to brown with occasional fine sand/silt partings.	

PREPARATION				Liquid Limit	47 %
Method of preparation		From natural		Plastic Limit	18 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	29 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.19
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs		Clay Content 31 %	Derived Activity	0.94



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

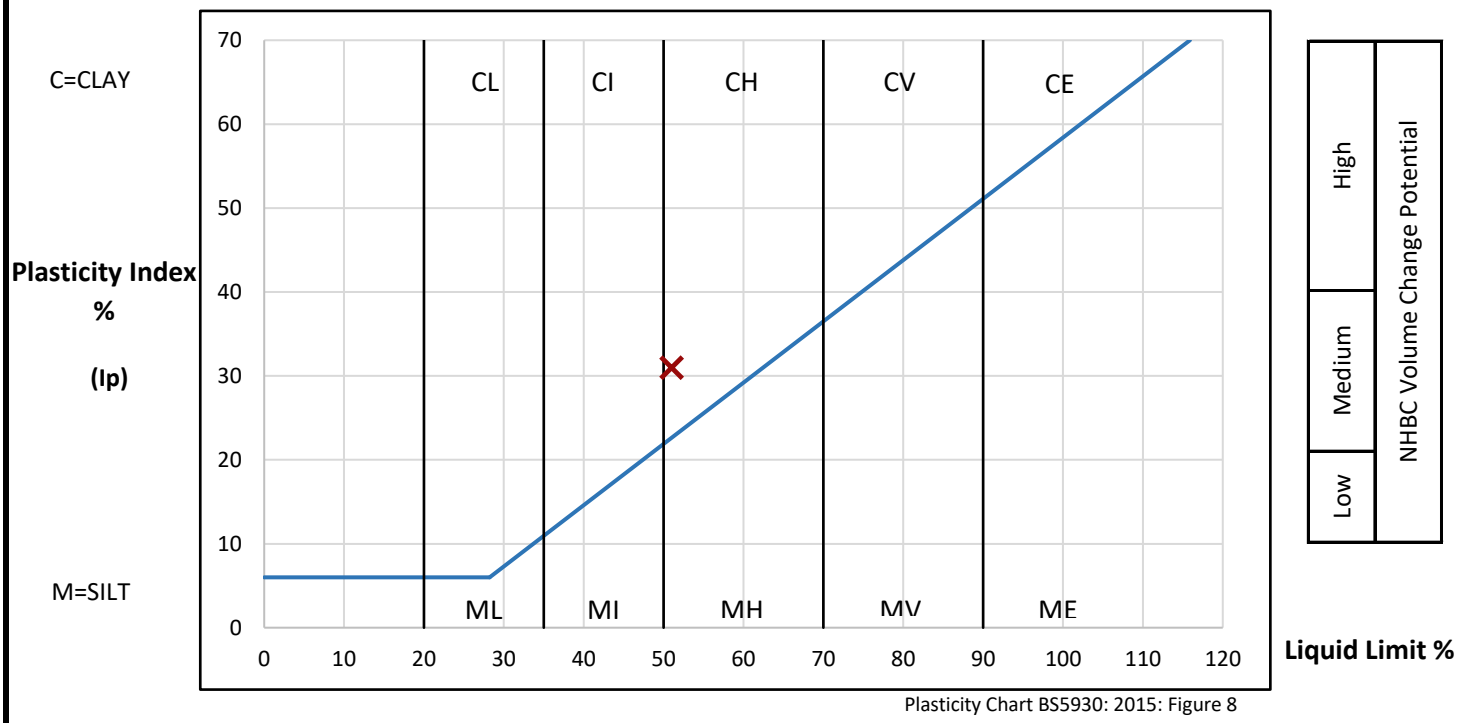
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	21.00 - 21.45	UT	45	25.8	Stiff (High strength) fissured grey CLAY with rare fine sand laminations.	

PREPARATION				Liquid Limit	51 %
Method of preparation		From natural		Plastic Limit	20 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	31 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.19
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

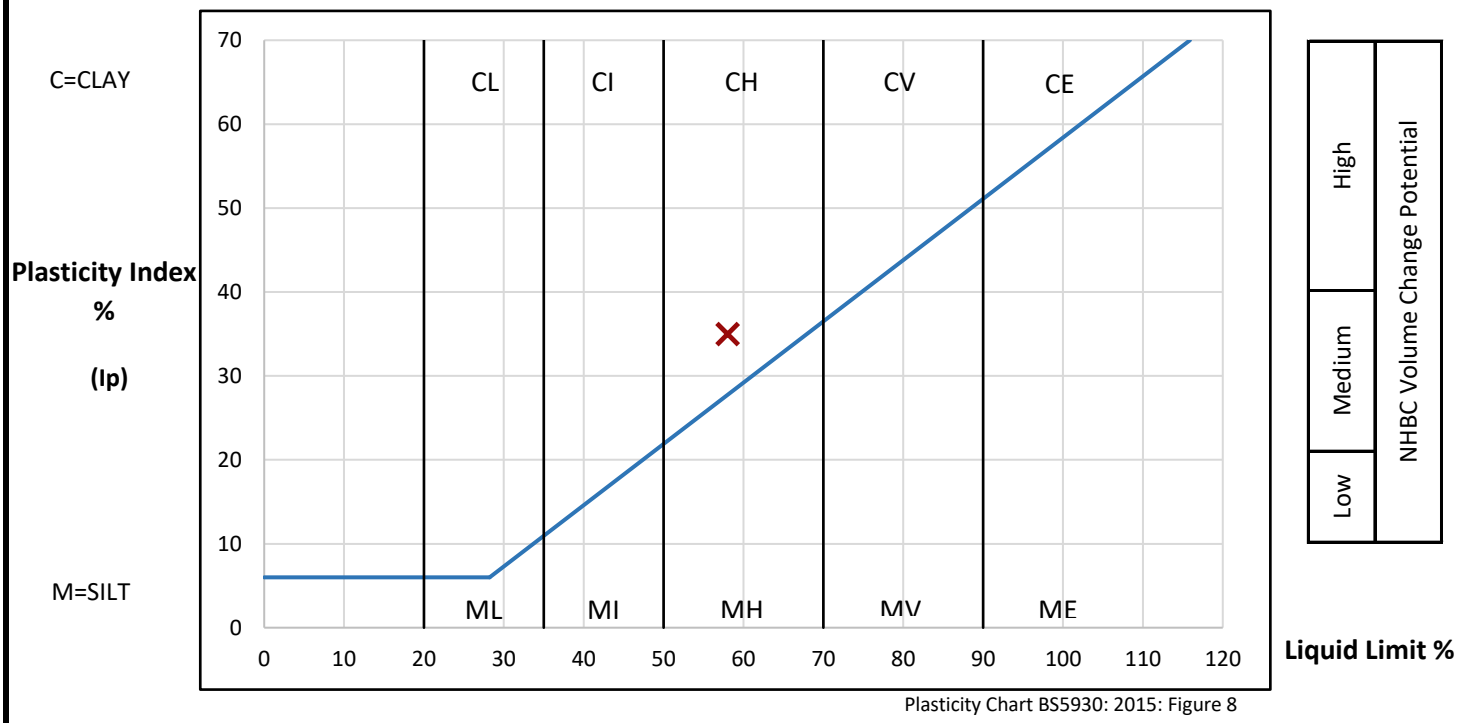
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC09	23.00 - 23.45	UT	50	30.3	Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.	

PREPARATION				Liquid Limit	58 %
Method of preparation		From natural		Plastic Limit	23 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	35 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.21
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	23 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

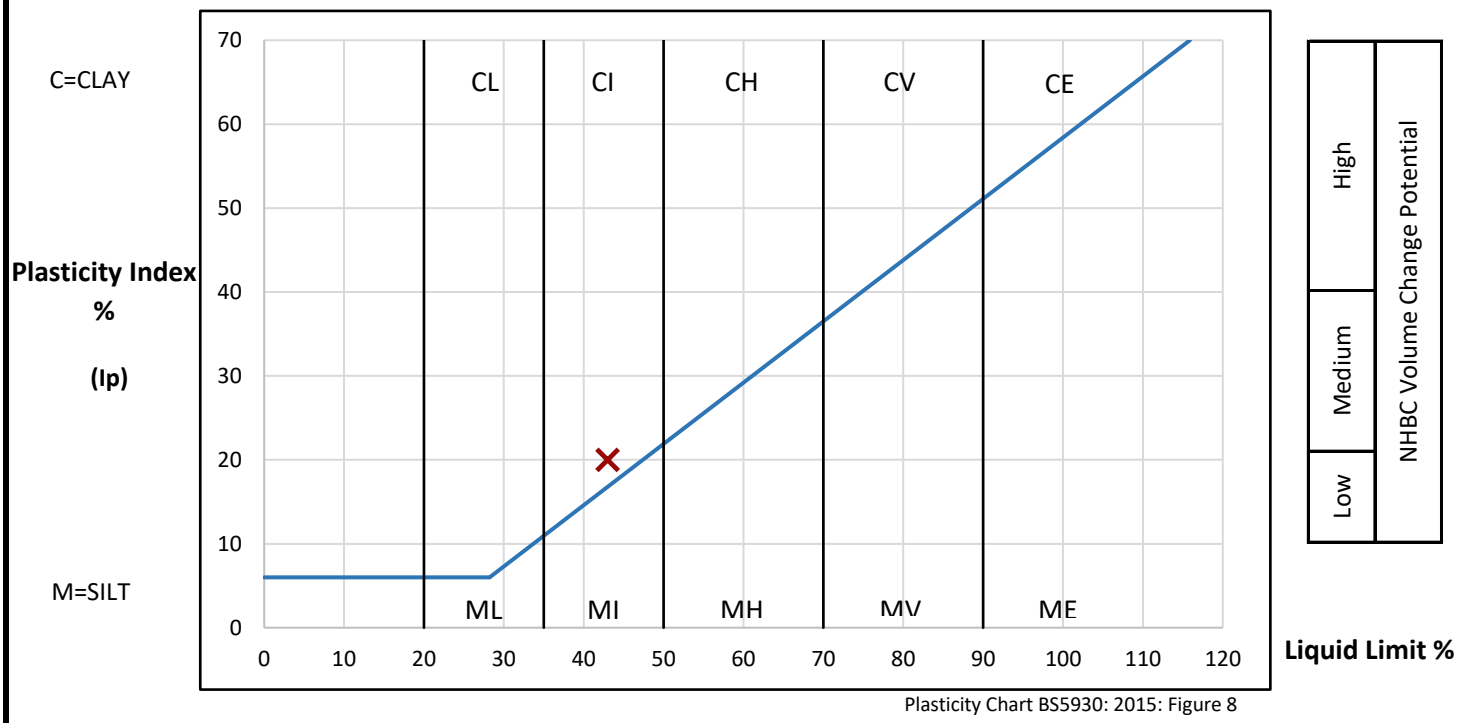
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	2.00 - 2.50	B	7	40.1	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown. Gravel is fine to medium flint.	

PREPARATION				Liquid Limit	43 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	23 %
Sample retained 0.425mm sieve	(Measured)	7 %		Plasticity Index	20 %
Corrected water content for material passing 0.425mm		43.1 %		Liquidity Index	0.86
Sample retained 2mm sieve	(Measured)	6 %		NHBC Modified (I'p)	19 %
Curing time	74 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

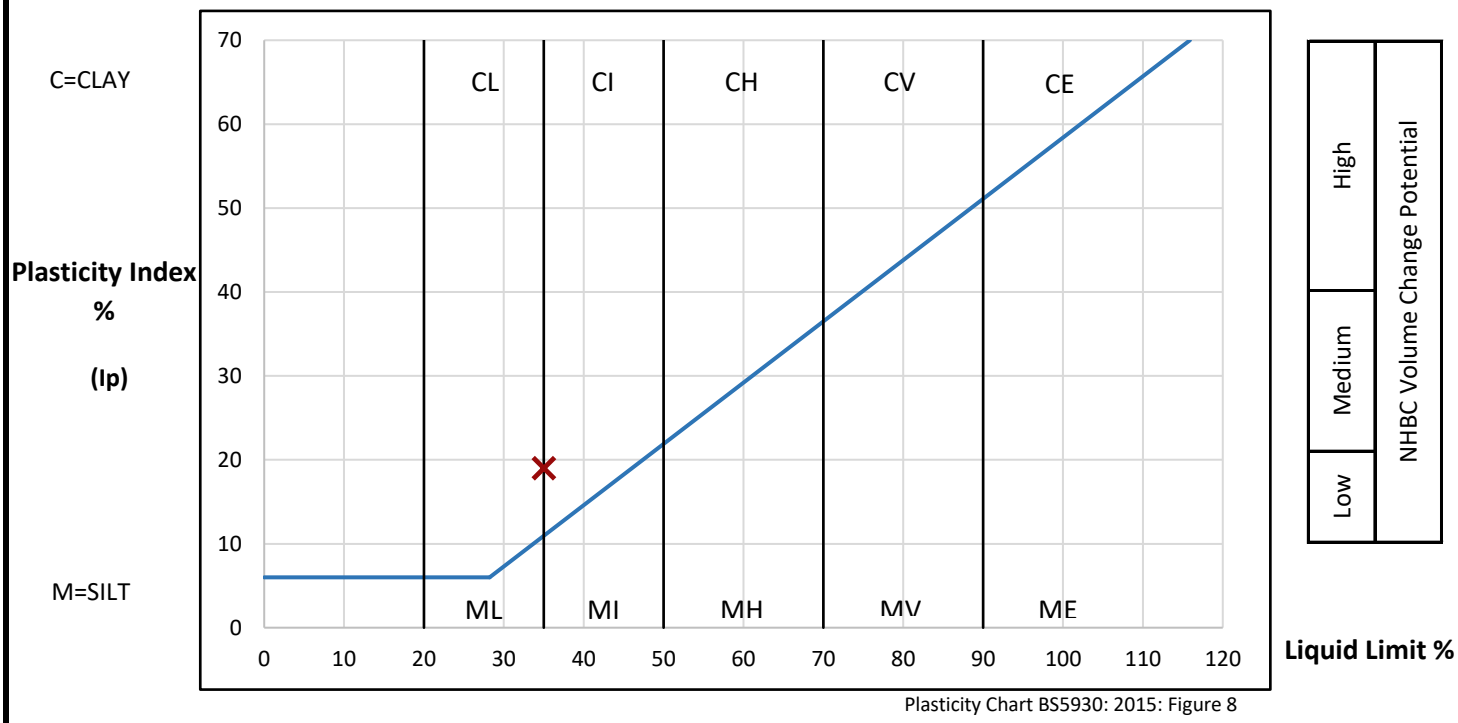
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	3.00 - 3.50	B	12	32.5	Very soft very dark grey slightly gravelly slightly sandy silty organic CLAY locally oxidised to brown with rare fossil and shell fragments. Gravel is fine to medium flint.	

PREPARATION				Liquid Limit	35 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	9 %		Plasticity Index	19 %
Corrected water content for material passing 0.425mm		35.7 %		Liquidity Index	0.87
Sample retained 2mm sieve	(Measured)	5 %		NHBC Modified (I'p)	17 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

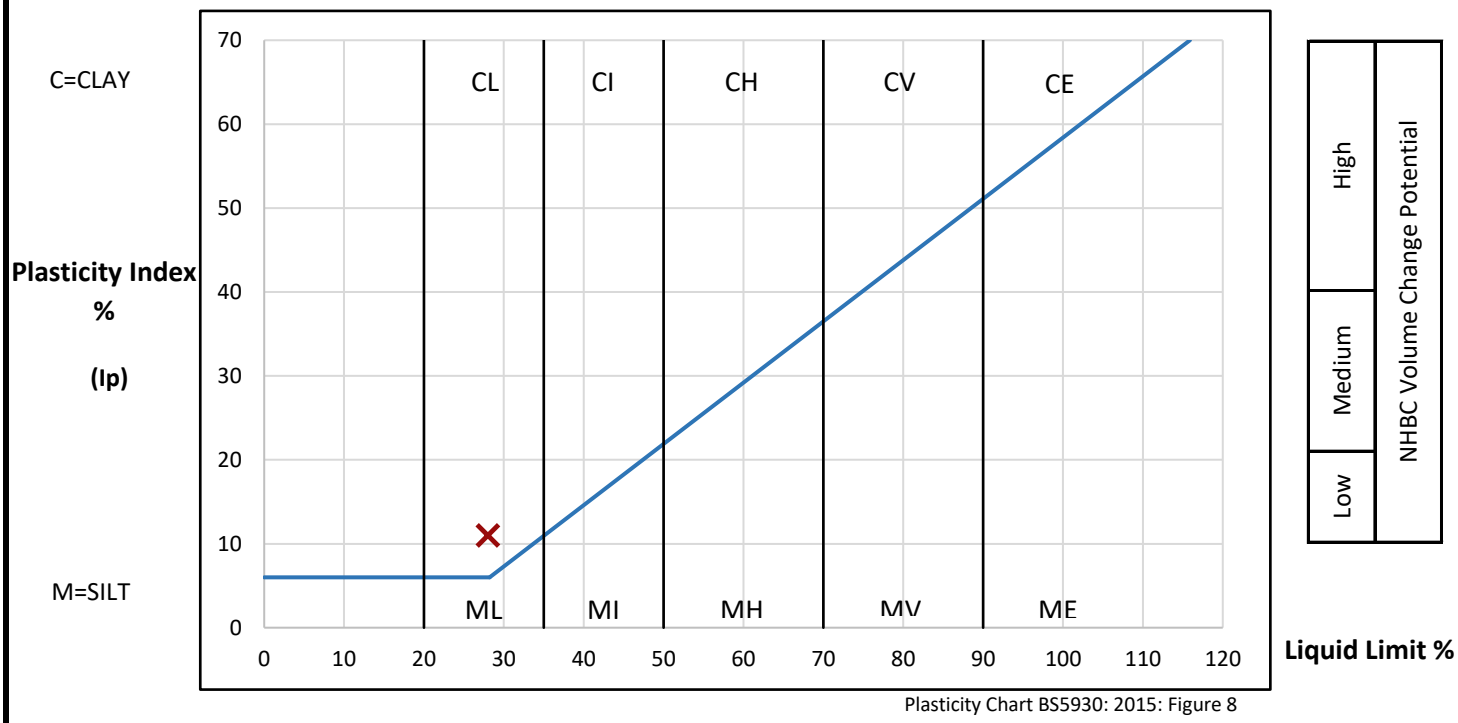
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	3.00 - 3.45	UT	9	27.6	Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.	

PREPARATION				Liquid Limit	28 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	17 %
Sample retained 0.425mm sieve	(Measured)	9 %		Plasticity Index	11 %
Corrected water content for material passing 0.425mm		30.3 %		Liquidity Index	0.96
Sample retained 2mm sieve	(Measured)	5 %		NHBC Modified (I'p)	10 %
Curing time	72 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

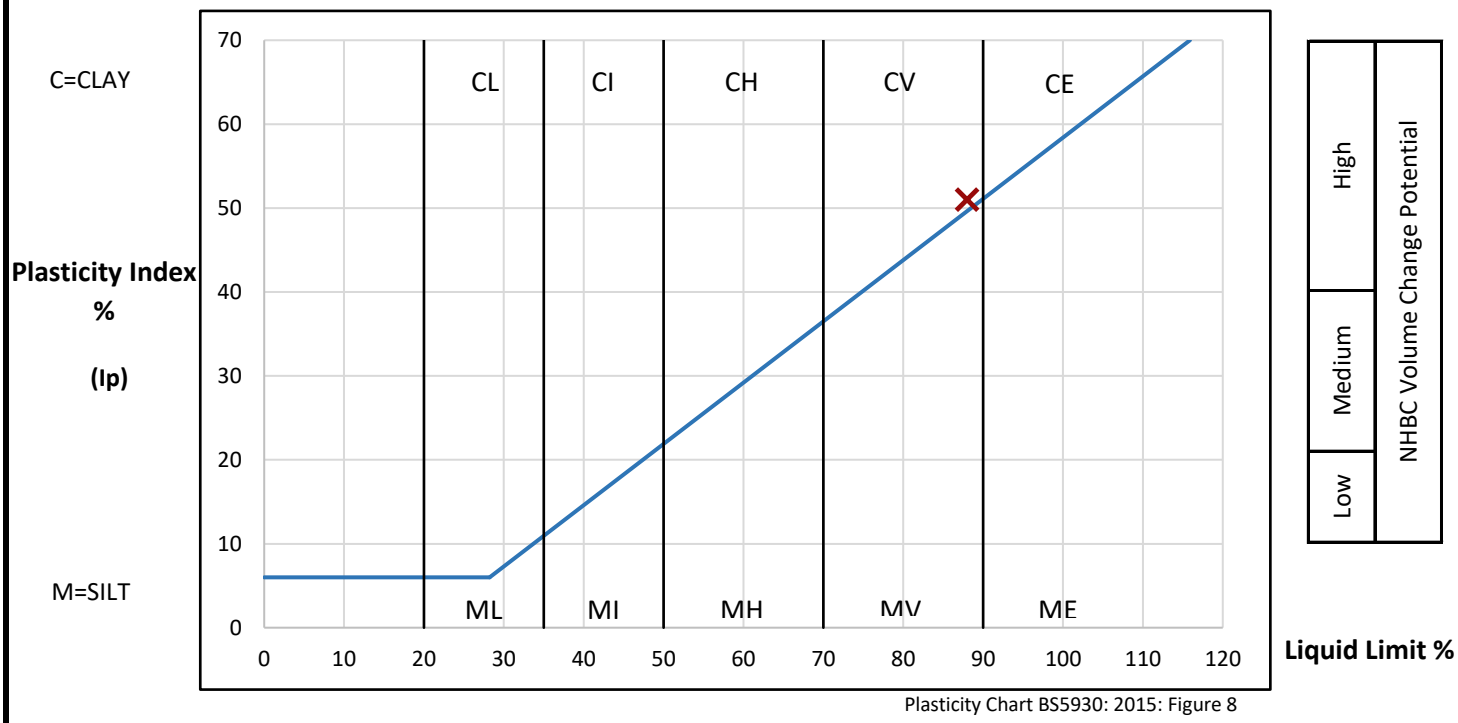
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	5.00 - 5.45	UT	15	78.4	Soft (Low strength) brown silty organic CLAY with occasional grey mottling.	

PREPARATION				Liquid Limit	88 %
Method of preparation		From natural		Plastic Limit	37 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	51 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.81
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

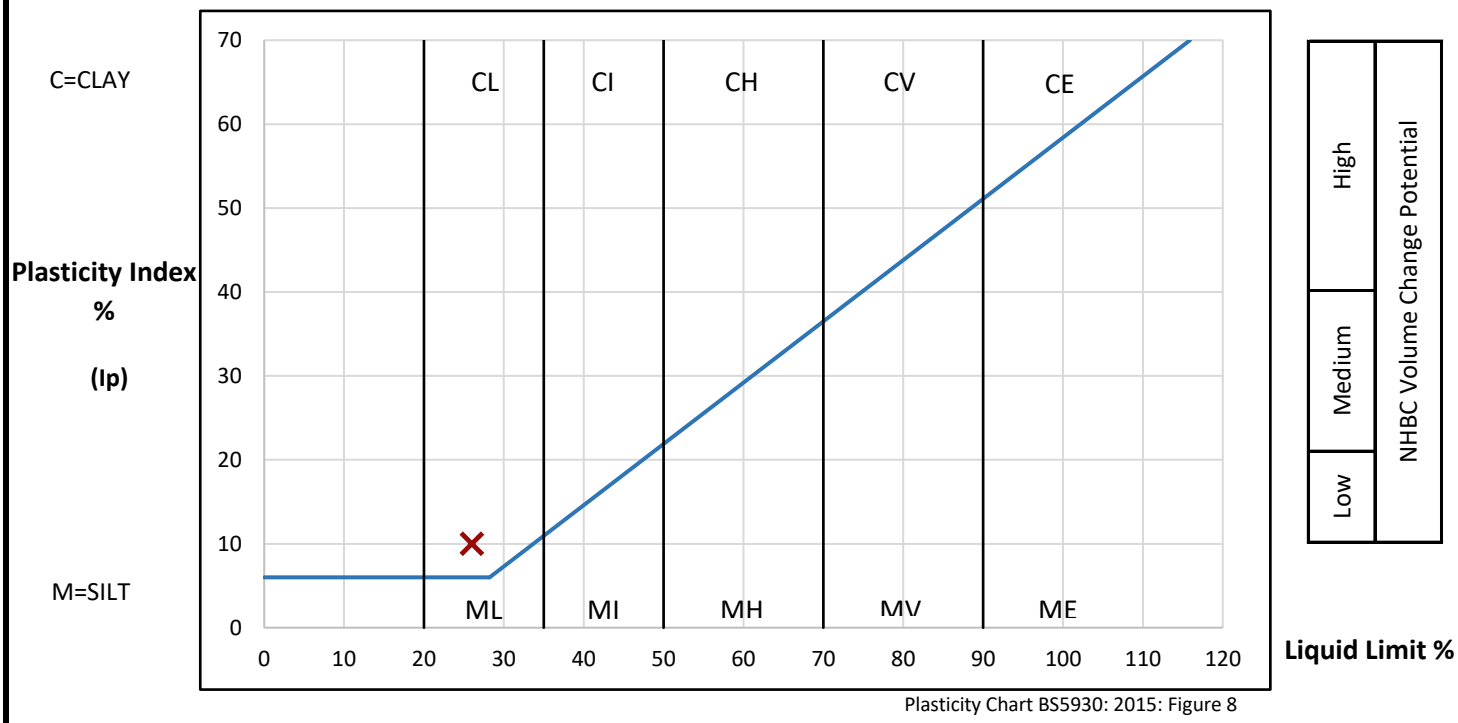
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	10.00 - 10.45	UT	25	19.1	Soft yellowish brown sandy silty CLAY with occasional bluish grey mottling. Sand is fine to medium.	

PREPARATION				Liquid Limit	26 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	1 %		Plasticity Index	10 %
Corrected water content for material passing 0.425mm		19.3 %		Liquidity Index	0.31
Sample retained 2mm sieve	(Measured)	<1 %		NHBC Modified (I'p)	10 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

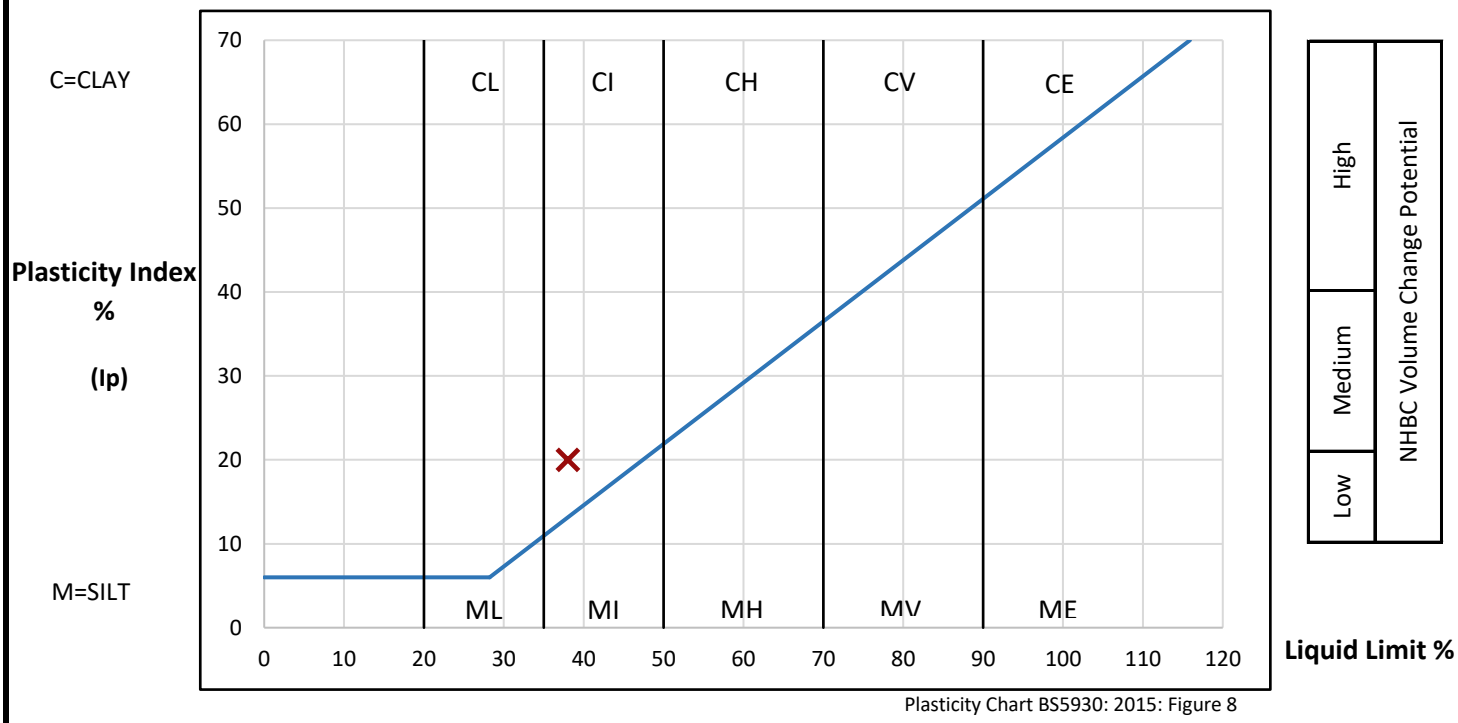
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	13.00 - 13.50	B	35	32.7	Very soft dark bluish grey sandy silty organic CLAY with occasional olive and brown mottling.	

PREPARATION				Liquid Limit	38 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	18 %
Sample retained 0.425mm sieve	(Measured)	12 %		Plasticity Index	20 %
Corrected water content for material passing 0.425mm		37.0 %		Liquidity Index	0.74
Sample retained 2mm sieve	(Measured)	0 %		NHBC Modified (I'p)	18 %
Curing time	67 hrs	Clay Content	25 %	Derived Activity	0.80



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

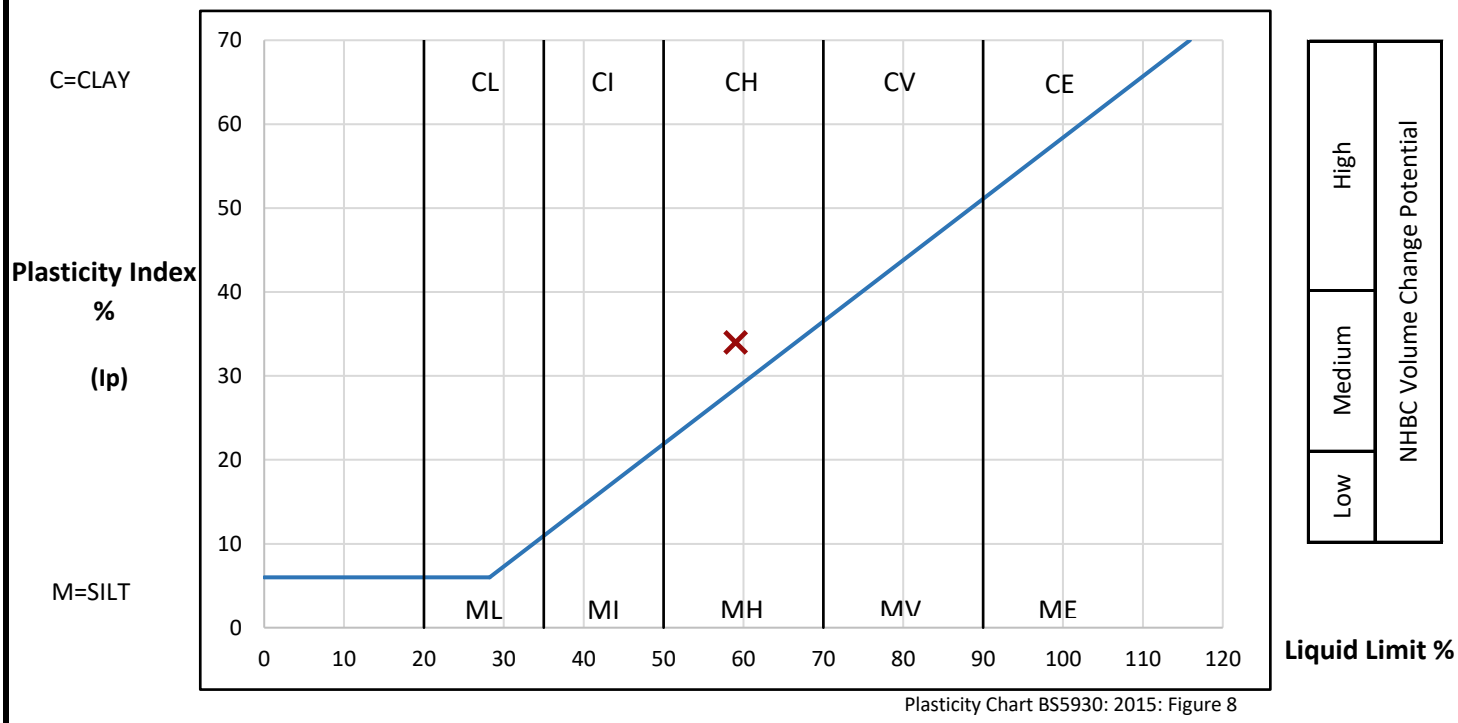
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	13.10 - 13.55	UT	33	32.5	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.	

PREPARATION				Liquid Limit	59 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	34 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.22
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

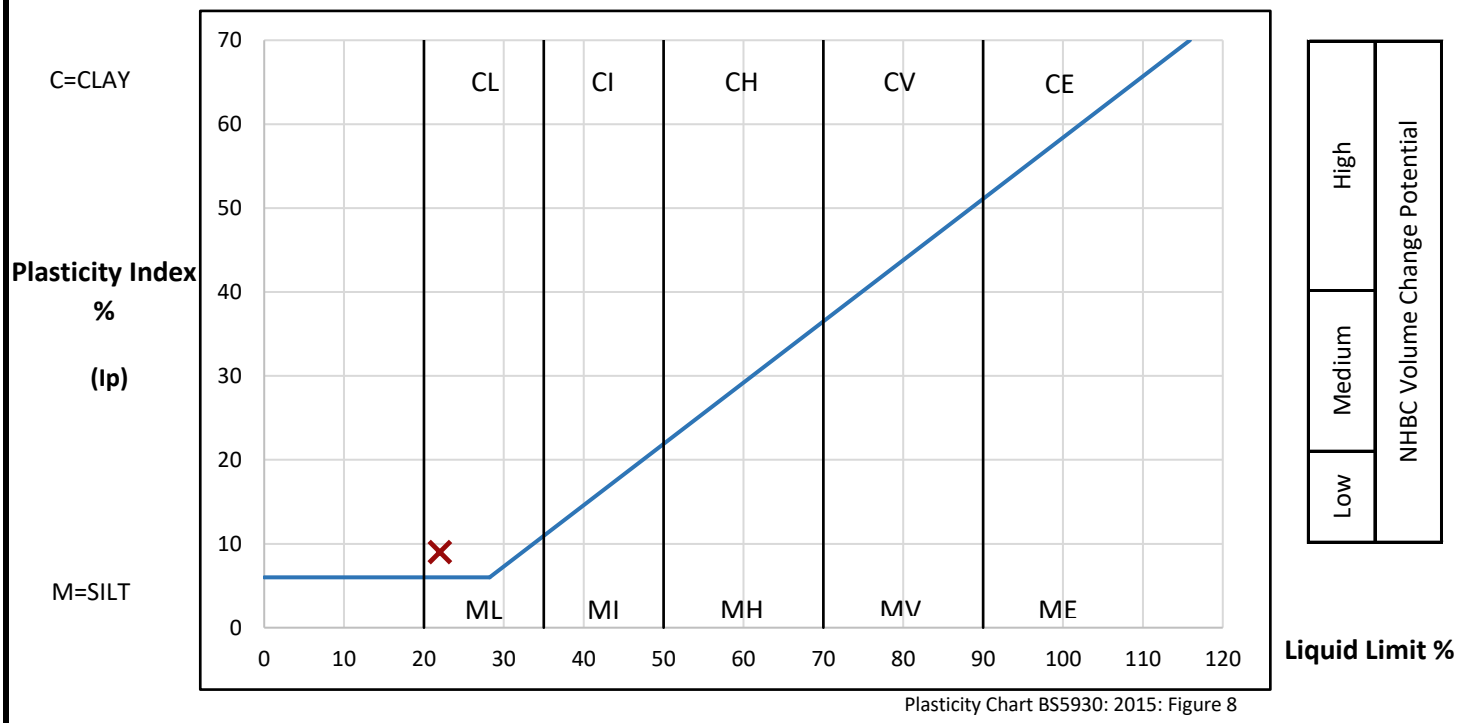
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	18.00 - 18.45	UT	44	21.7	Grey sandy silty organic CLAY with occasional laminations. Sand is fine to medium.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	13 %
Sample retained 0.425mm sieve	(Measured)	1 %		Plasticity Index	9 %
Corrected water content for material passing 0.425mm		21.8 %		Liquidity Index	0.97
Sample retained 2mm sieve	(Measured)	0 %		NHBC Modified (I'p)	9 %
Curing time	67 hrs	Clay Content	16 %	Derived Activity	0.56



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

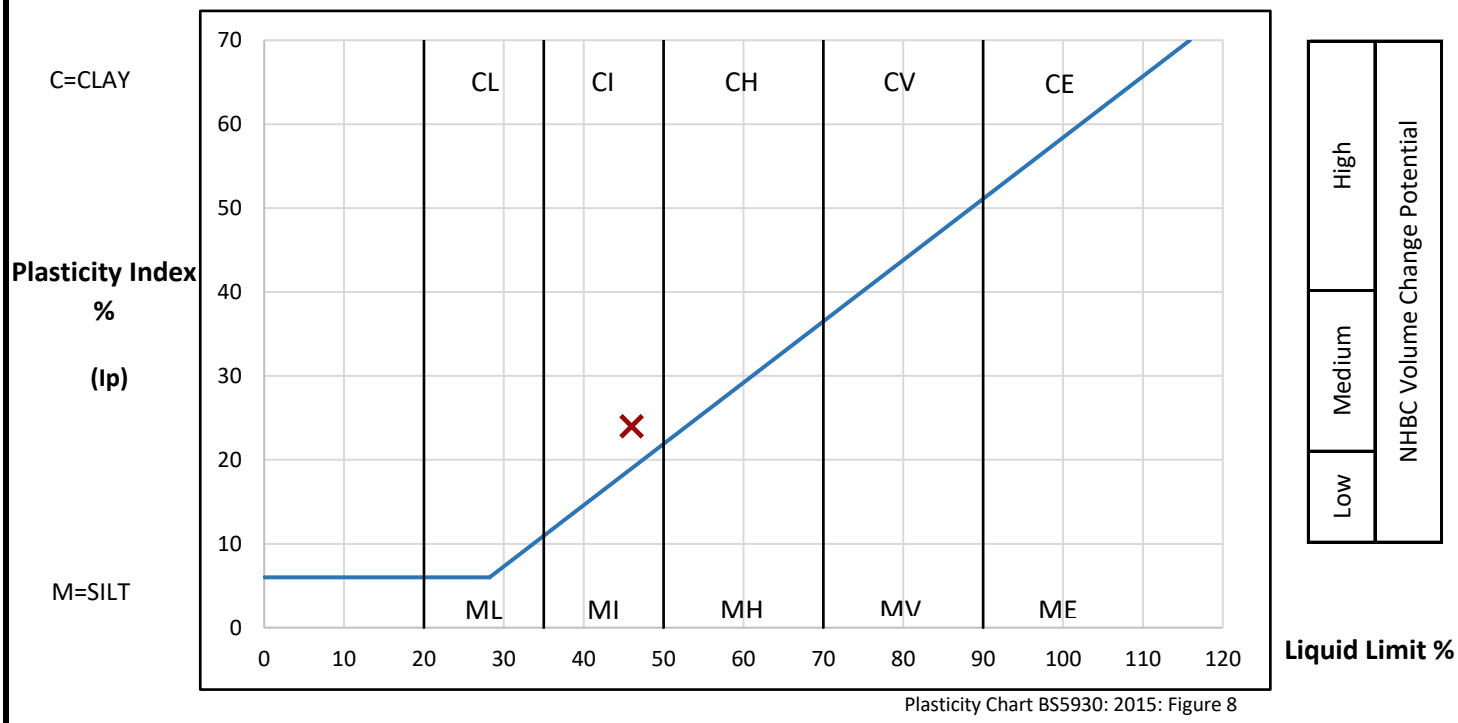
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	20.00 - 20.45	UT	49	23.9	Stiff (High strength) grey slightly sandy organic CLAY with rare dark grey mottling changing to slightly sandy silty clay at bottom of specimen.	

PREPARATION				Liquid Limit	46 %
Method of preparation		From natural		Plastic Limit	22 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	24 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.08
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

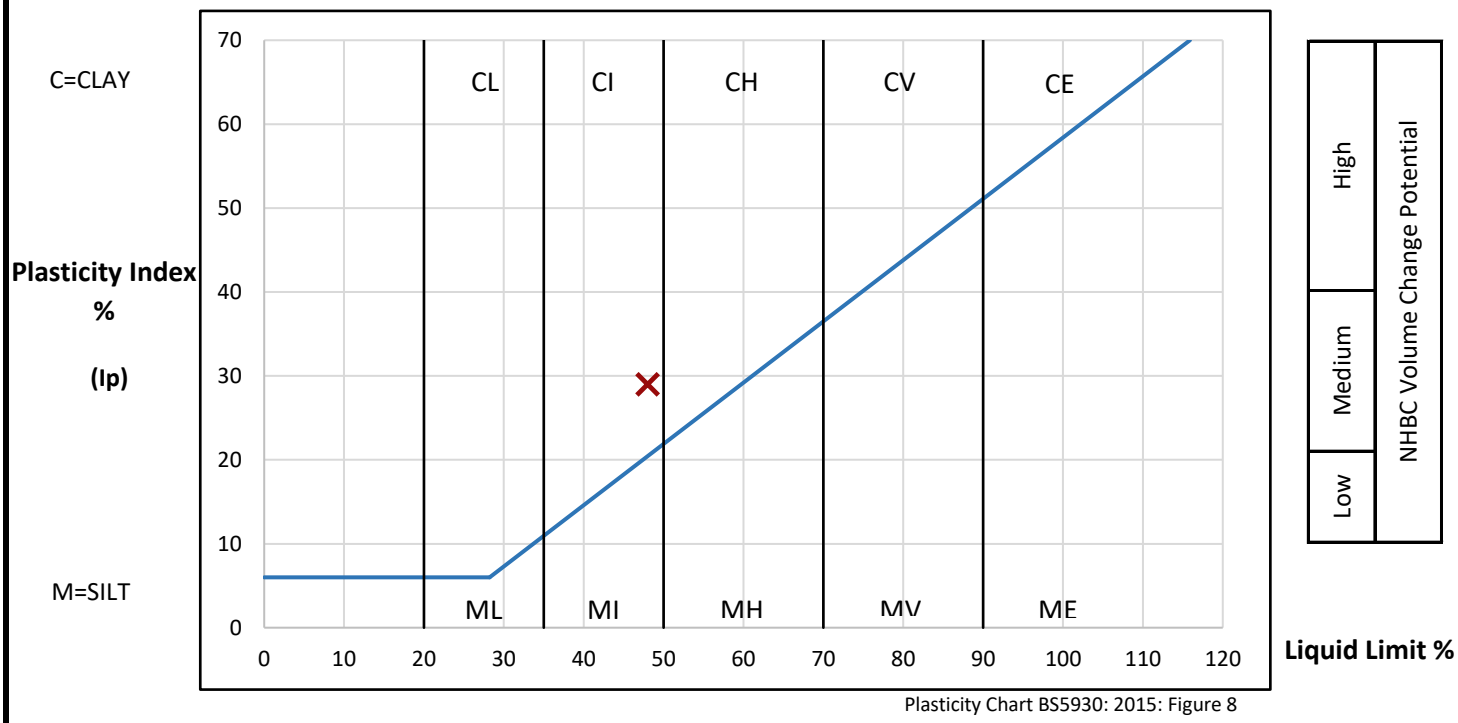
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	20.00 - 20.50	B	51	23.3	Firm brown slightly sandy silty slightly organic CLAY with occasional bluish grey and orange mottling, and rare fine to coarse flint. Sand is fine.	

PREPARATION				Liquid Limit	48 %
Method of preparation	From natural/gravel picked out by hand			Plastic Limit	19 %
Sample retained 0.425mm sieve	(Assumed)	%		Plasticity Index	29 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.15
Sample retained 2mm sieve	(Approximate)	<1 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

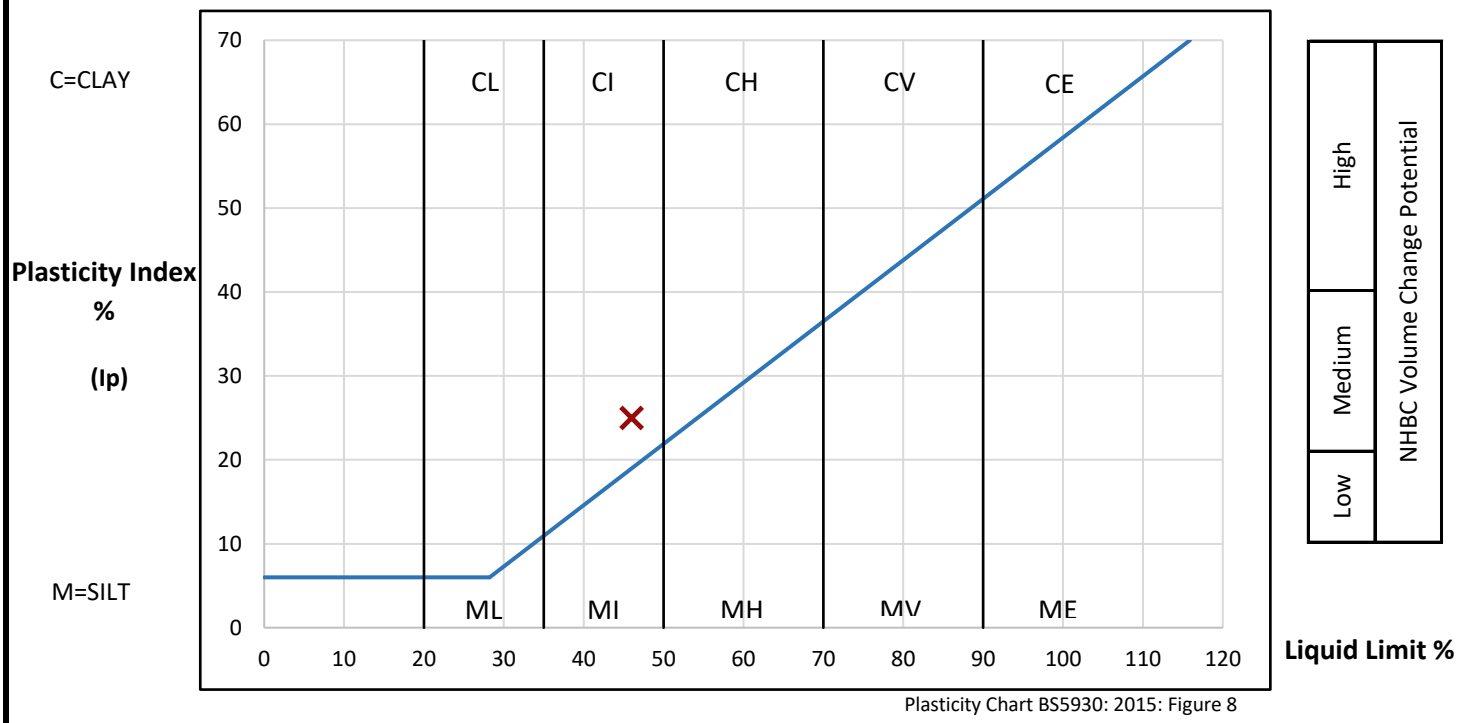
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	22.00 - 22.45	UT	54	29.7	Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.	

PREPARATION				Liquid Limit	46 %
Method of preparation		From natural		Plastic Limit	21 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	25 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.35
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

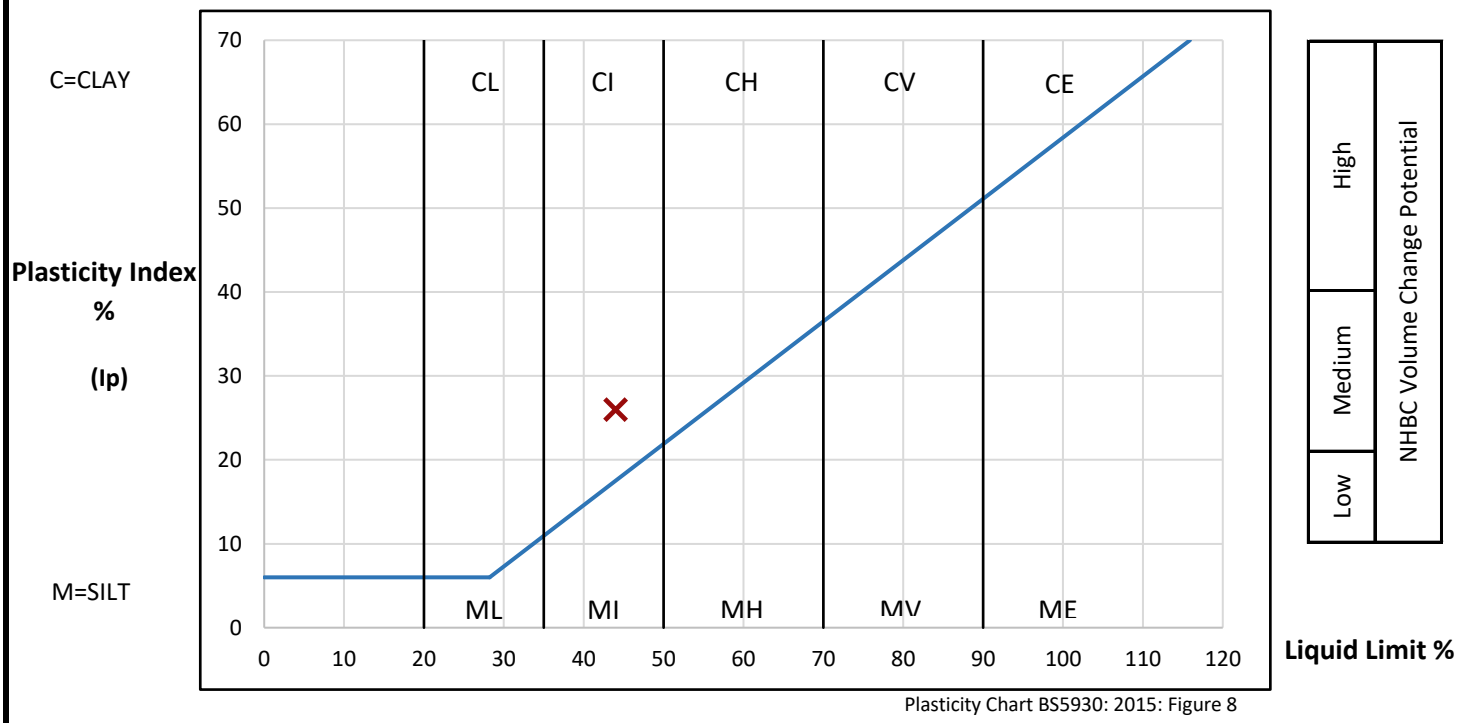
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC10	24.00 - 24.45	UT	59	34.4	Firm (Medium strength) grey slightly sandy silty organic CLAY. Sand is fine.	

PREPARATION				Liquid Limit	44 %
Method of preparation		From natural		Plastic Limit	18 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	26 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.63
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	28 hrs	Clay Content	35 %	Derived Activity	0.74



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

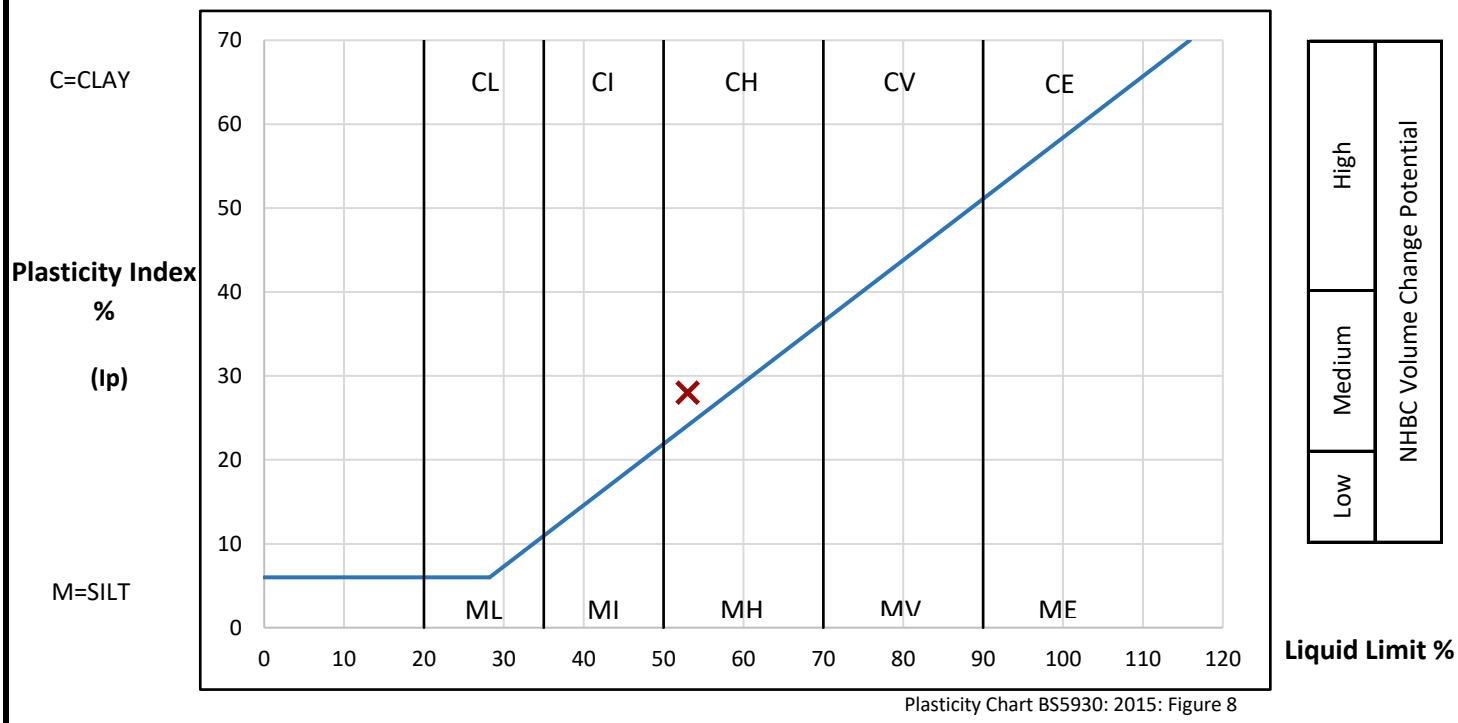
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC20	11.70	B	26	36.5	Soft light bluish grey slightly sandy silty slightly organic CLAY with rare dark grey mottling.	

PREPARATION				Liquid Limit	53 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	28 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.41
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	19 hrs	Clay Content	51 %	Derived Activity	0.55



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2

Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

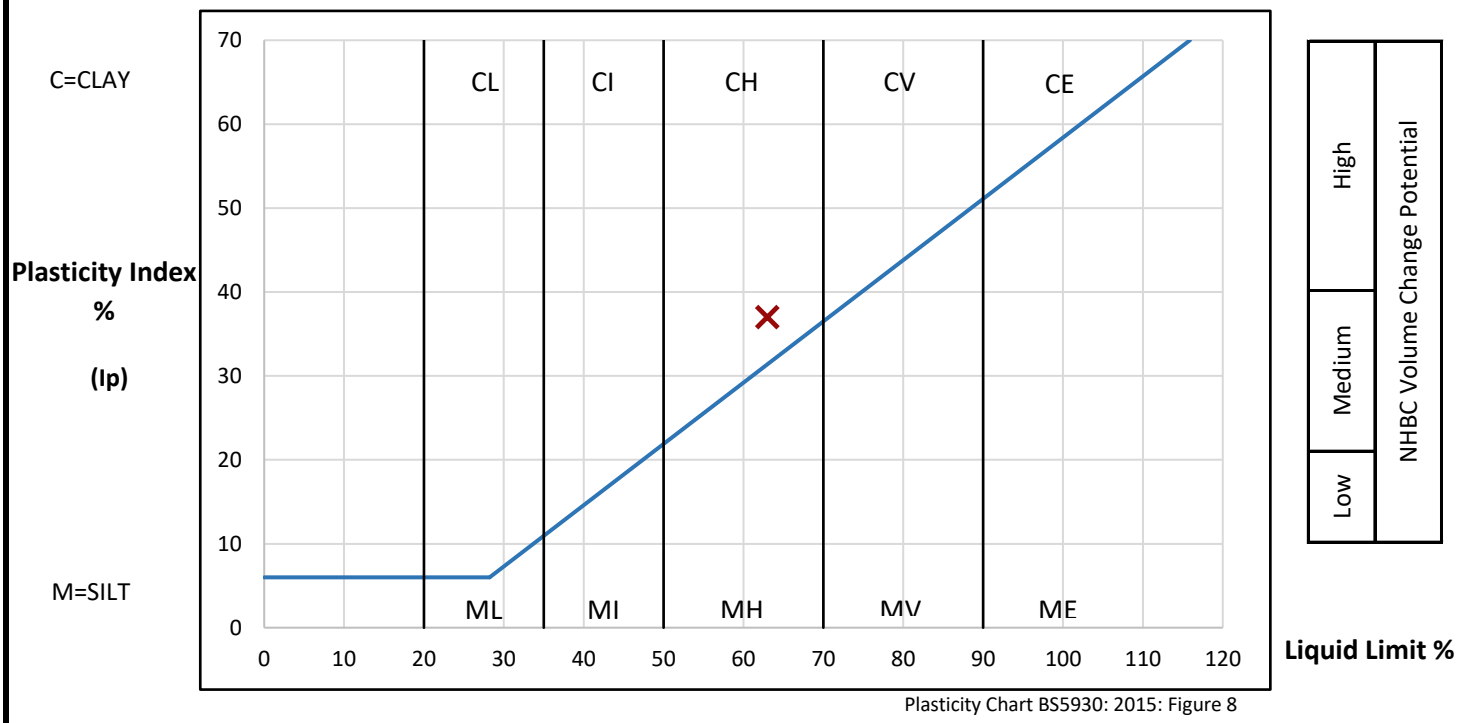
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC20	12.00 - 12.45	D	27	32.7	Firm brown slightly sandy slightly organic CLAY with occasional bluish grey and orange mottling. Sand is fine.	

PREPARATION				Liquid Limit	63 %
Method of preparation		From natural		Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	37 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.18
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

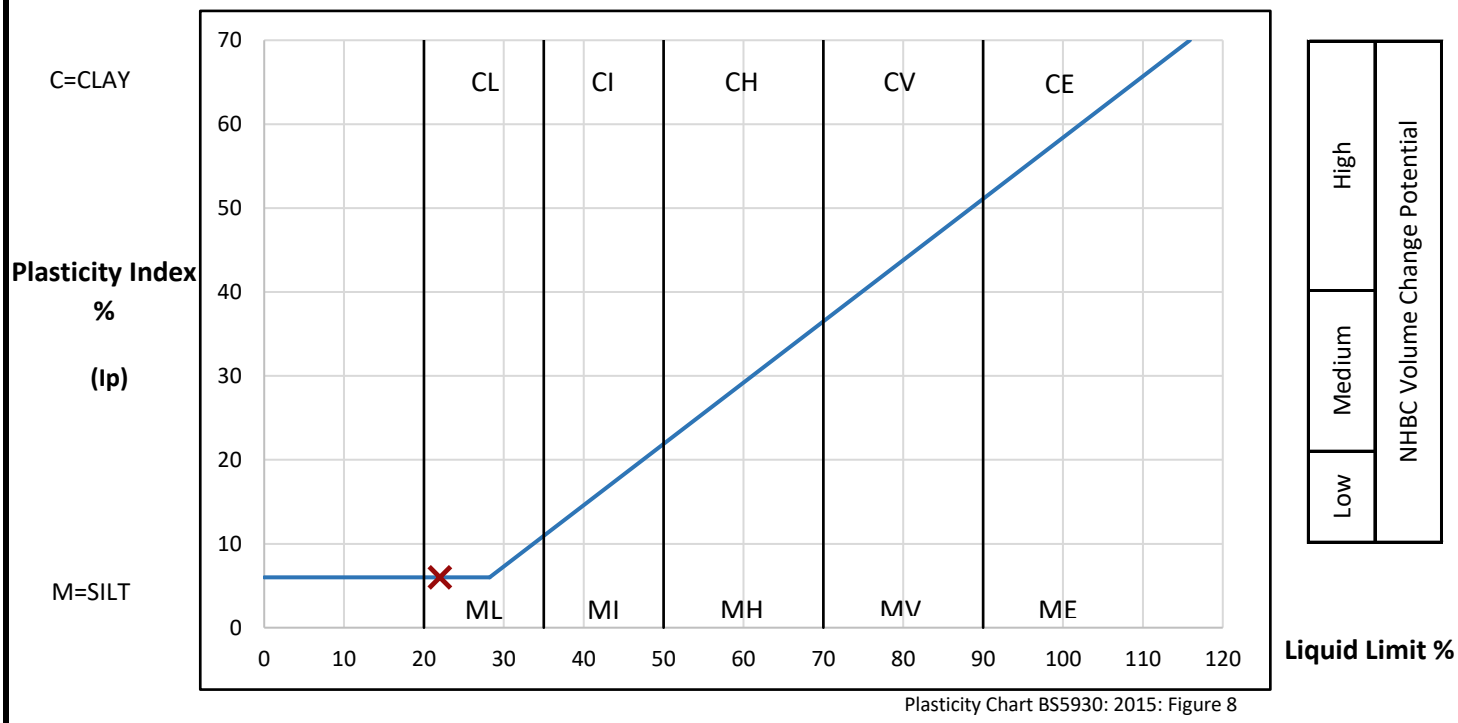
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC20	23.00	UT	48	15.9	Dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	

PREPARATION				Liquid Limit	22 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	16 %
Sample retained 0.425mm sieve	(Measured)	8 %		Plasticity Index	6 %
Corrected water content for material passing 0.425mm		17.3 %		Liquidity Index	-0.02
Sample retained 2mm sieve	(Measured)	<1 %		NHBC Modified (I'p)	6 %
Curing time	73 hrs	Clay Content	9 %	Derived Activity	0.67



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

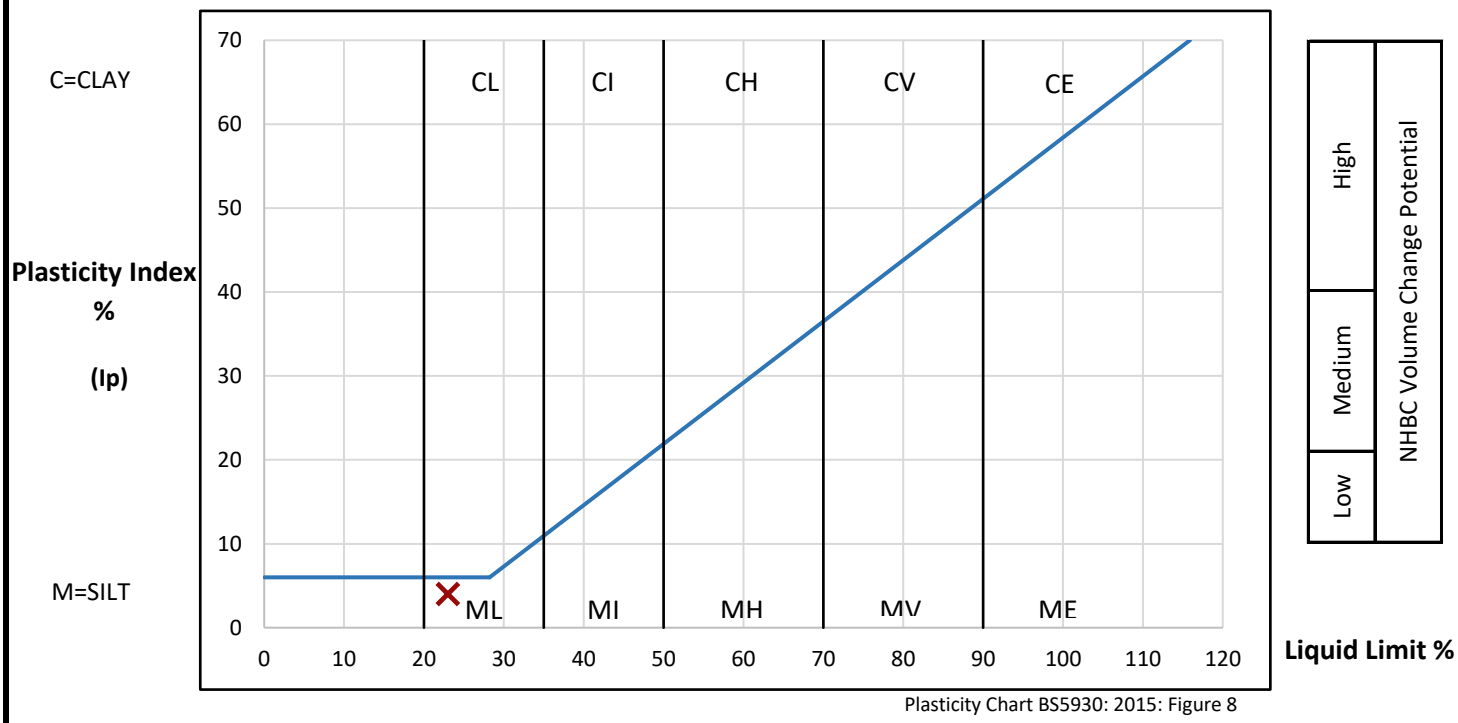
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
BHC20	23.00 - 23.45	D	49	18.2	Olive silty clayey possibly slightly organic fine to medium SAND with occasional dark bluish grey mottling, and soft clayey lumps.	

PREPARATION				Liquid Limit	23 %
Method of preparation	Wet sieved over 0.425mm sieve			Plastic Limit	19 %
Sample retained 0.425mm sieve	(Measured)	11 %		Plasticity Index	4 %
Corrected water content for material passing 0.425mm		20.4 %		Liquidity Index	-0.20
Sample retained 2mm sieve	(Measured)	<1 %		NHBC Modified (I'p)	4 %
Curing time	24 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1 Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100)

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

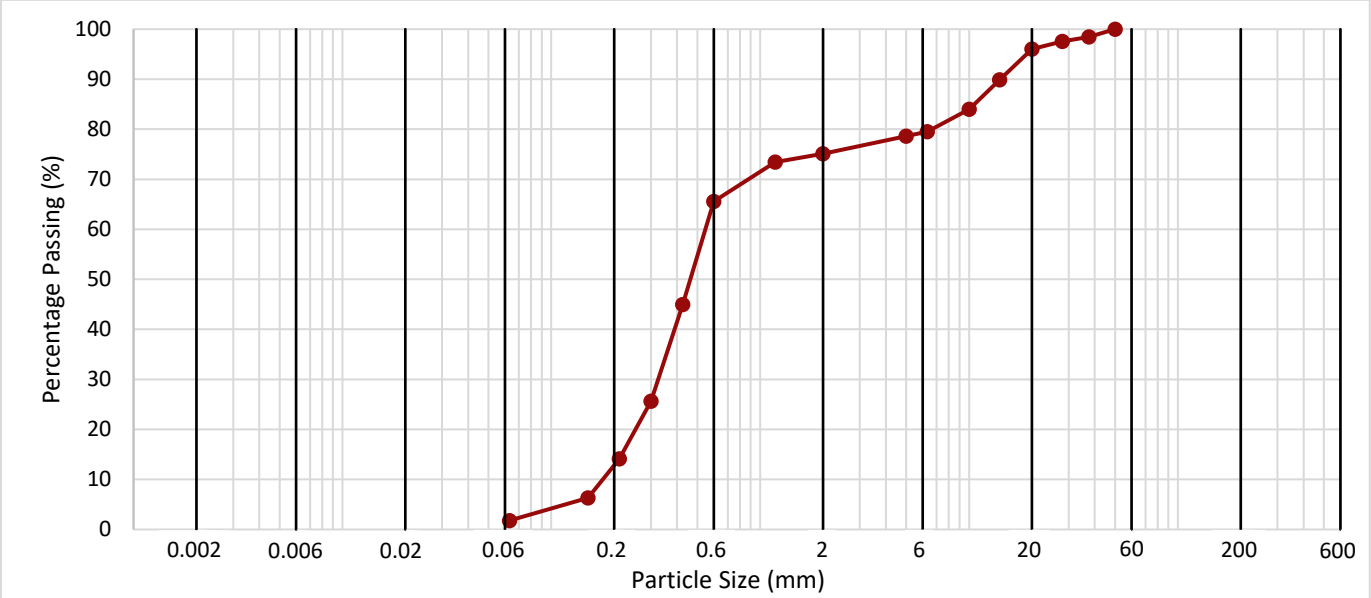
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	0.20 - 0.50	B	1	Yellowish brown very gravelly slightly silty SAND with rare concrete fragments. Gravel is brown, black and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	75	73
1.18	73	
0.600	66	
0.425	45	
0.300	26	
0.212	14	
0.150	6	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		25
125		
90		
63		
50	100	
37.5	98	
28	98	
20	96	
14	90	
10	84	
6.3	79	
5	79	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

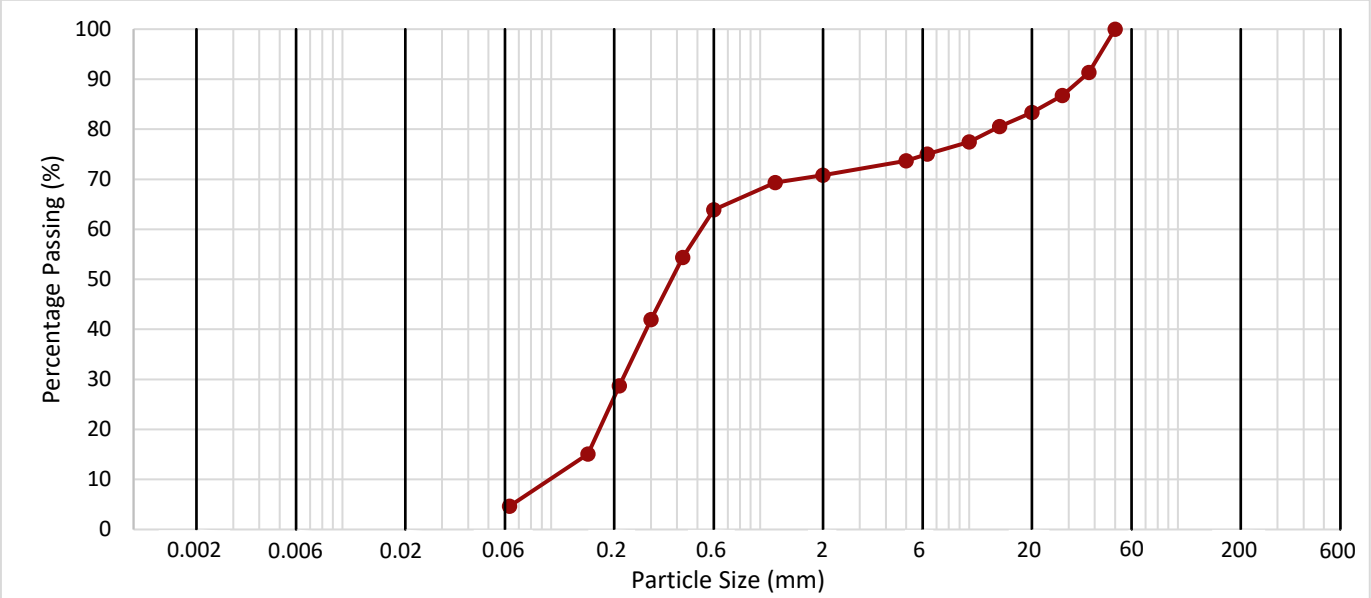
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	1.00 - 1.50	B	3	Brown and greyish brown very gravelly silty SAND with occasional brick and concrete fragments. Gravel is brown and black rounded to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	71	**66**
1.18	69	
0.600	64	
0.425	54	
0.300	42	
0.212	29	
0.150	15	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	**5**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**29**
125		
90		
63		
50	100	
37.5	91	
28	87	
20	83	
14	81	
10	77	
6.3	75	
5	74	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

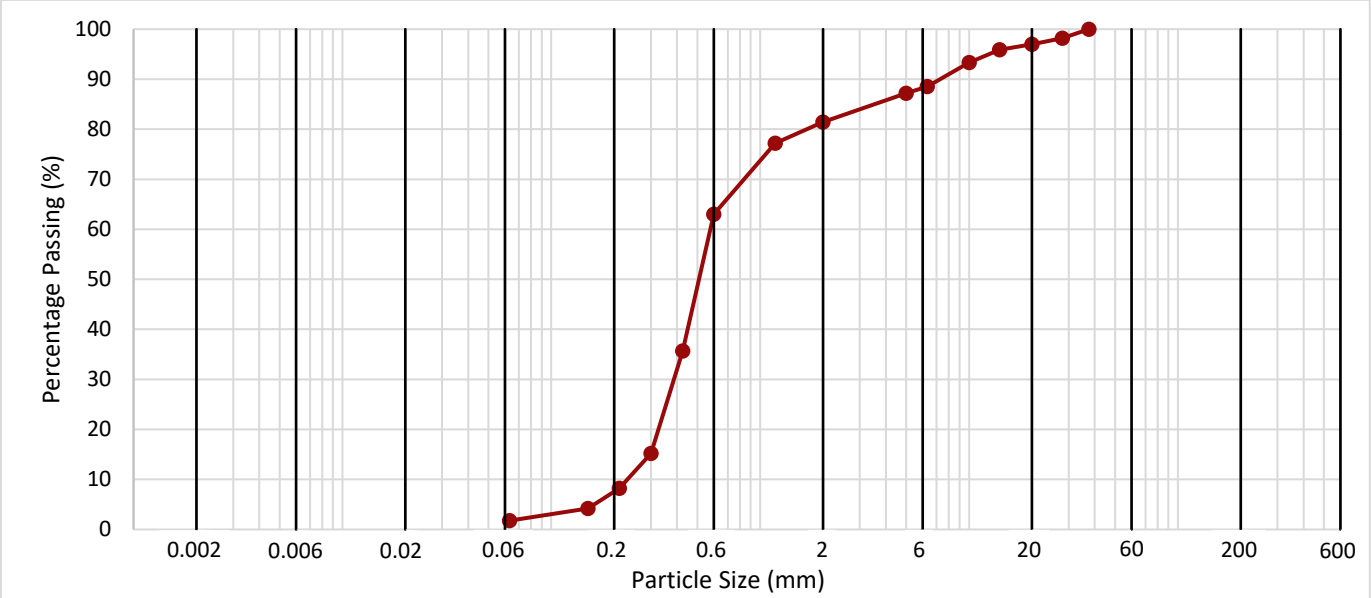
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	1.50 - 2.00	B	5	Brown gravelly slightly silty SAND with rare concrete fragments. Gravel is black, brown and white angular to rounded flint and rare reddish brown and black granite.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	81	**79**
1.18	77	
0.600	63	
0.425	36	
0.300	15	
0.212	8	
0.150	4	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	**2**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**19**
125		
90		
63		
50		
37.5	100	
28	98	
20	97	
14	96	
10	93	
6.3	89	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

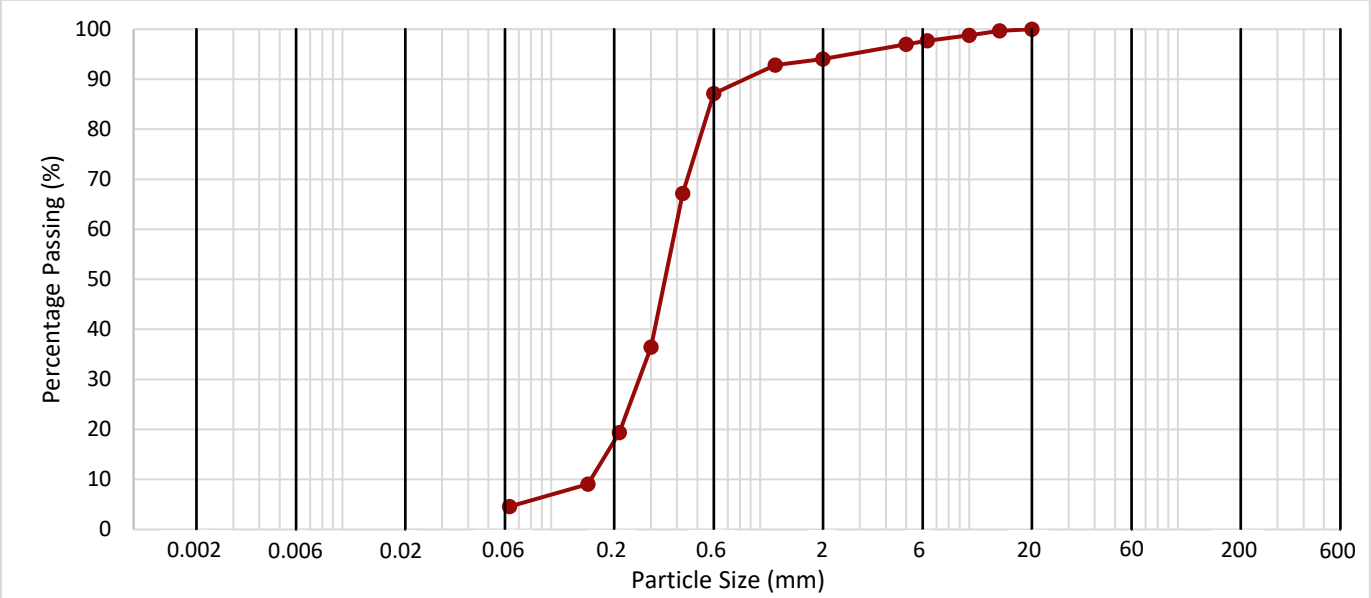
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	3.00 - 3.50	B	8	Light olive brown gravelly slightly silty SAND with rare soft light grey clay lumps. Gravel is black and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	94	89
1.18	93	
0.600	87	
0.425	67	
0.300	36	
0.212	19	
0.150	9	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		6
125		
90		
63		
50		
37.5		
28		
20	100	
14	100	
10	99	
6.3	98	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

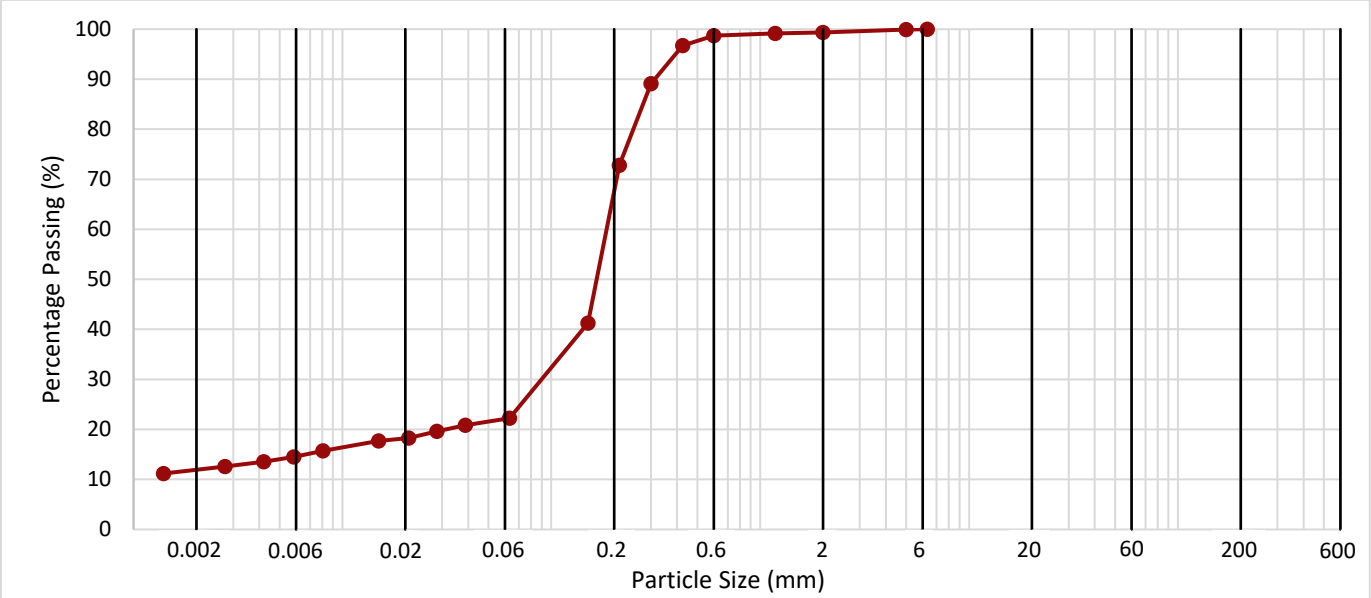
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	5.50 - 6.00	B	11	Greyish brown slightly gravelly silty clayey organic SAND. Gravel is fine flint	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0388	21	10
	0.0284	20	
	0.0208	18	
	0.0149	18	Clay by Dry Mass (%)
	0.0081	16	
	0.0058	15	
	0.0042	14	12
	0.0027	13	
	0.0014	11	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	77
1.18	99	
0.600	99	
0.425	97	
0.300	89	
0.212	73	
0.150	41	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

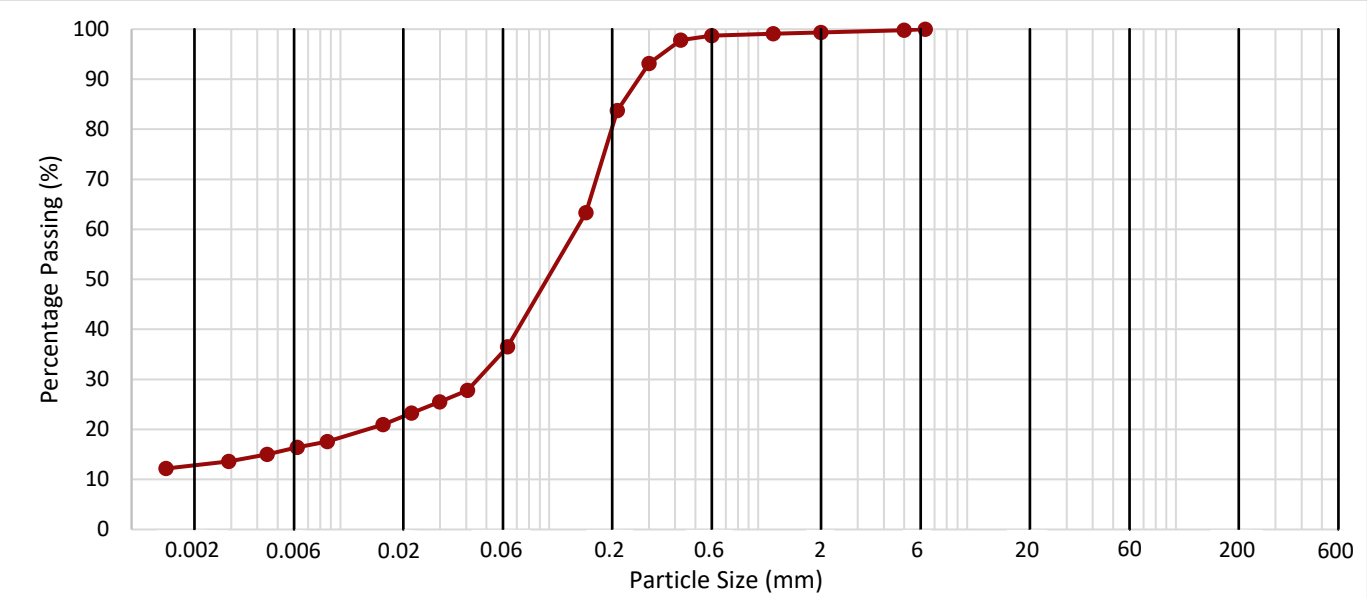
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	7.50 - 8.00	B	15	Very soft brownish yellow sandy silty CLAY with rare fine flint gravel	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0405	28	24
	0.0298	26	
	0.0219	23	
	0.0160	21	Clay by Dry Mass (%)
	0.0087	18	
	0.0062	16	
	0.0045	15	13
	0.0029	14	
	0.0015	12	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	62
1.18	99	
0.600	99	
0.425	98	
0.300	93	
0.212	84	
0.150	63	
0.063	37	

Fines By Dry Mass (%)	
<0.063mm	37

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

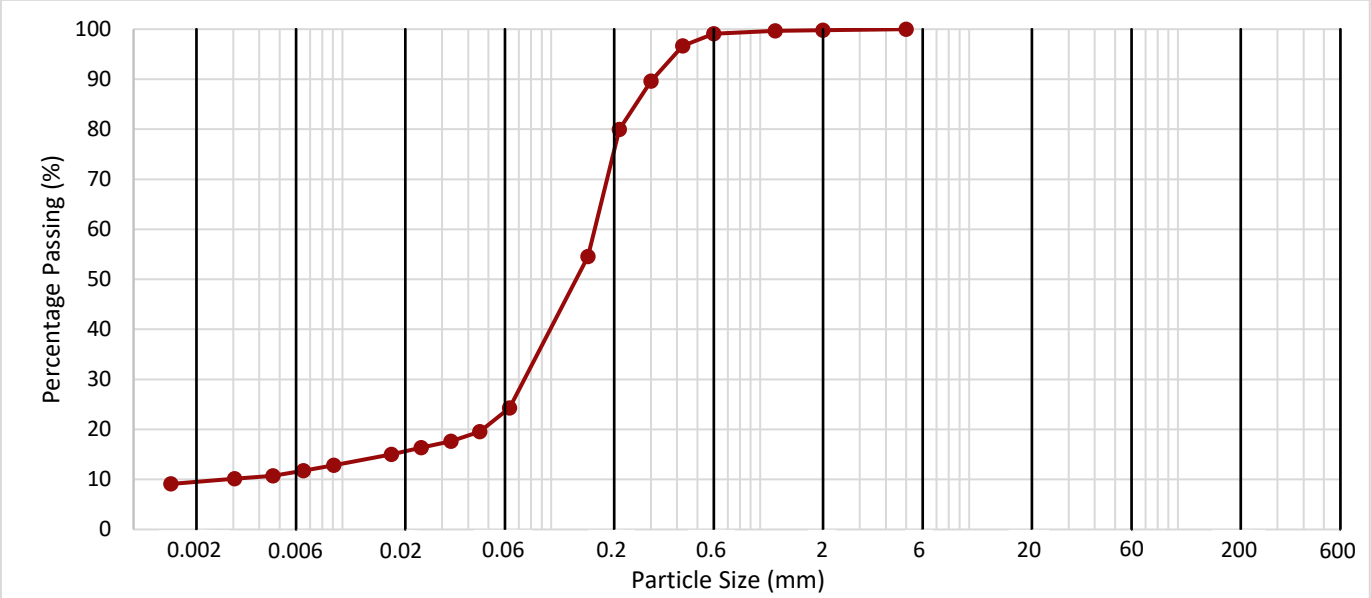
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	9.00 - 9.50	B	18	Brownish yellow silty clayey SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0454	20	15	
	0.0330	18		
	0.0238	16		
	0.0171	15		9
	0.0091	13		
	0.0065	12		
	0.0047	11		
	0.0030	10		
	0.0015	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	76
1.18	100	
0.600	99	
0.425	97	
0.300	90	
0.212	80	
0.150	55	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

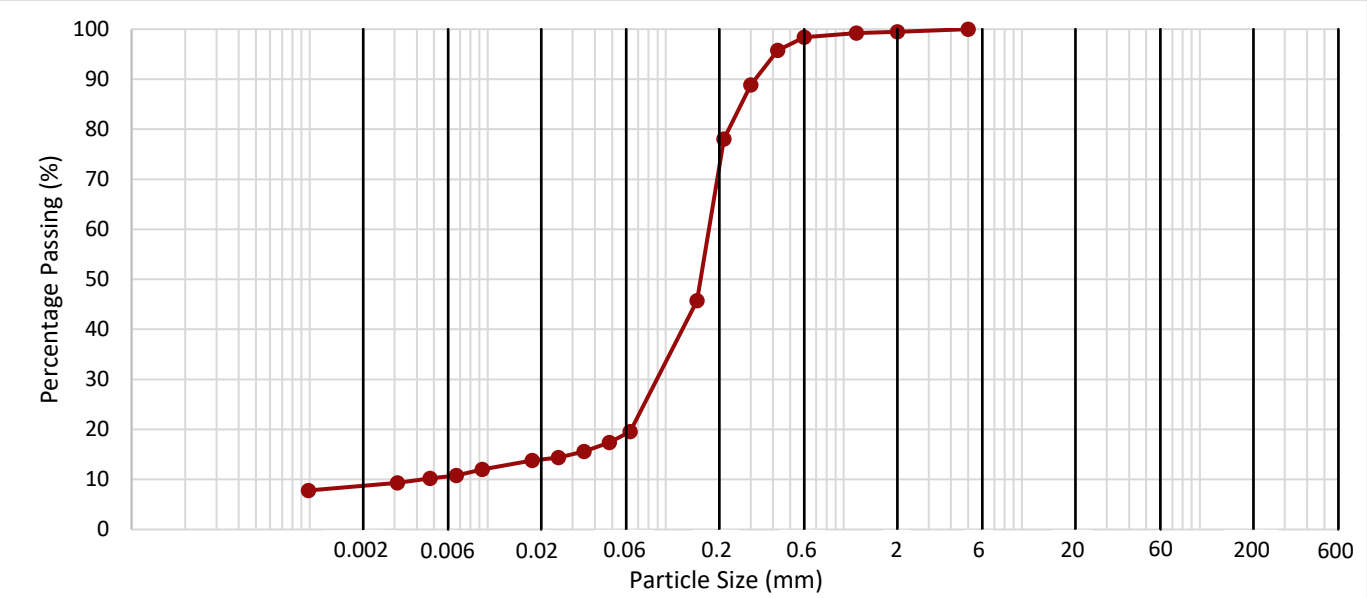
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	11.00 - 11.50	B	23	Brownish yellow silty clayey SAND with rare fine flint gravel	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0482	17	11	
	0.0348	16		
	0.0250	14		
	0.0177	14		9
	0.0093	12		
	0.0067	11		
	0.0048	10		
	0.0031	9		
	0.0010	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	79
1.18	99	
0.600	98	
0.425	96	
0.300	89	
0.212	78	
0.150	46	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

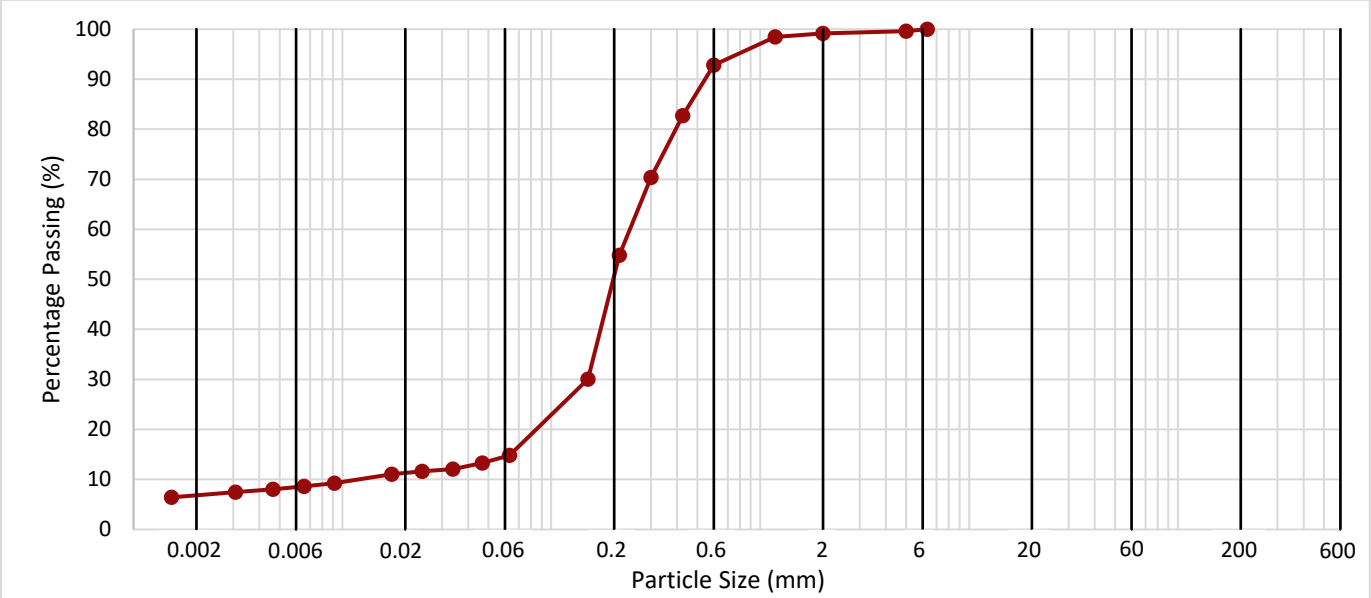
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	12.50 - 13.00	B	27	Olive brown silty clayey organic SAND with rare shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0467	13	8
0.0338	12	
0.0241	12	
0.0172	11	Clay by Dry Mass (%)
0.0092	9	
0.0065	9	
0.0047	8	7
0.0031	7	
0.0015	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	98	
0.600	93	
0.425	83	
0.300	70	
0.212	55	
0.150	30	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

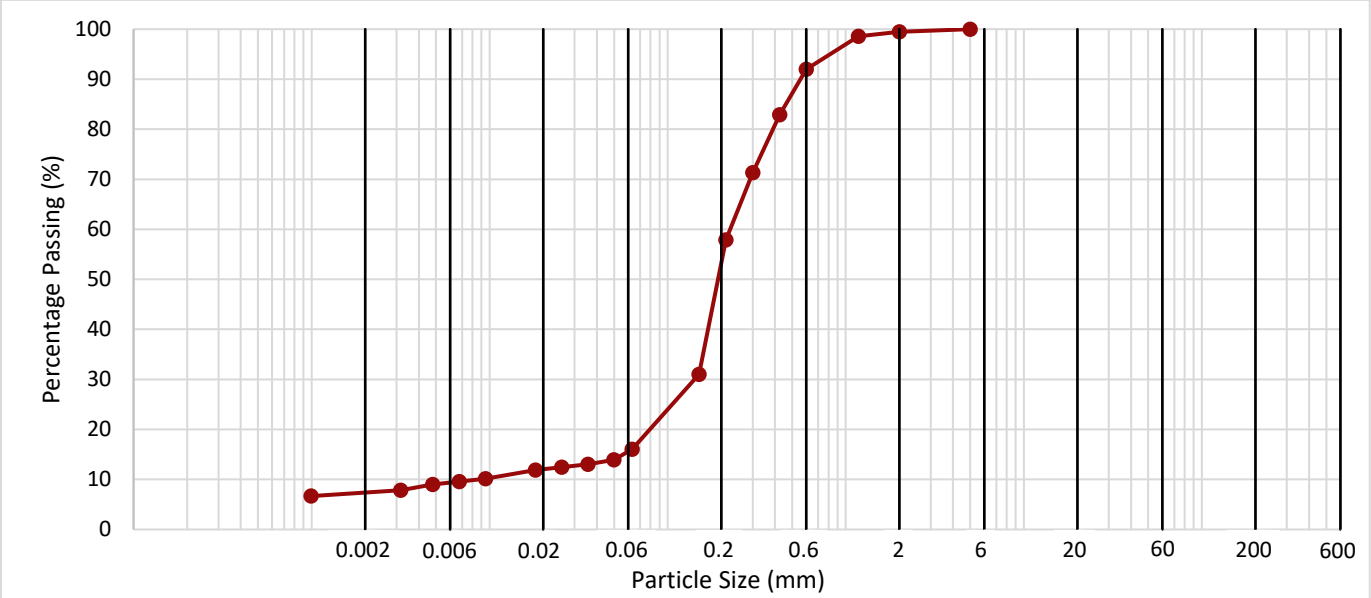
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	14.30	B	30	Olive silty clayey organic SAND locally oxidised to brown with rare fine flint gravel	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0499	14	9	
	0.0356	13		
	0.0254	12		
	0.0180	12		7
	0.0095	10		
	0.0067	10		
	0.0048	9		
	0.0032	8		
	0.0010	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	83
1.18	99	
0.600	92	
0.425	83	
0.300	71	
0.212	58	
0.150	31	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

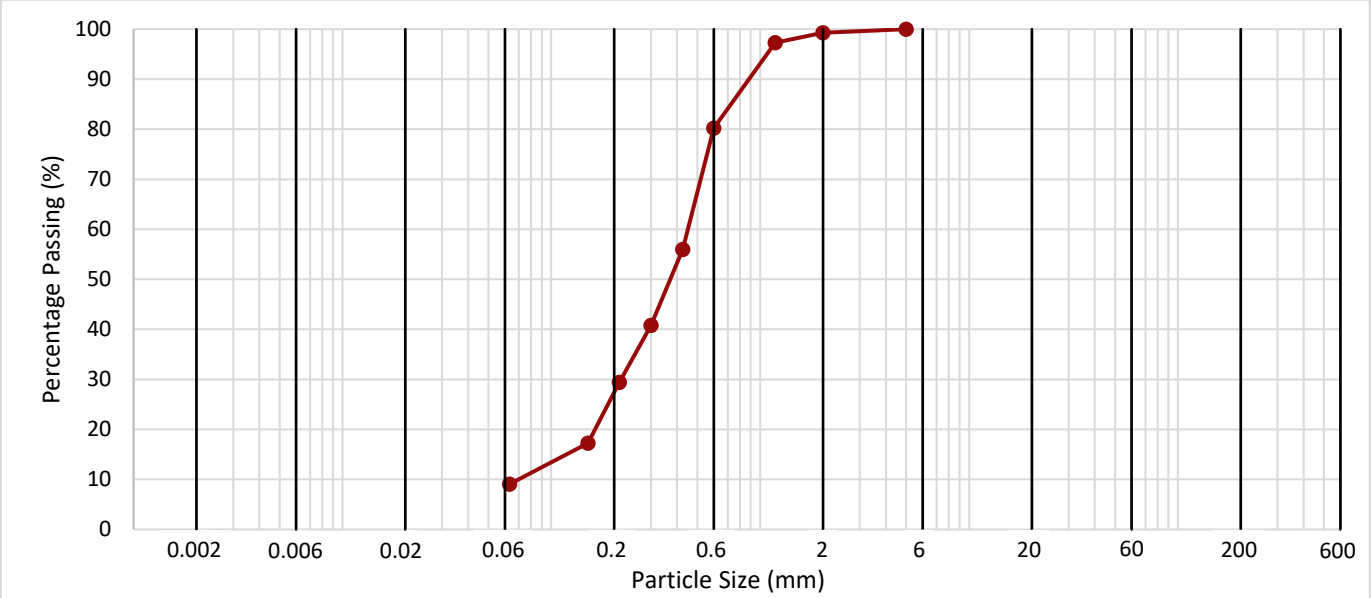
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	14.50 - 15.10	B	32	Olive grey slightly silty clayey organic SAND with rare fine flint gravel	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**90**
1.18	97	
0.600	80	
0.425	56	
0.300	41	
0.212	29	
0.150	17	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	**9**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

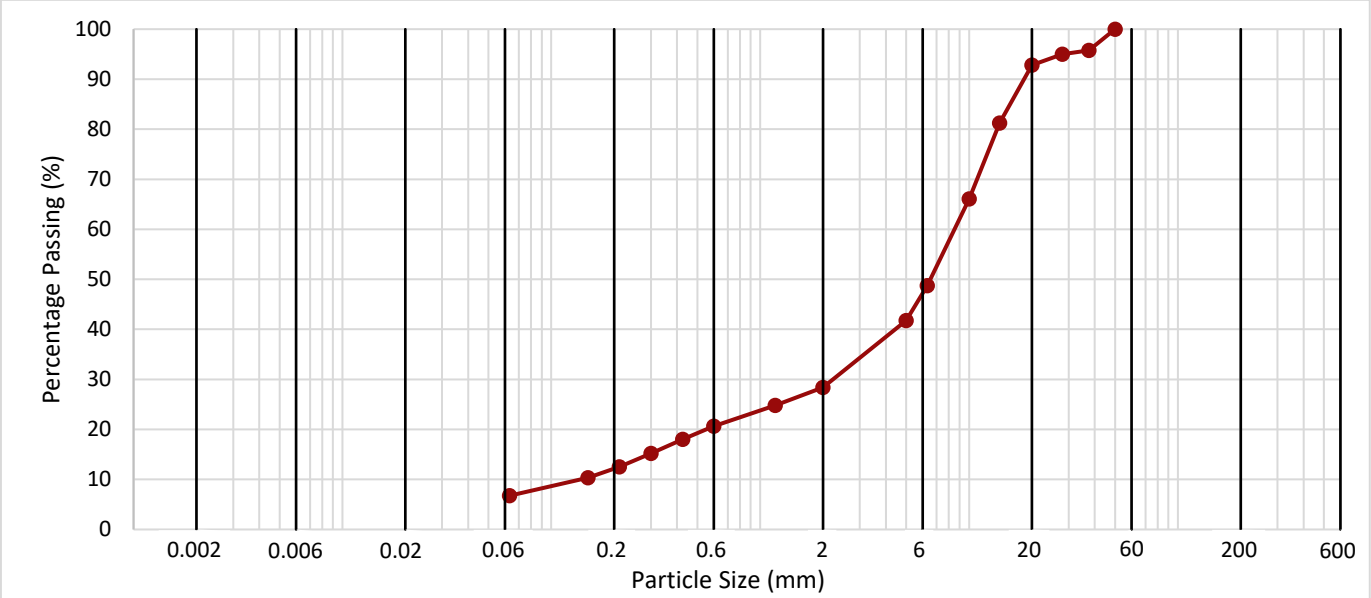
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	0.30 - 0.50	B	1	MADE GROUND comprising crushed CONCRETE fragments with occasional brick, brown, black and white angular to subrounded flint gravel, dark brown silty sand and rare metal fragments.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	28	21
1.18	25	
0.600	21	
0.425	18	
0.300	15	
0.212	13	
0.150	10	
0.063	7	

Fines By Dry Mass (%)	
<0.063mm	7

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		72
125		
90		
63		
50	100	
37.5	96	
28	95	
20	93	
14	81	
10	66	
6.3	49	
5	42	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

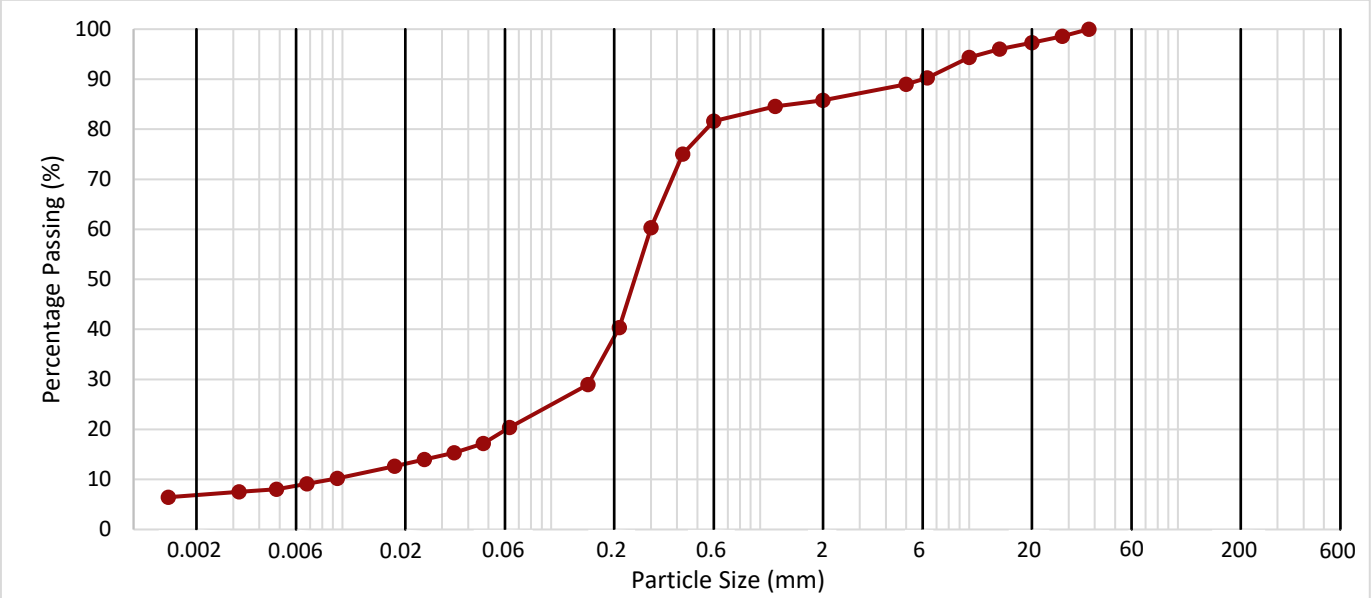
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	1.10 - 1.60	B	3	Dark greyish brown gravelly silty SAND with occasional firm brown and grey sandy clay lumps. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0473	17	13	
	0.0343	15		
	0.0247	14		
	0.0178	13		
	0.0095	10		
	0.0068	9		7
	0.0048	8		
	0.0032	8		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	86	66
1.18	85	
0.600	82	
0.425	75	
0.300	60	
0.212	40	
0.150	29	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		14
125		
90		
63		
50		
37.5	100	
28	99	
20	97	
14	96	
10	94	
6.3	90	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

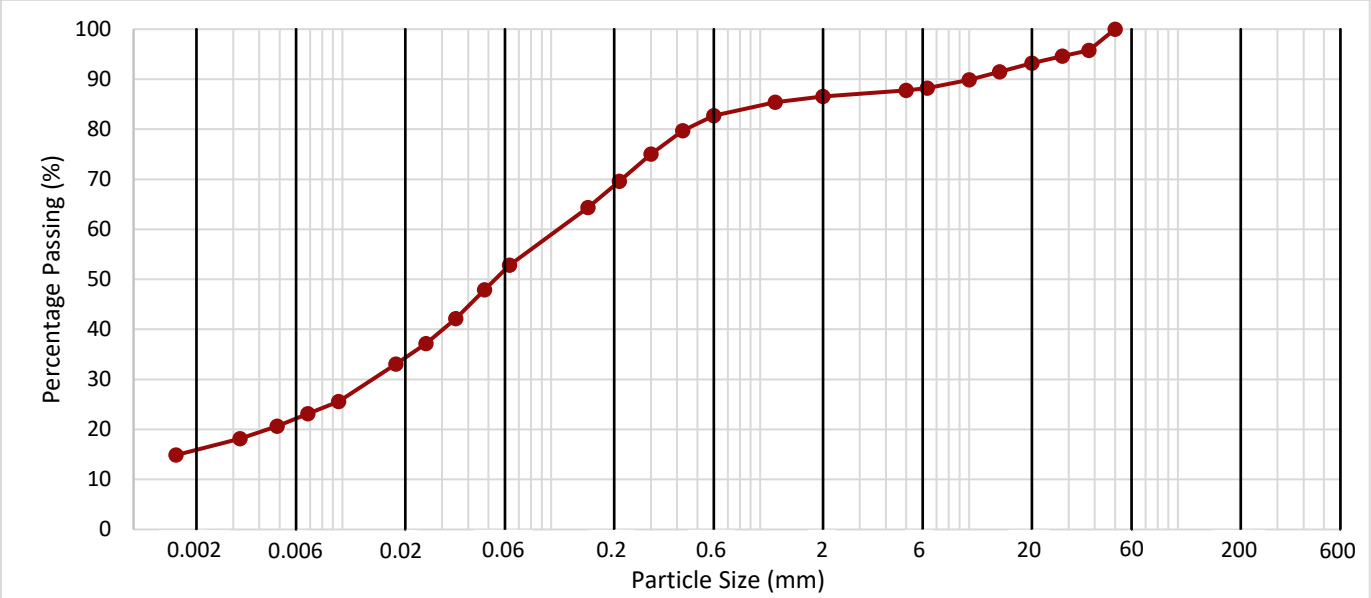
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	1.60 - 2.00	B	5	Soft black slightly gravelly slightly sandy silty organic CLAY with occasional brown mottling. Gravel is black, white and brown angular to rounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0480	48	37
	0.0348	42	
	0.0251	37	
	0.0180	33	Clay by Dry Mass (%)
	0.0096	26	
	0.0068	23	
	0.0049	21	16
	0.0032	18	
	0.0016	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	87	34
1.18	85	
0.600	83	
0.425	80	
0.300	75	
0.212	70	
0.150	64	
0.063	53	

Fines By Dry Mass (%)	
<0.063mm	53

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		13
125		
90		
63		
50	100	
37.5	96	
28	95	
20	93	
14	91	
10	90	
6.3	88	
5	88	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

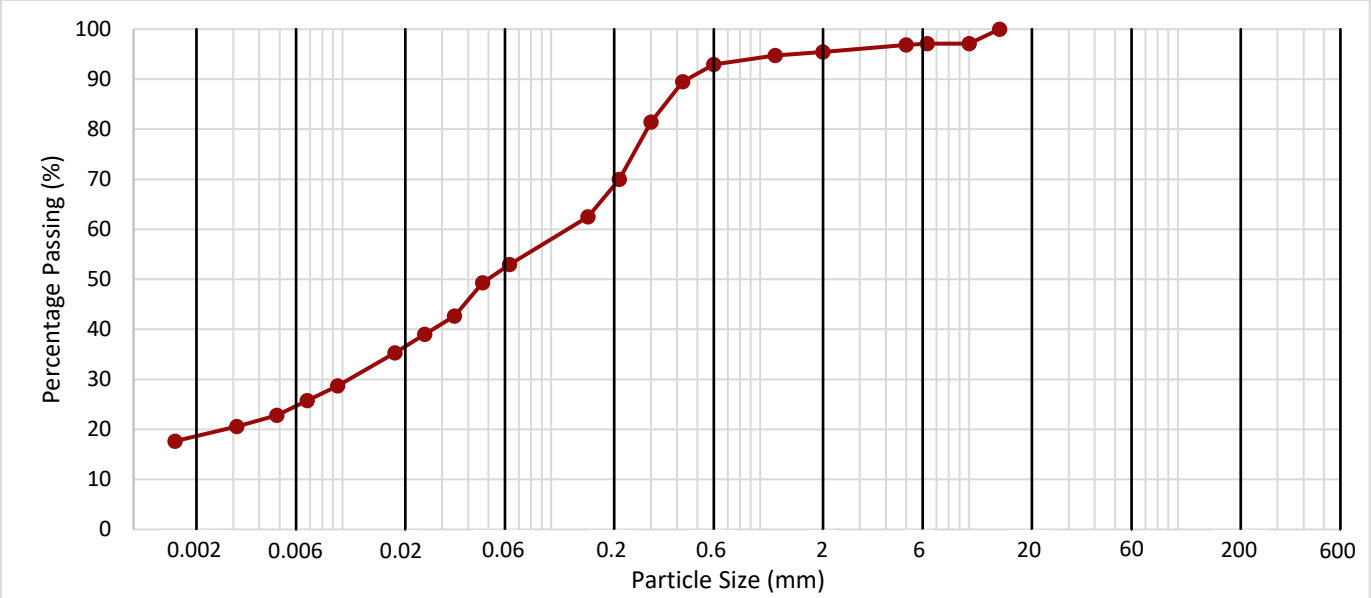
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	2.20 - 2.70	B	7	Very soft very dark grey slightly gravelly sandy silty organic CLAY locally oxidised to brown. Gravel is fine flint	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0470	49	35
0.0344	43	
0.0247	39	
0.0178	35	Clay by Dry Mass (%)
0.0095	29	
0.0068	26	
0.0048	23	18
0.0031	21	
0.0016	18	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	95	42
1.18	95	
0.600	93	
0.425	90	
0.300	81	
0.212	70	
0.150	62	
0.063	53	

Fines By Dry Mass (%)	
<0.063mm	53

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		5
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	97	
6.3	97	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

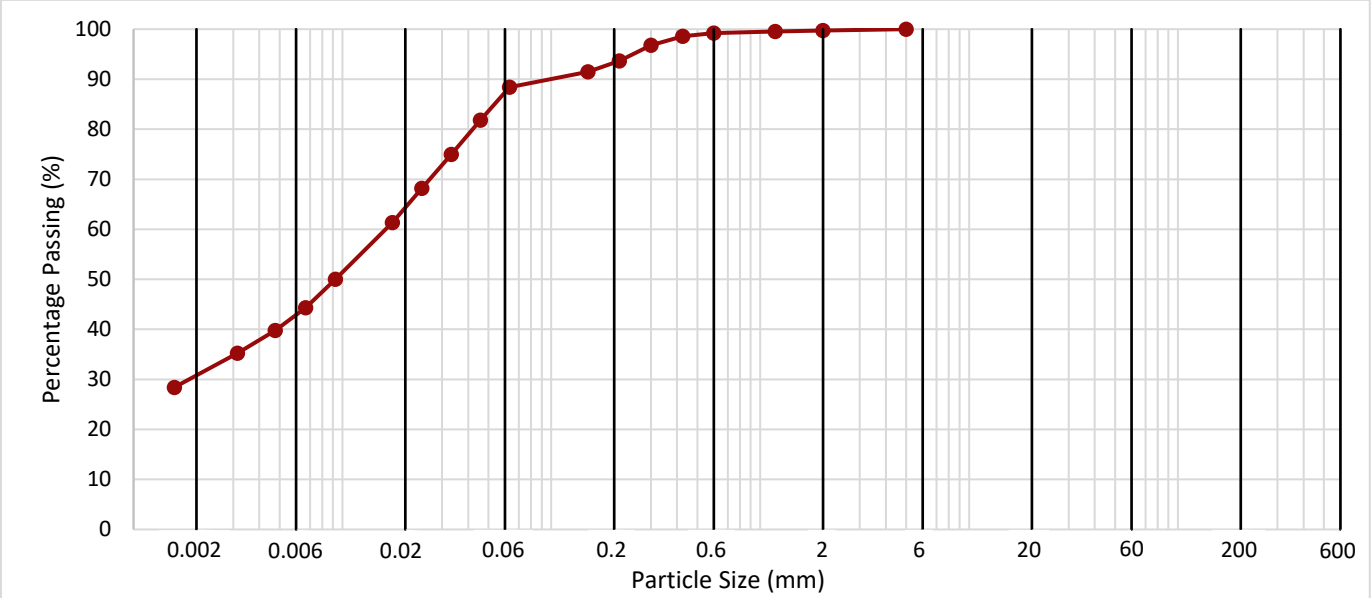
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	4.40 - 4.90	B	11	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0458	82	
0.0332	75	**58**
0.0240	68	
0.0173	61	**Clay by Dry Mass (%)**
0.0093	50	
0.0067	44	
0.0048	40	**30**
0.0031	35	
0.0016	28	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	
1.18	100	
0.600	99	
0.425	99	**12**
0.300	97	
0.212	94	
0.150	91	
0.063	88	

Fines By Dry Mass (%)	
<0.063mm	**88**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		
125		
90		
63		
50		
37.5		
28		**0**
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

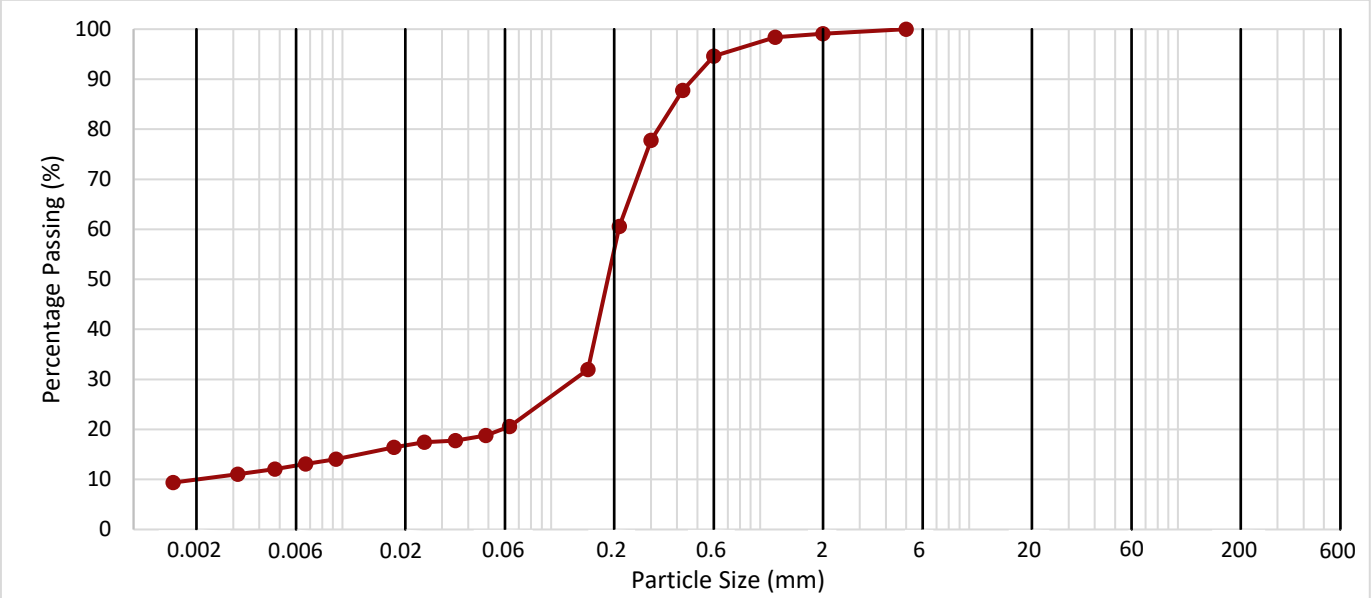
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	5.40 - 5.90	B	13	Pale olive and bluish grey silty clayey SAND with rare fine flint gravel	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0487	19	11
0.0348	18	
0.0247	17	
0.0176	16	Clay by Dry Mass (%)
0.0093	14	
0.0067	13	
0.0048	12	10
0.0032	11	
0.0015	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	78
1.18	98	
0.600	95	
0.425	88	
0.300	78	
0.212	61	
0.150	32	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

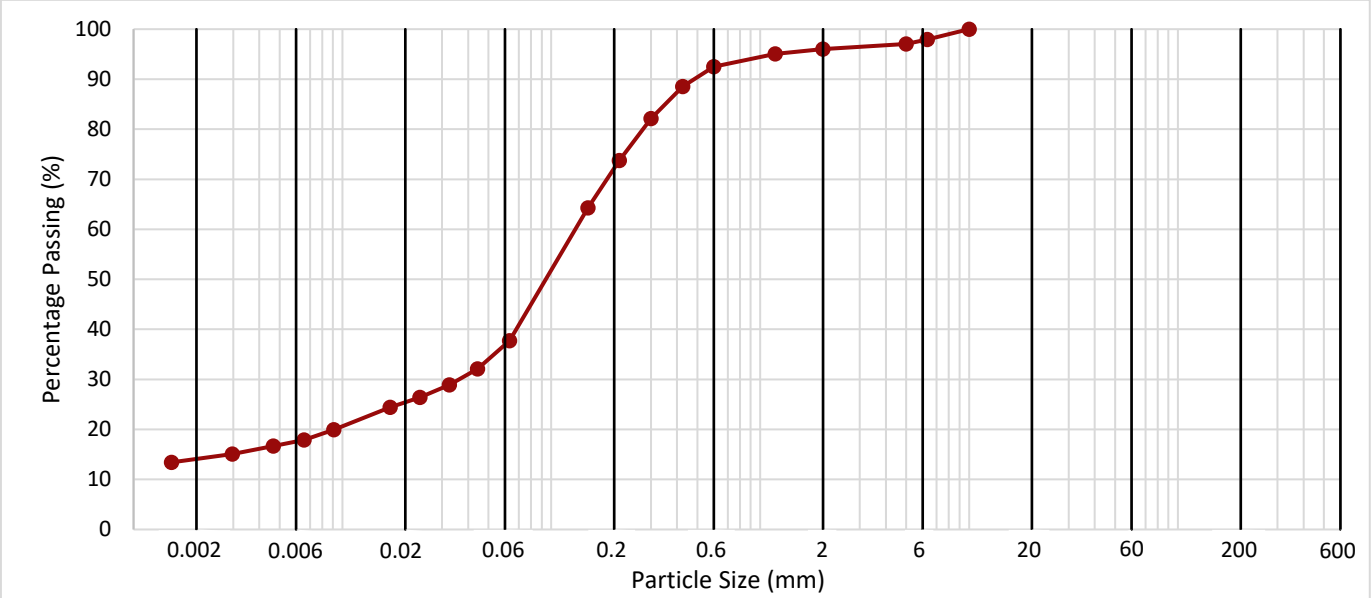
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	6.40 - 6.90	B	15	Very soft olive grey slightly gravelly sandy silty organic CLAY with rare shell debris. Gravel is fine flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0444	32	24
0.0325	29	
0.0235	26	
0.0169	24	Clay by Dry Mass (%)
0.0091	20	
0.0065	18	
0.0047	17	14
0.0030	15	
0.0015	13	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	96	58
1.18	95	
0.600	93	
0.425	89	
0.300	82	
0.212	74	
0.150	64	
0.063	38	

Fines By Dry Mass (%)	
<0.063mm	38

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		4
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	98	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

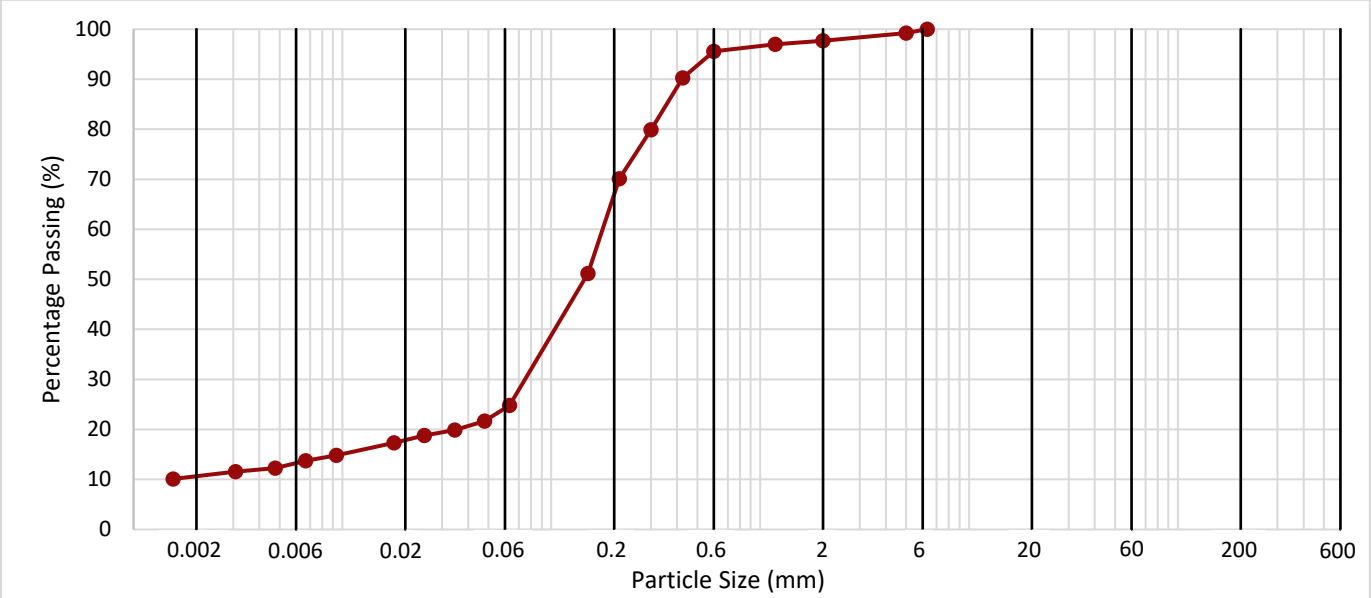
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	7.40 - 7.90	B	17	Very soft olive yellow organic slightly gravelly very sandy silty CLAY/silty clayey SAND with occasional olive grey mottling. Gravel is fine flint.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0479	22	14
0.0345	20	
0.0246	19	
0.0177	17	Clay by Dry Mass (%)
0.0093	15	
0.0067	14	
0.0048	12	11
0.0031	12	
0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	73
1.18	97	
0.600	96	
0.425	90	
0.300	80	
0.212	70	
0.150	51	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	25

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

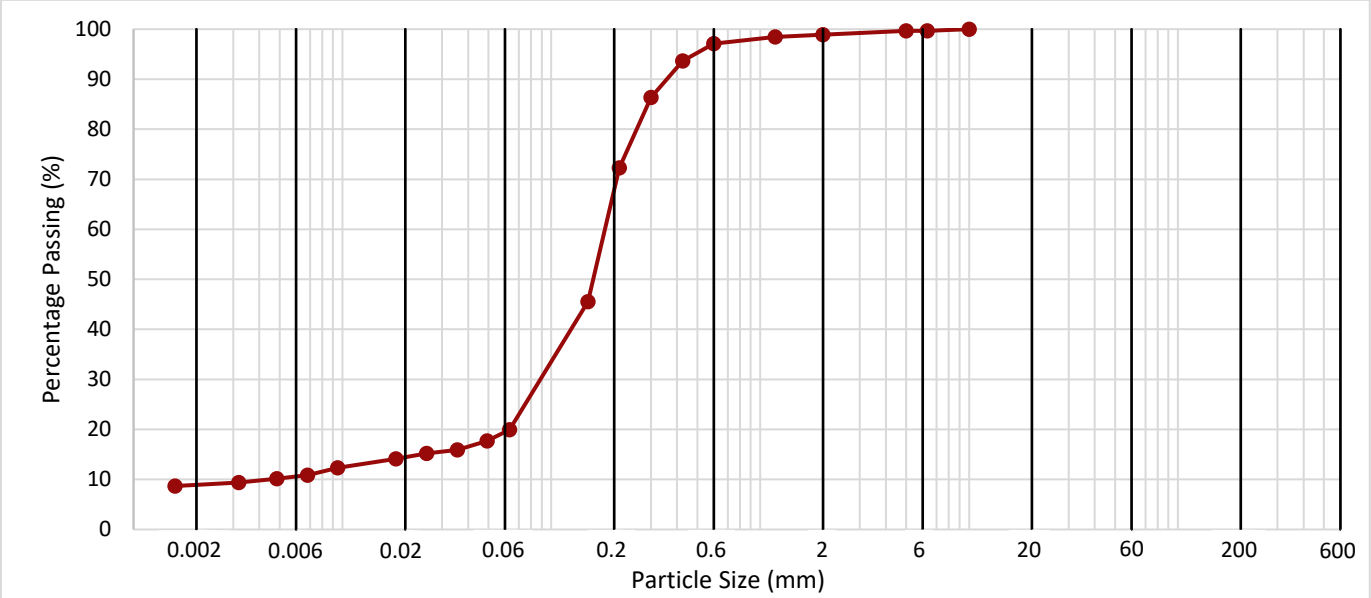
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	8.40 - 8.90	B	19	Very soft yellowish brown very sandy silty organic CLAY with occasional olive mottling and rare fine flint gravel	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0493	18	11
	0.0355	16	
	0.0253	15	
	0.0181	14	Clay by Dry Mass (%)
	0.0095	12	
	0.0068	11	
	0.0048	10	9
	0.0032	9	
	0.0016	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	79
1.18	98	
0.600	97	
0.425	94	
0.300	86	
0.212	72	
0.150	46	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

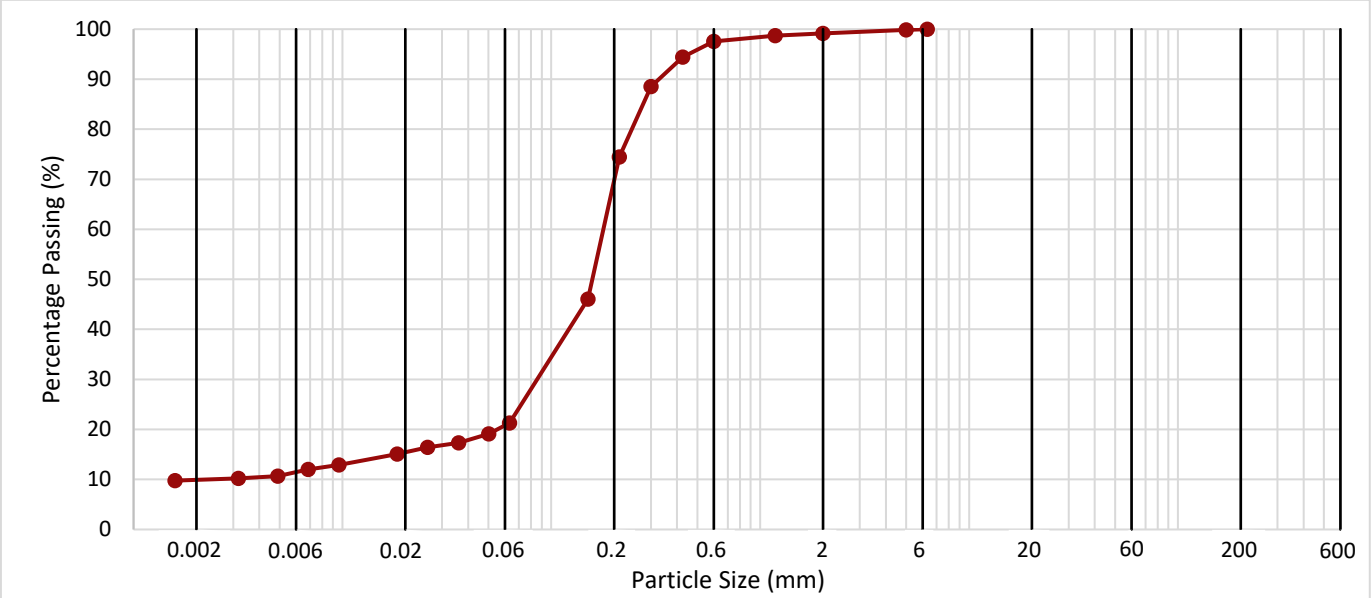
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	9.40 - 9.90	B	21	Very soft yellowish brown very sandy silty organic CLAY with occasional olive mottling and rare fine flint gravel	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0502	19	11	
	0.0360	17		
	0.0256	16		
	0.0183	15		
	0.0096	13		
	0.0069	12		
	0.0049	11		10
	0.0032	10		
	0.0016	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	78
1.18	99	
0.600	98	
0.425	94	
0.300	89	
0.212	74	
0.150	46	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

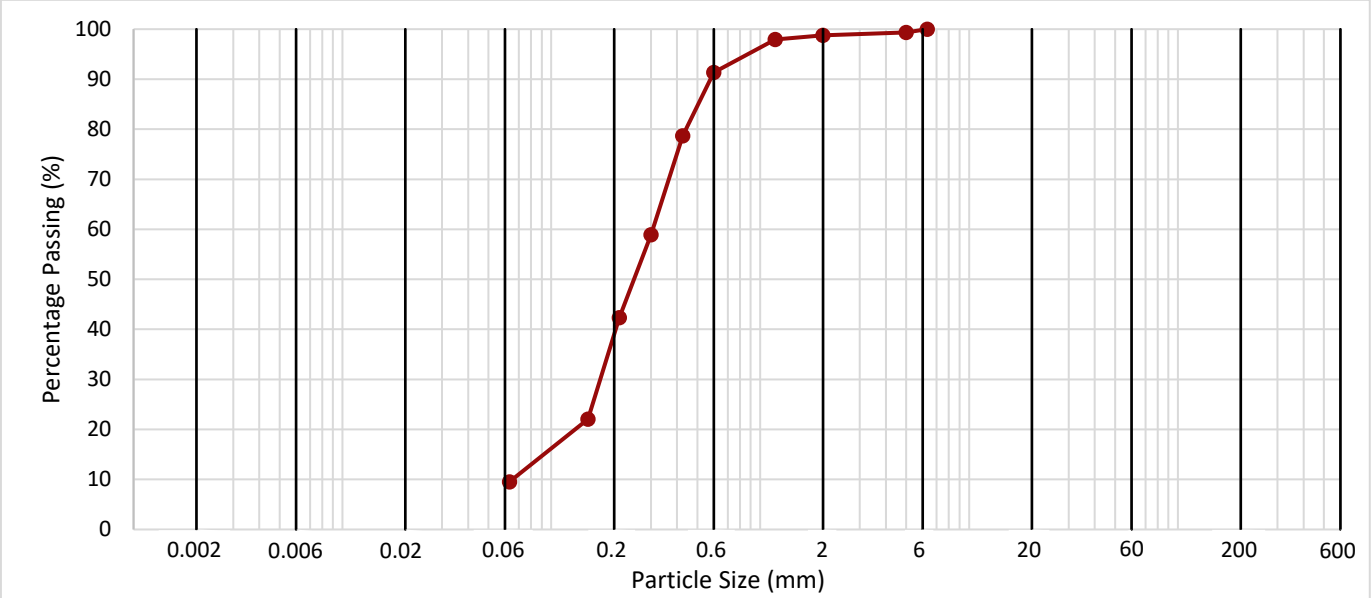
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	11.40 - 11.90	B	25	Olive slightly gravelly silty slightly clayey SAND. Gravel is flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	89
1.18	98	
0.600	91	
0.425	79	
0.300	59	
0.212	42	
0.150	22	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

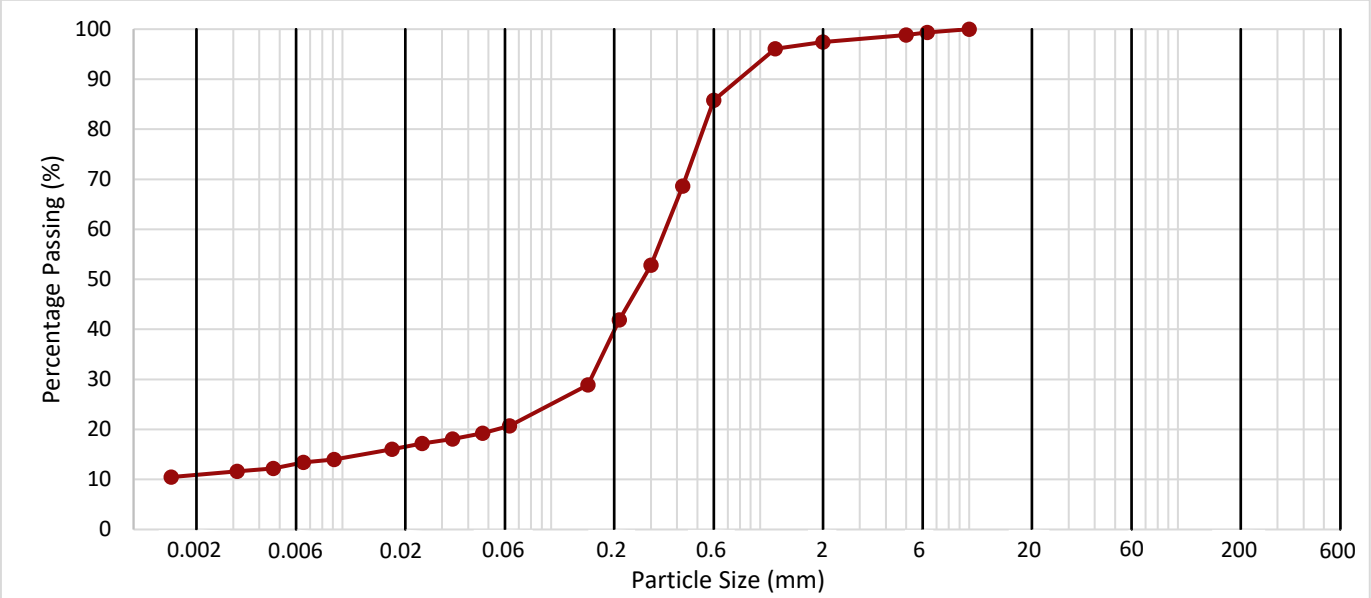
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	14.40 - 14.90	B	31	Olive grey slightly gravelly silty clayey slightly organic SAND. Gravel is fine and medium flint	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0469	19	10
0.0337	18	
0.0241	17	
0.0173	16	Clay by Dry Mass (%)
0.0091	14	
0.0065	13	
0.0047	12	11
0.0031	12	
0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	97	76
1.18	96	
0.600	86	
0.425	69	
0.300	53	
0.212	42	
0.150	29	
0.063	21	

Fines By Dry Mass (%)	
<0.063mm	21

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		3
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

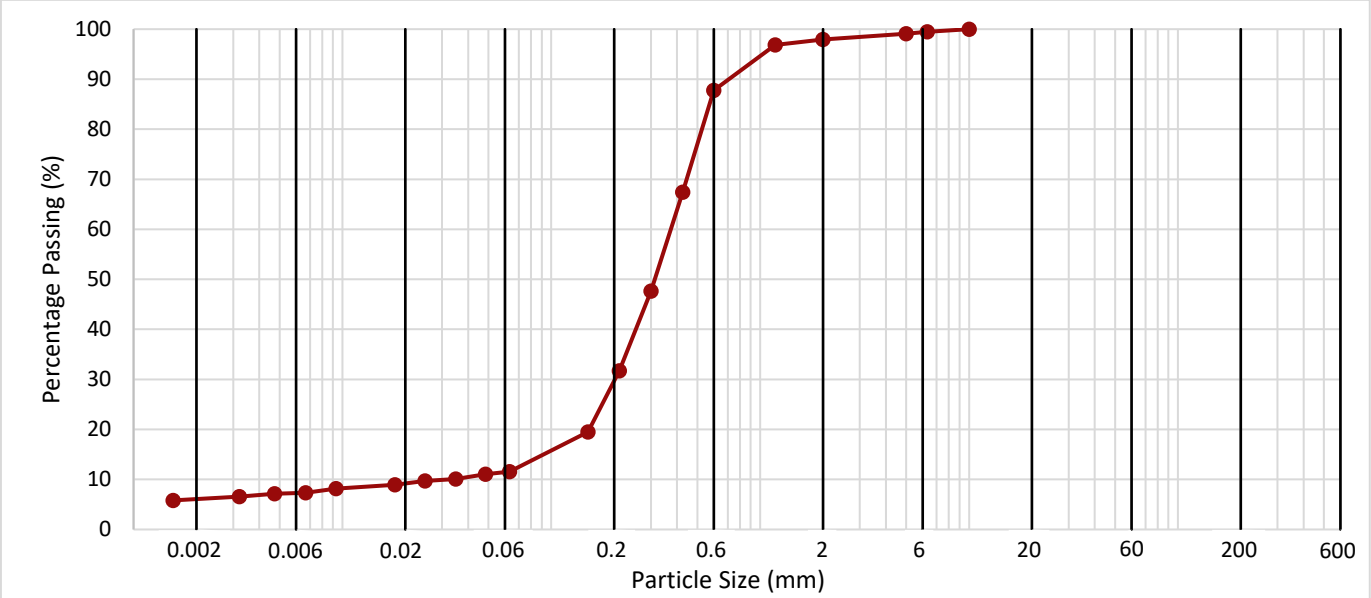
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	16.40 - 16.90	B	35	Olive grey slightly gravelly silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0485	11	6	
	0.0349	10		
	0.0248	10		
	0.0178	9		6
	0.0093	8		
	0.0067	7		
	0.0047	7		
	0.0032	7		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	86
1.18	97	
0.600	88	
0.425	67	
0.300	48	
0.212	32	
0.150	19	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

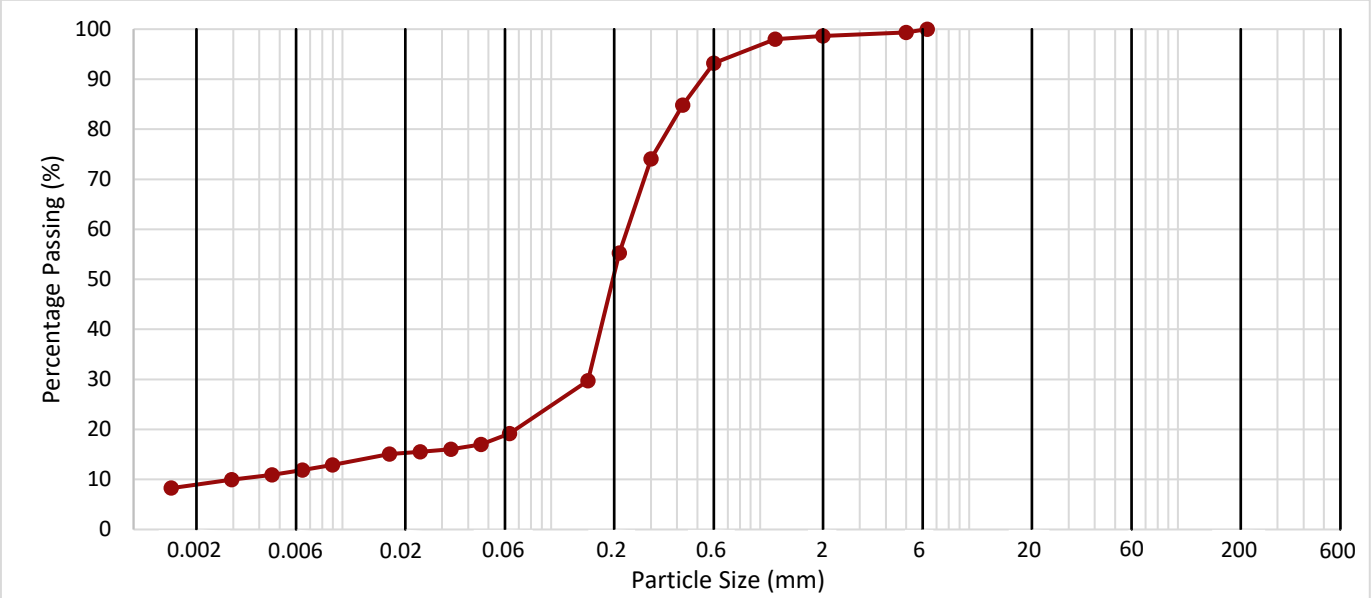
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	18.40 - 18.90	B	39	Dark bluish grey slightly gravelly silty clayey organic SAND locally oxidised to brown. Gravel is fine	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0461	17	10
	0.0331	16	
	0.0236	16	
	0.0168	15	Clay by Dry Mass (%)
	0.0090	13	
	0.0064	12	
	0.0046	11	9
	0.0029	10	
	0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	93	
0.425	85	
0.300	74	
0.212	55	
0.150	30	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

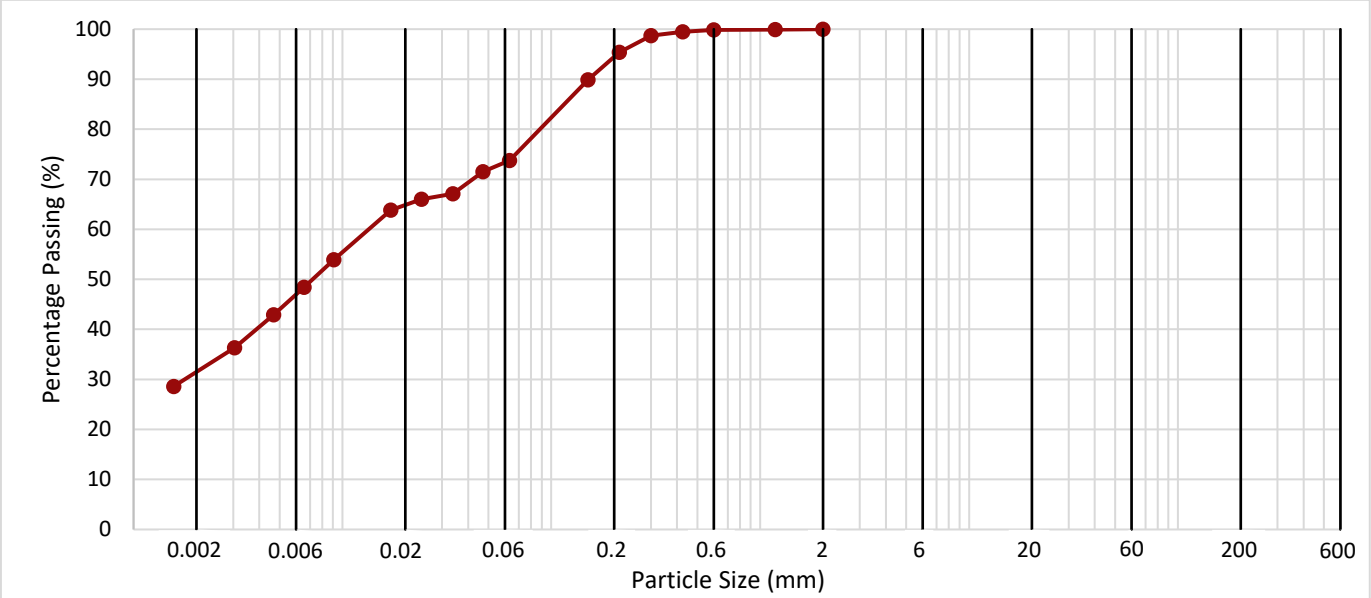
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	20.00 - 20.50	B	44	Firm grey slightly sandy silty organic CLAY locally oxidised to brown with occasional fine sand/silt partings.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0470	72	43
	0.0337	67	
	0.0240	66	
	0.0171	64	Clay by Dry Mass (%)
	0.0091	54	
	0.0065	48	
	0.0047	43	31
	0.0030	36	
	0.0016	29	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	26
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	95	
0.150	90	
0.063	74	

Fines By Dry Mass (%)	
<0.063mm	74

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

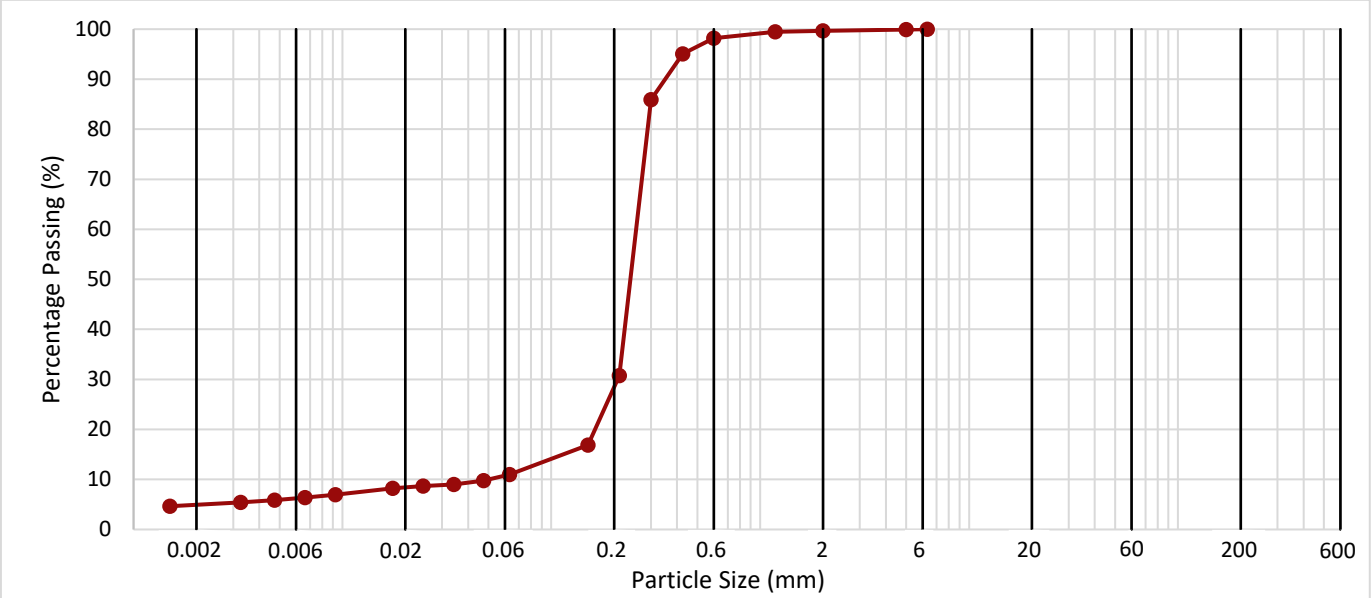
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	21.60 - 21.90	B	47	Olive grey silty clayey organic SAND locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0475	10	6
	0.0342	9	
	0.0244	9	
	0.0174	8	Clay by Dry Mass (%)
	0.0092	7	
	0.0066	6	
	0.0047	6	5
	0.0033	5	
	0.0015	5	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	99	
0.600	98	
0.425	95	
0.300	86	
0.212	31	
0.150	17	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

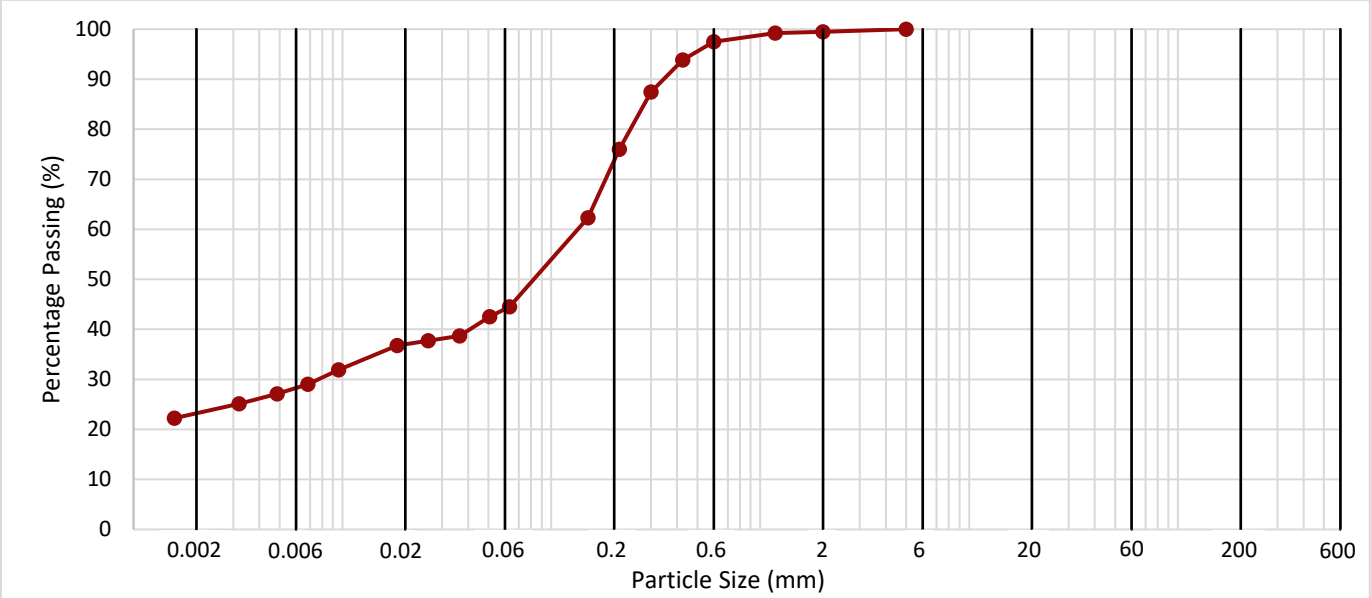
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	24.40 - 24.90	B	53	Very soft dark grey sandy silty organic CLAY locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0507	43	22	
	0.0363	39		
	0.0258	38		
	0.0183	37		23
	0.0096	32		
	0.0068	29		
	0.0049	27		
	0.0032	25		
	0.0016	22		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	54
1.18	99	
0.600	97	
0.425	94	
0.300	87	
0.212	76	
0.150	62	
0.063	45	

Fines By Dry Mass (%)	
<0.063mm	45

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

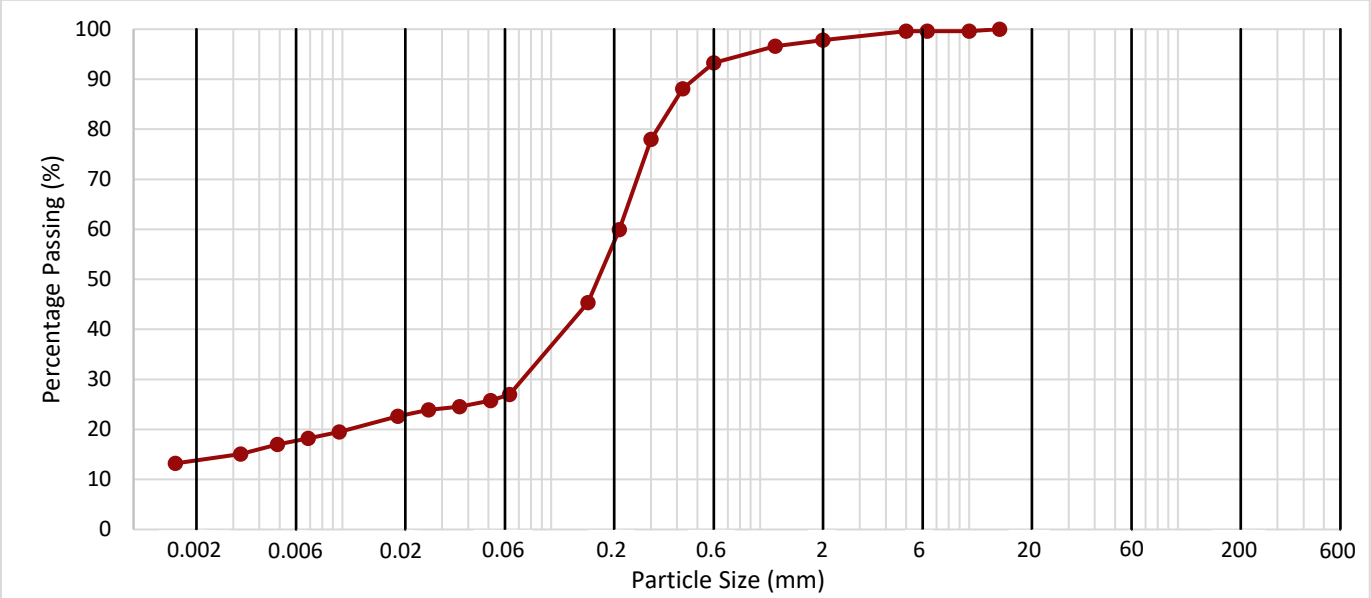
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	26.40 - 26.90	B	57	Very soft dark grey very sandy silty organic CLAY locally oxidised to brown with rare shell debris.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0512	26	13	
0.0364	25		
0.0259	24		
0.0184	23		14
0.0096	19		
0.0069	18		
0.0049	17		
0.0033	15		
0.0016	13		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	71
1.18	97	
0.600	93	
0.425	88	
0.300	78	
0.212	60	
0.150	45	
0.063	27	

Fines By Dry Mass (%)	
<0.063mm	27

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

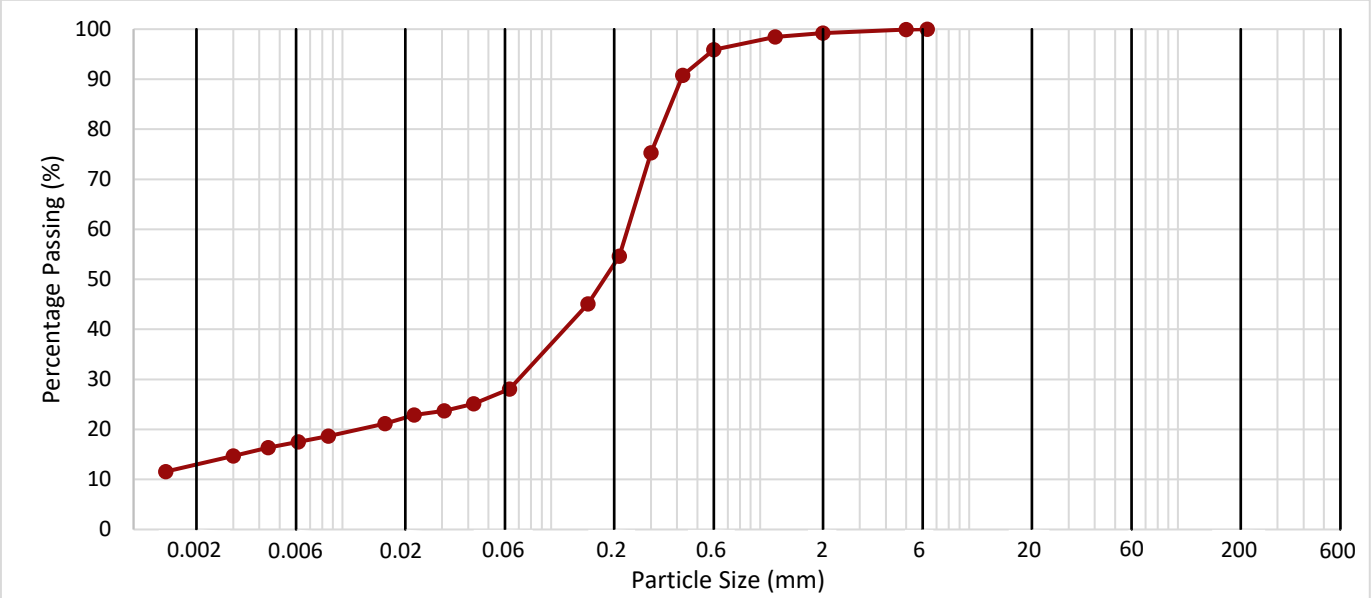
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	28.40 - 28.90	B	61	Very soft dark olive very sandy silty organic CLAY locally oxidised to brown with rare shell debris	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0425	25	15
	0.0308	24	
	0.0220	23	
	0.0160	21	Clay by Dry Mass (%)
	0.0086	19	
	0.0061	18	
	0.0044	16	13
	0.0030	15	
	0.0014	12	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	71
1.18	98	
0.600	96	
0.425	91	
0.300	75	
0.212	55	
0.150	45	
0.063	28	

Fines By Dry Mass (%)	
<0.063mm	28

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

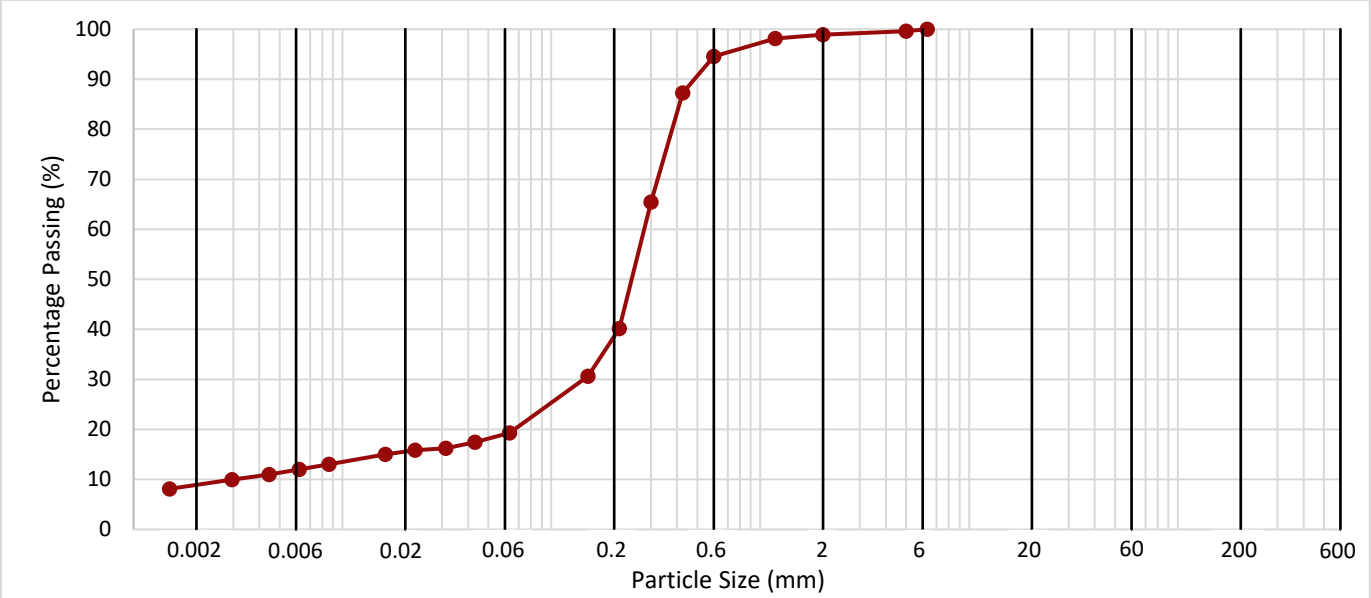
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	30.40 - 30.90	B	65	Dark olive grey silty clayey slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0431	17	10	
	0.0313	16		
	0.0223	16		
	0.0160	15		9
	0.0086	13		
	0.0062	12		
	0.0045	11		
	0.0030	10		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	80
1.18	98	
0.600	95	
0.425	87	
0.300	65	
0.212	40	
0.150	31	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

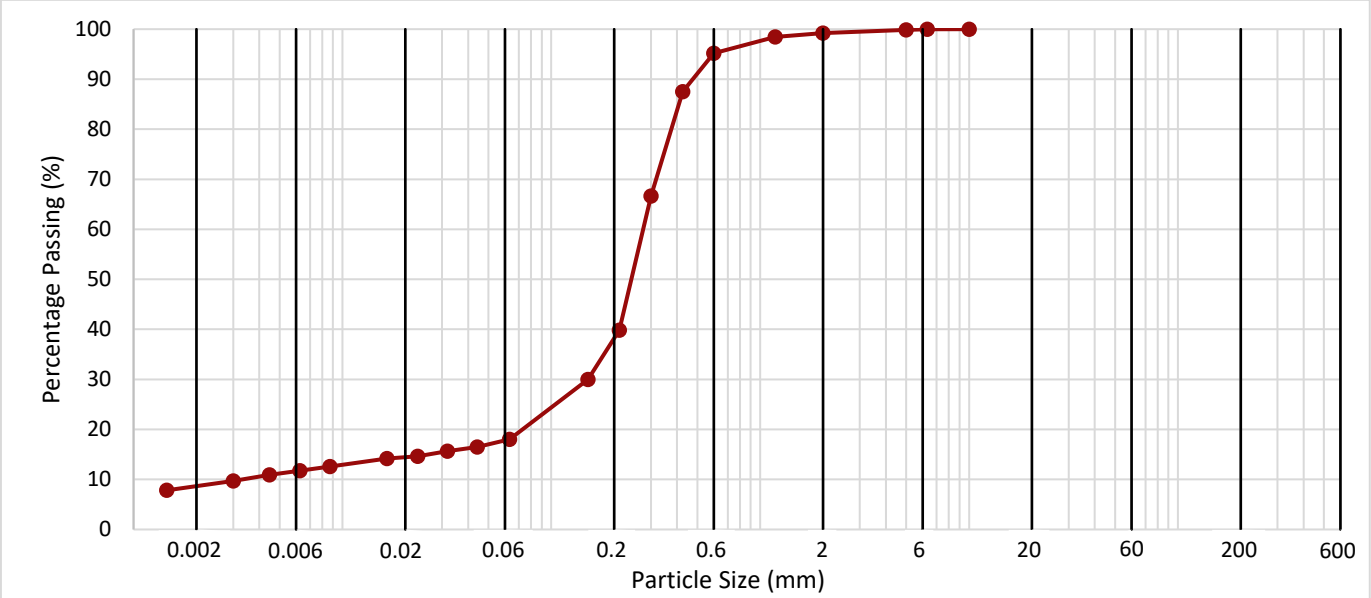
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	32.40 - 32.90	B	69	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0442	16	10
	0.0318	16	
	0.0229	15	
	0.0163	14	Clay by Dry Mass (%)
	0.0087	13	
	0.0062	12	
	0.0045	11	8
	0.0030	10	
	0.0014	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	81
1.18	98	
0.600	95	
0.425	88	
0.300	67	
0.212	40	
0.150	30	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

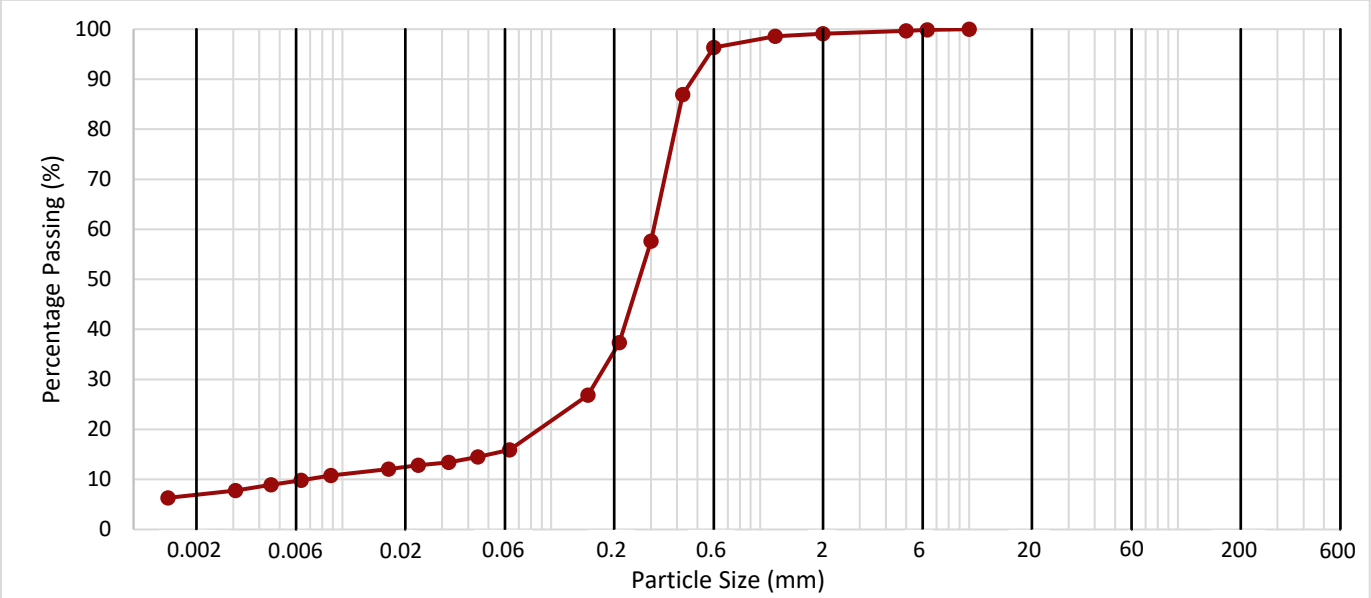
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	34.40 - 34.90	B	73	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0446	14	9	
0.0323	13		
0.0231	13		
0.0166	12		
0.0088	11		
0.0063	10		
0.0046	9		7
0.0031	8		
0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	83
1.18	99	
0.600	96	
0.425	87	
0.300	58	
0.212	37	
0.150	27	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

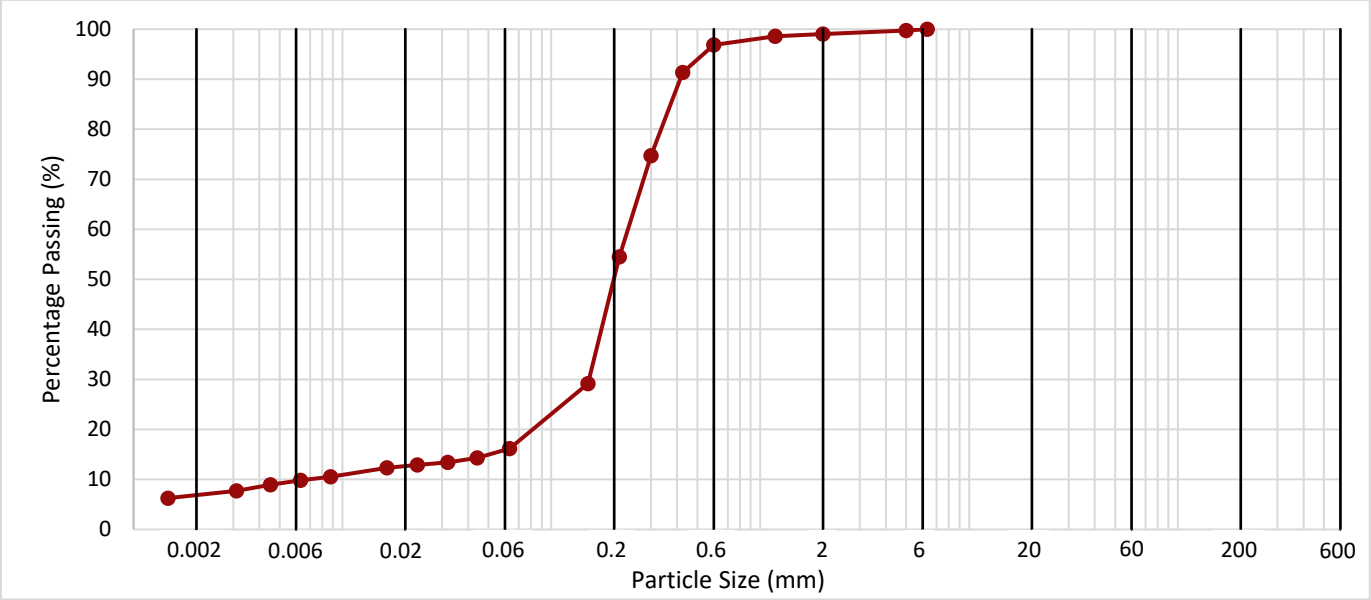
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	36.40 - 36.90	B	77	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0442	14	9	
	0.0319	13		
	0.0228	13		
	0.0163	12		7
	0.0088	11		
	0.0063	10		
	0.0045	9		
	0.0031	8		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	83
1.18	99	
0.600	97	
0.425	91	
0.300	75	
0.212	54	
0.150	29	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

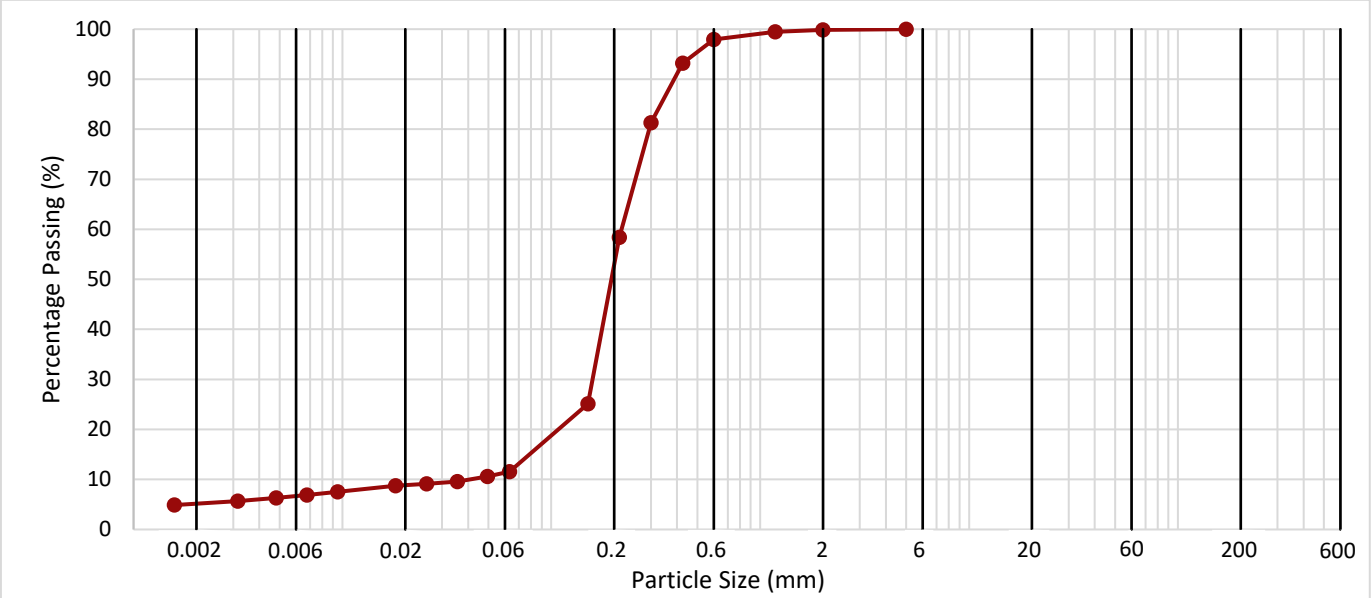
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	38.40 - 38.90	B	81	Dark olive grey silty clayey SAND with rare shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0494	11	7	
	0.0355	10		
	0.0253	9		
	0.0180	9		
	0.0095	8		
	0.0068	7		
	0.0048	6		5
	0.0032	6		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	100	
0.600	98	
0.425	93	
0.300	81	
0.212	58	
0.150	25	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

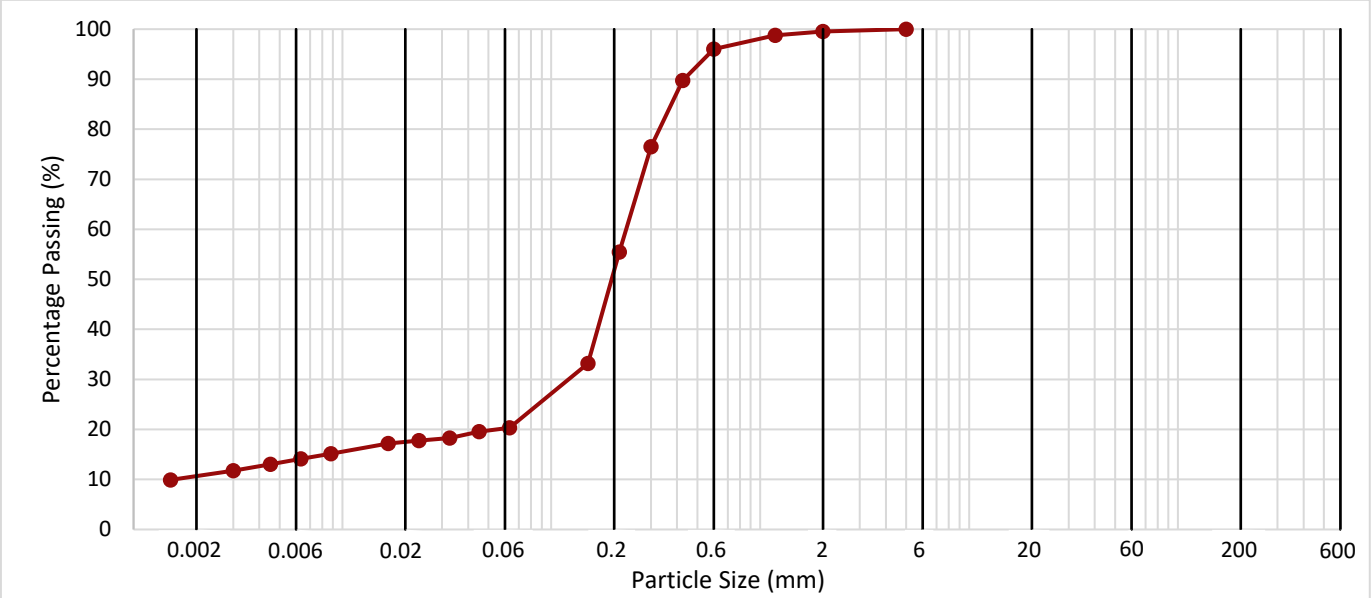
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	41.40 - 41.90	B	87	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0451	20	9
	0.0326	18	
	0.0232	18	
	0.0166	17	Clay by Dry Mass (%)
	0.0088	15	
	0.0063	14	
	0.0045	13	11
	0.0030	12	
	0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	80
1.18	99	
0.600	96	
0.425	90	
0.300	77	
0.212	55	
0.150	33	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

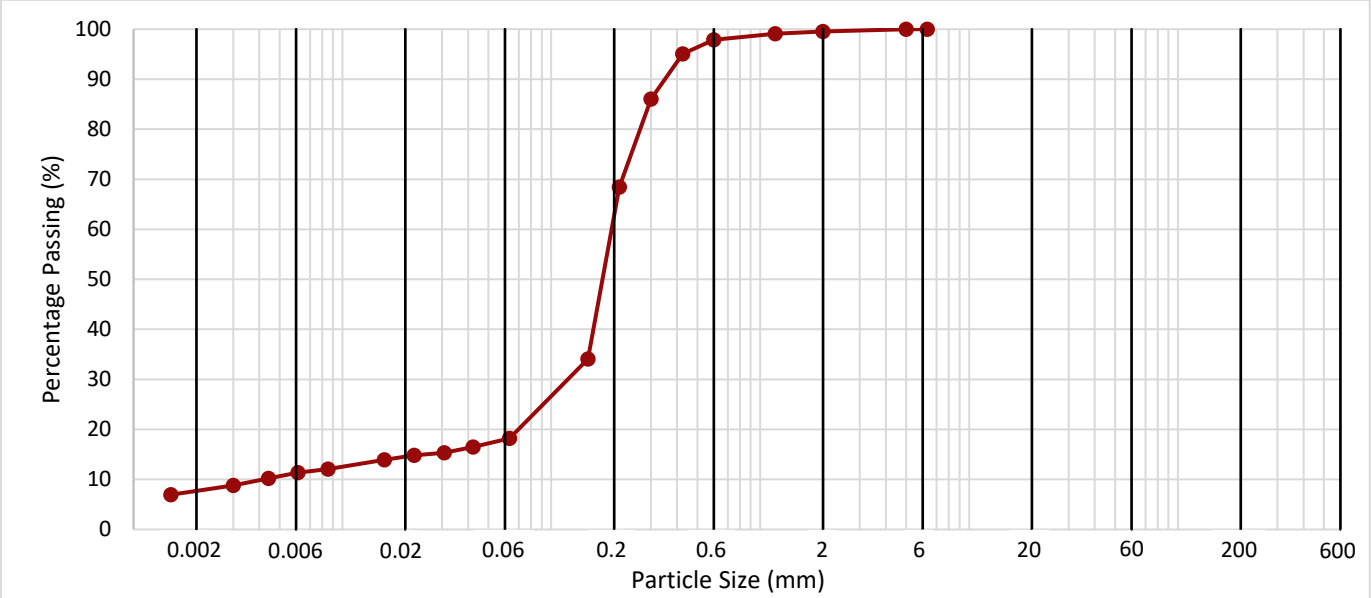
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	44.40 - 44.90	B	93	Dark olive grey silty clayey SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0423	16	10
	0.0307	15	
	0.0220	15	
	0.0159	14	Clay by Dry Mass (%)
	0.0085	12	
	0.0061	11	
	0.0044	10	8
	0.0030	9	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	82
1.18	99	
0.600	98	
0.425	95	
0.300	86	
0.212	68	
0.150	34	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

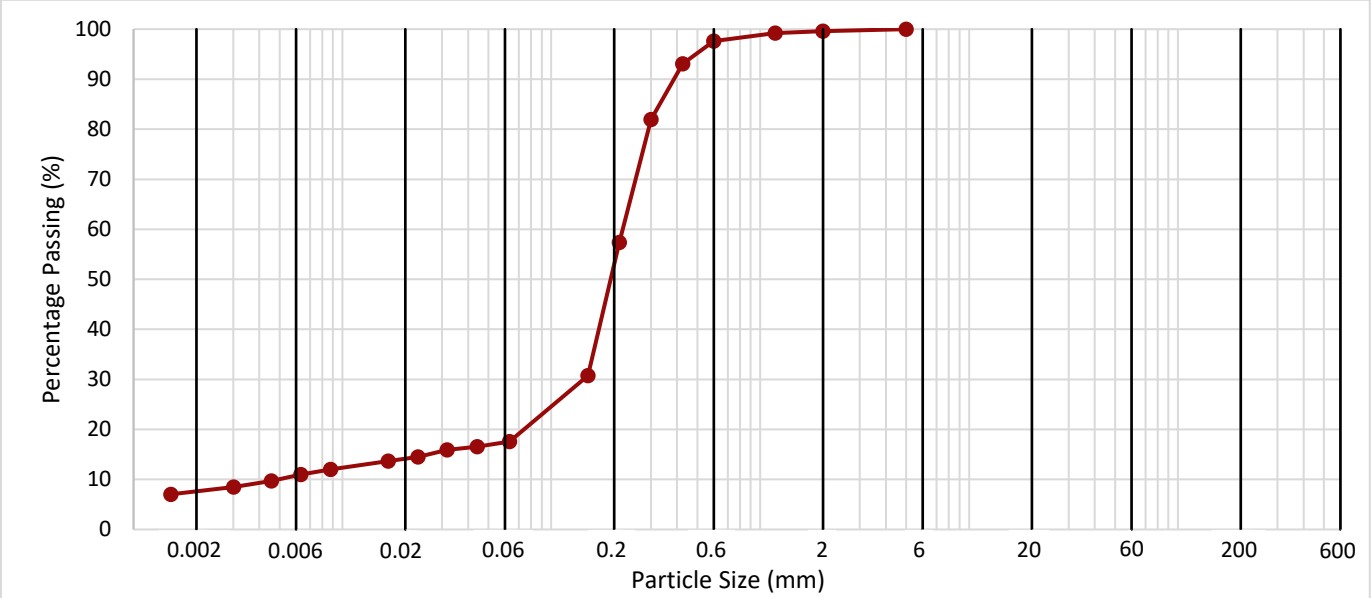
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	47.40 - 47.90	B	99	Dark olive grey silty clayey SAND with occasional shell and fossil debris	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0442	17	**10**
	0.0317	16	
	0.0230	14	
	0.0165	14	Clay by Dry Mass (%)
	0.0088	12	
	0.0063	11	
	0.0046	10	**8**
	0.0030	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	**82**
1.18	99	
0.600	98	
0.425	93	
0.300	82	
0.212	57	
0.150	31	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	**18**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

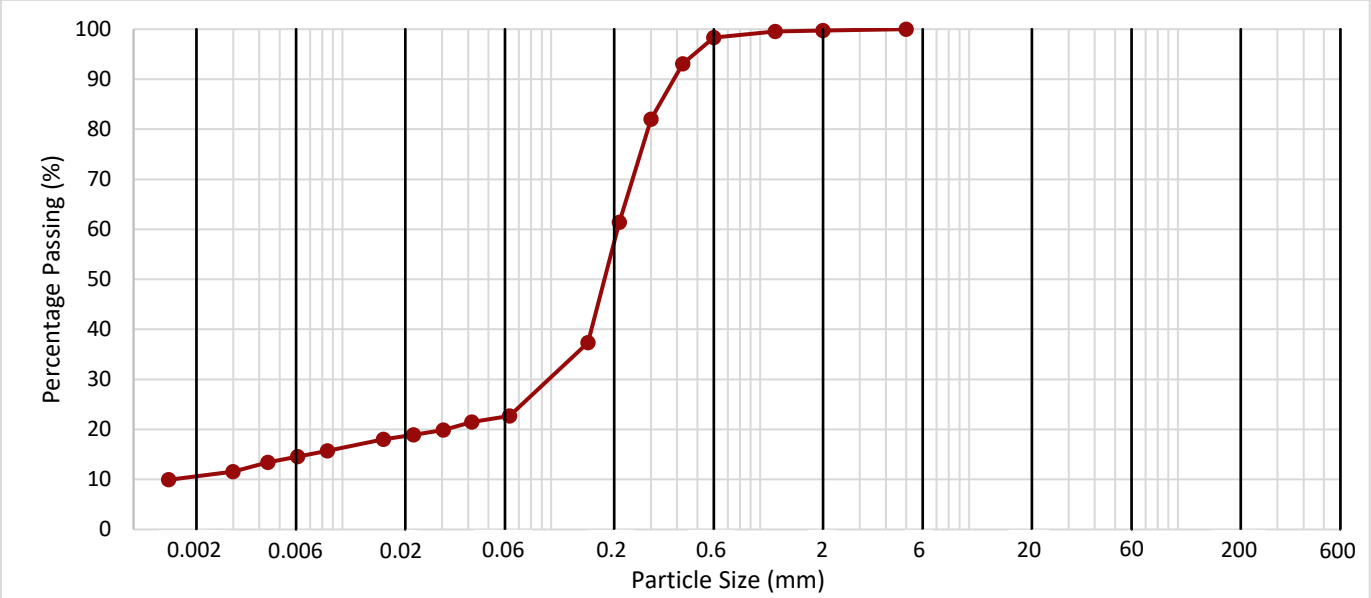
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	49.40 - 49.90	B	103	Dark olive grey silty clayey SAND	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0416	21	13
	0.0304	20	
	0.0219	19	
	0.0157	18	Clay by Dry Mass (%)
	0.0085	16	
	0.0061	15	
	0.0044	13	10
	0.0030	12	
	0.0015	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	77
1.18	100	
0.600	98	
0.425	93	
0.300	82	
0.212	61	
0.150	37	
0.063	23	

Fines By Dry Mass (%)	
<0.063mm	23

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

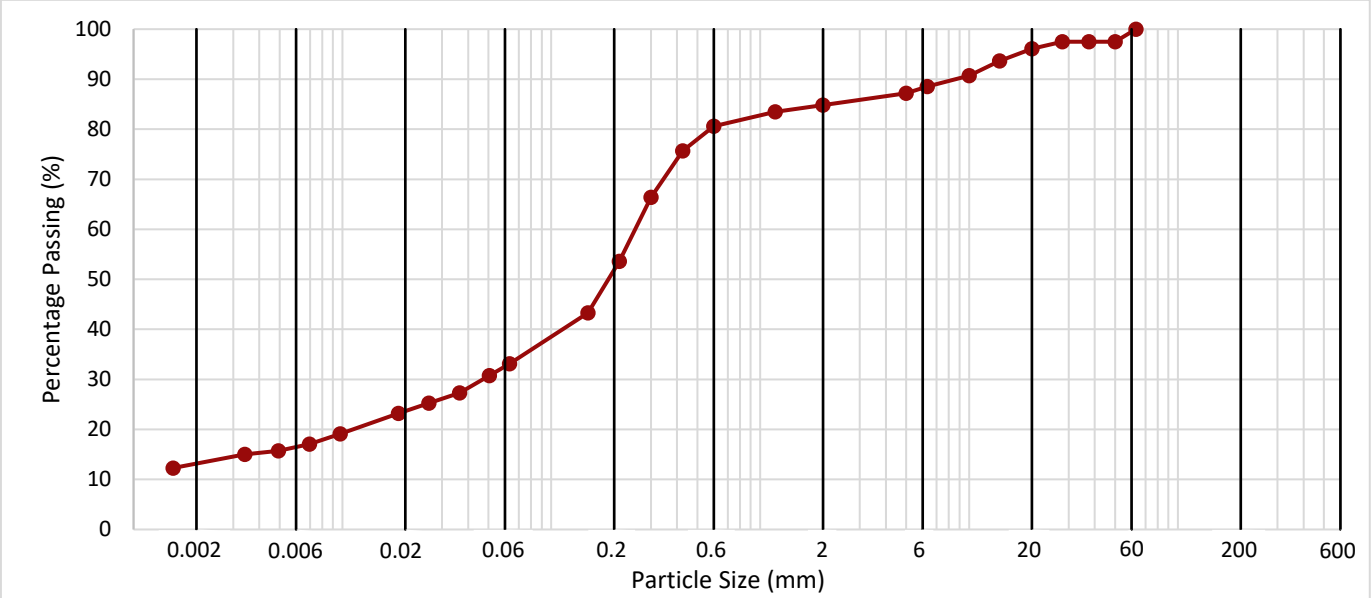
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	1.00 - 1.20	B	1	Firm brown and grey CLAY and dark brownish grey gravelly silty SAND pockets with occasional brick and cinder fragments. Gravel is white and black flint.	Description based on possible engineering behaviour.

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0506	31	20
	0.0364	27	
	0.0260	25	
	0.0185	23	Clay by Dry Mass (%)
	0.0097	19	
	0.0070	17	
	0.0049	16	13
	0.0034	15	
	0.0015	12	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	85	52
1.18	84	
0.600	81	
0.425	76	
0.300	66	
0.212	54	
0.150	43	
0.063	33	

Fines By Dry Mass (%)	
<0.063mm	33

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		15
125		
90		
63	100	
50	97	
37.5	97	
28	97	
20	96	
14	94	
10	91	
6.3	89	
5	87	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

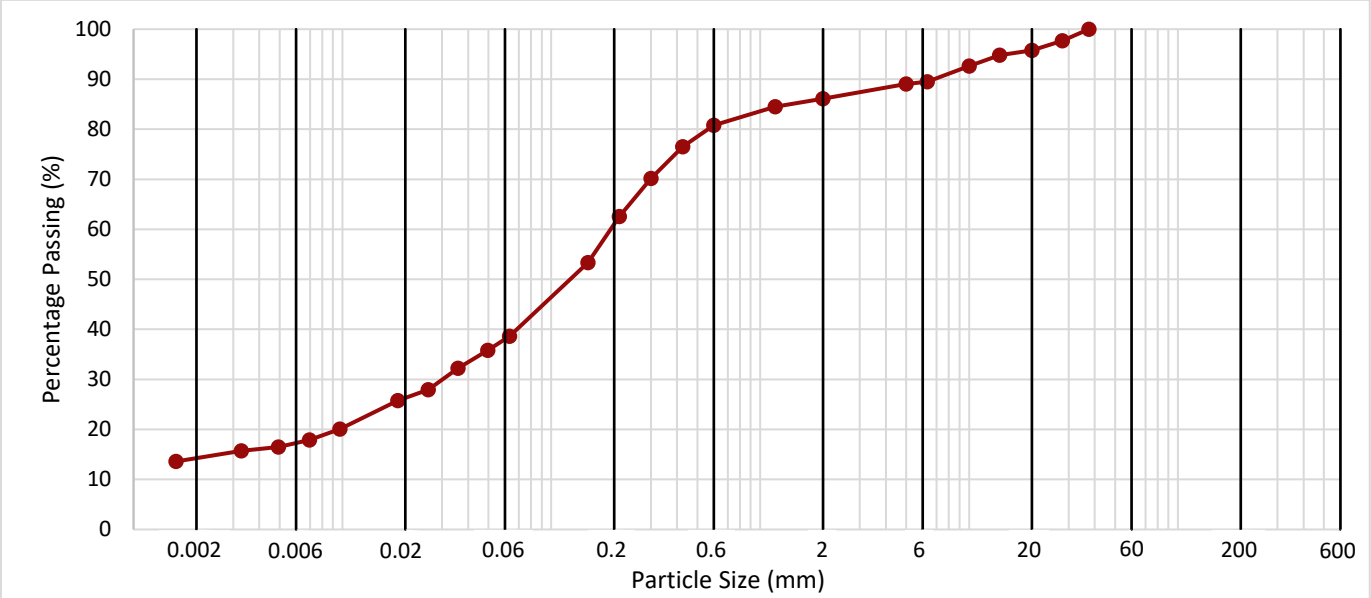
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	1.20 - 1.50	B	3	Firm dark greyish brown slightly gravelly sandy silty CLAY with occasional brown, grey and yellowish brown pockets, dark greyish brown silty clayey sand pockets, and rare brick and glass fragments. Gravel is black, brown and white angular to subrounded flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0497	36	25
0.0357	32	
0.0258	28	
0.0184	26	Clay by Dry Mass (%)
0.0097	20	
0.0070	18	
0.0049	16	14
0.0033	16	
0.0016	14	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	86	47
1.18	84	
0.600	81	
0.425	77	
0.300	70	
0.212	63	
0.150	53	
0.063	39	

Fines By Dry Mass (%)	
<0.063mm	39

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		14
125		
90		
63		
50		
37.5	100	
28	98	
20	96	
14	95	
10	93	
6.3	90	
5	89	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

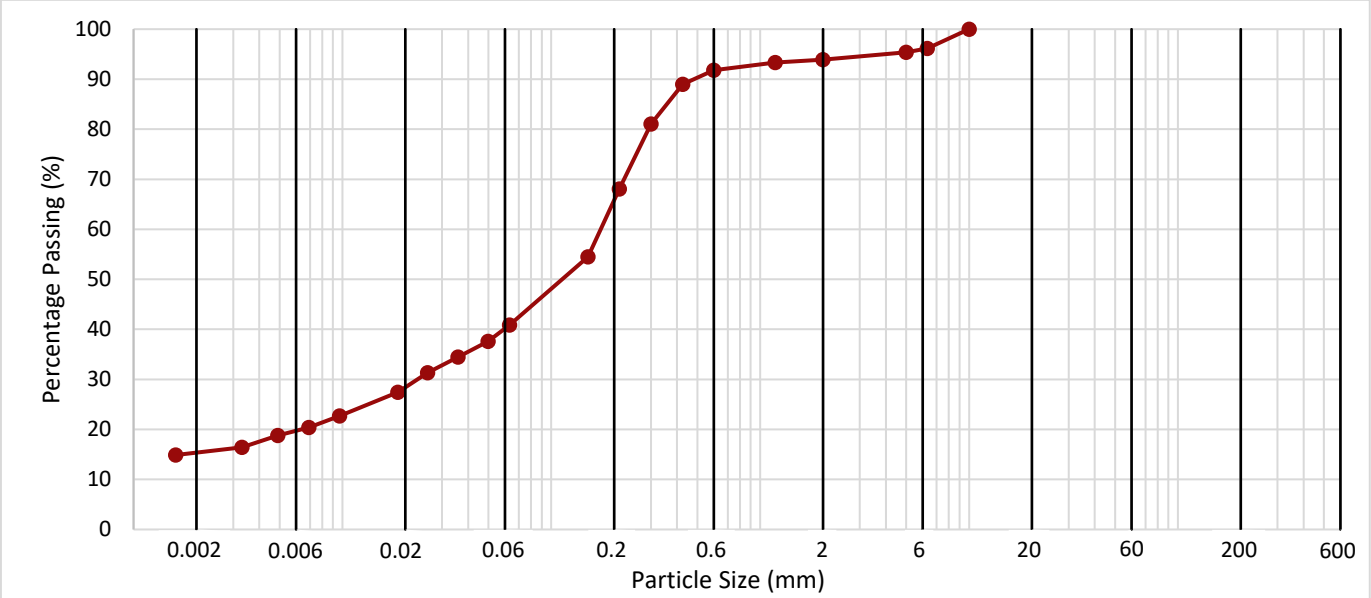
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	1.80 - 2.00	B	5	Very soft brown slightly gravelly sandy silty CLAY with occasional dark grey organic pockets. Gravel is fine to medium flint.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0499	38	26
	0.0357	34	
	0.0256	31	
	0.0184	27	Clay by Dry Mass (%)
	0.0097	23	
	0.0069	20	
	0.0049	19	15
	0.0033	16	
	0.0016	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	94	53
1.18	93	
0.600	92	
0.425	89	
0.300	81	
0.212	68	
0.150	55	
0.063	41	

Fines By Dry Mass (%)	
<0.063mm	41

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		6
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	96	
5	95	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

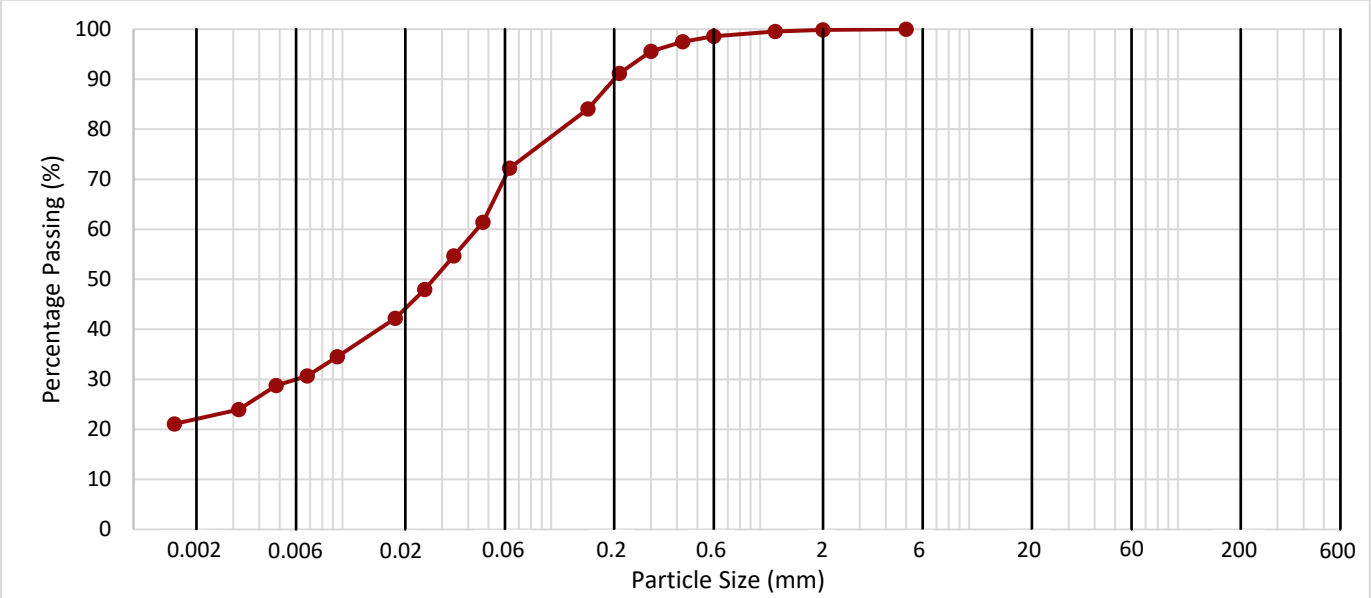
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	2.50 - 3.00	B	8	Soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown, with rare fine to medium flint gravel.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0471	61	50
0.0342	55	
0.0248	48	
0.0179	42	Clay by Dry Mass (%)
0.0095	35	
0.0068	31	
0.0048	29	22
0.0032	24	
0.0016	21	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	28
1.18	100	
0.600	99	
0.425	97	
0.300	96	
0.212	91	
0.150	84	
0.063	72	

Fines By Dry Mass (%)	
<0.063mm	72

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

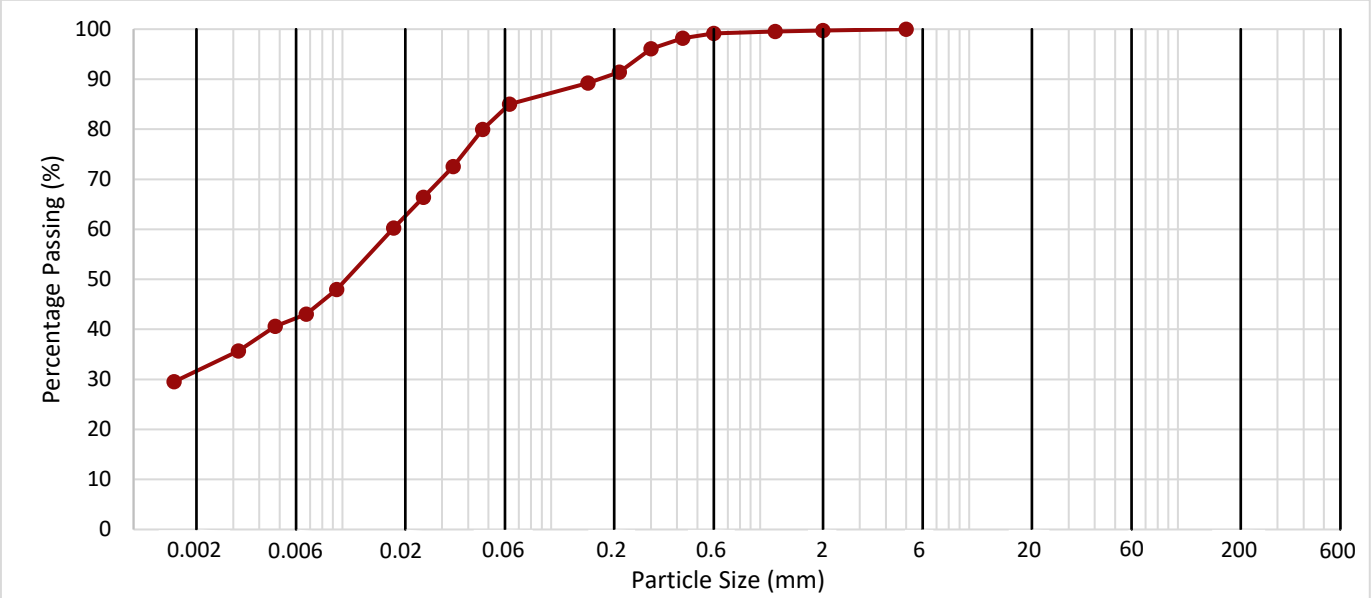
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	4.00 - 4.50	B	14	Very soft very dark grey slightly sandy silty organic CLAY locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0470	80	54
0.0340	73	
0.0244	66	
0.0176	60	Clay by Dry Mass (%)
0.0094	48	
0.0067	43	
0.0048	41	31
0.0032	36	
0.0016	30	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	15
1.18	100	
0.600	99	
0.425	98	
0.300	96	
0.212	91	
0.150	89	
0.063	85	

Fines By Dry Mass (%)	
<0.063mm	85

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

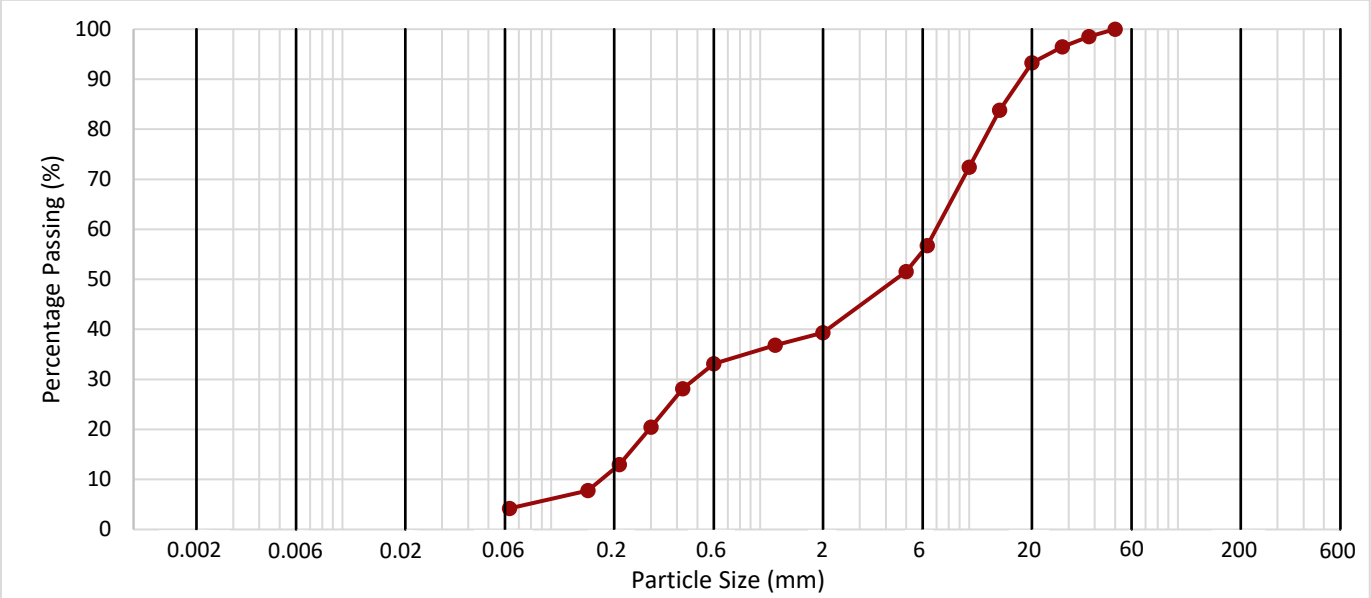
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	6.00 - 6.50	B	18	Black, brown and white very sandy slightly silty slightly clayey angular to rounded flint GRAVEL with occasional dark grey organic pockets. Sand is brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	39	35
1.18	37	
0.600	33	
0.425	28	
0.300	20	
0.212	13	
0.150	8	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	4

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		61
125		
90		
63		
50	100	
37.5	98	
28	96	
20	93	
14	84	
10	72	
6.3	57	
5	52	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

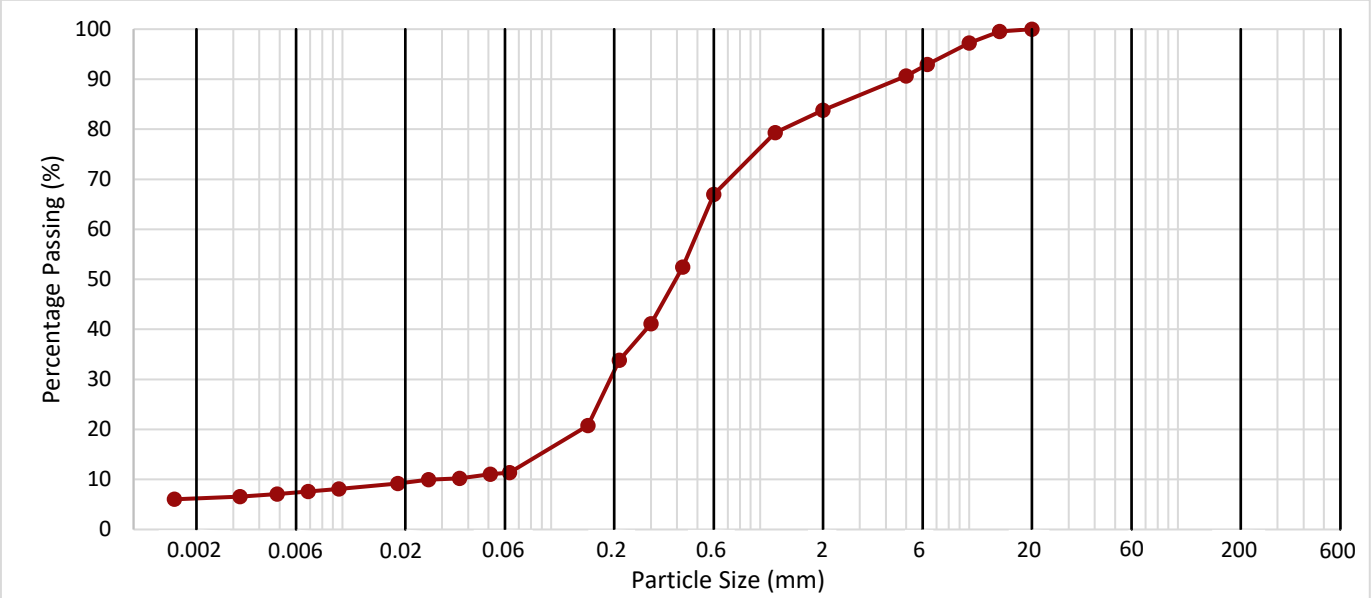
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	8.00 - 8.50	B	23	Yellowish brown slightly gravelly silty SAND with occasional firm grey sandy clay lumps. Gravel is black angular to subangular flint.	

Method of Test:	Wet Sieve + Hydrometer	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0510	11	5
	0.0364	10	
	0.0258	10	
	0.0184	9	Clay by Dry Mass (%)
	0.0096	8	
	0.0069	8	
	0.0049	7	6
	0.0032	7	
	0.0016	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	84	73
1.18	79	
0.600	67	
0.425	52	
0.300	41	
0.212	34	
0.150	21	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		16
125		
90		
63		
50		
37.5		
28		
20	100	
14	100	
10	97	
6.3	93	
5	91	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

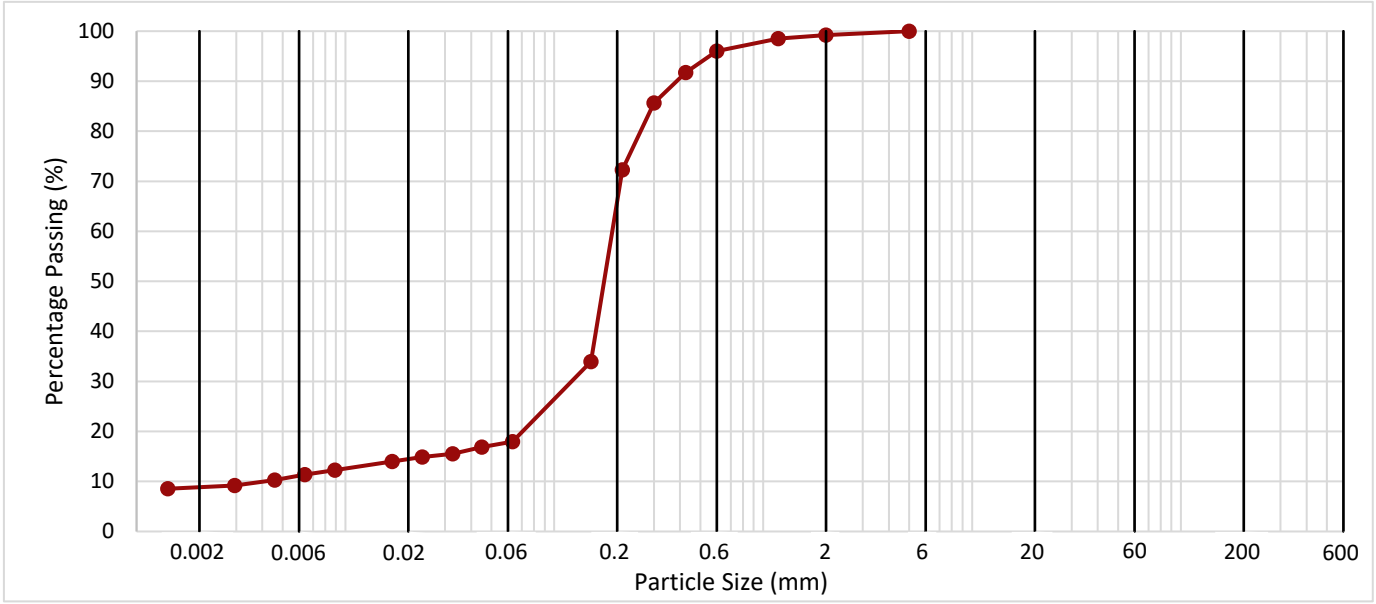
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	10.00 - 10.50	B	27	Olive grey silty clayey organic SAND locally oxidised to brown with rare fine flint gravel	

Method of Test: Hydrometer + Pre-sieve

Method of Pretreatment: Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0450	17	9	
0.0326	16		
0.0233	15		
0.0168	14		9
0.0089	12		
0.0064	11		
0.0046	10		
0.0030	9		
0.0014	9		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	81
1.18	98	
0.600	96	
0.425	92	
0.300	86	
0.212	72	
0.150	34	
0.063	18	

Fines By Dry Mass (%)	
<0.063mm	18

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part2: 1990: 9.2, 9.5

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

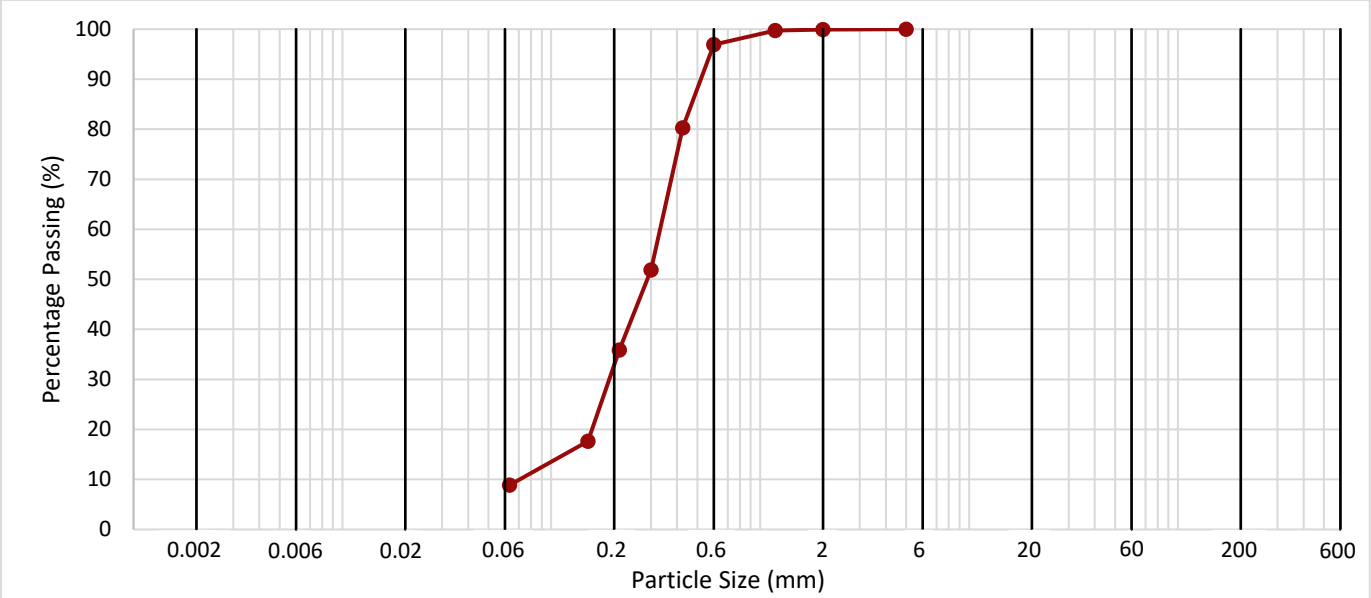
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	12.50 - 12.90	B	31	Olive slightly silty clayey organic SAND locally oxidised to brown.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**91**
1.18	100	
0.600	97	
0.425	80	
0.300	52	
0.212	36	
0.150	18	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	**9**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

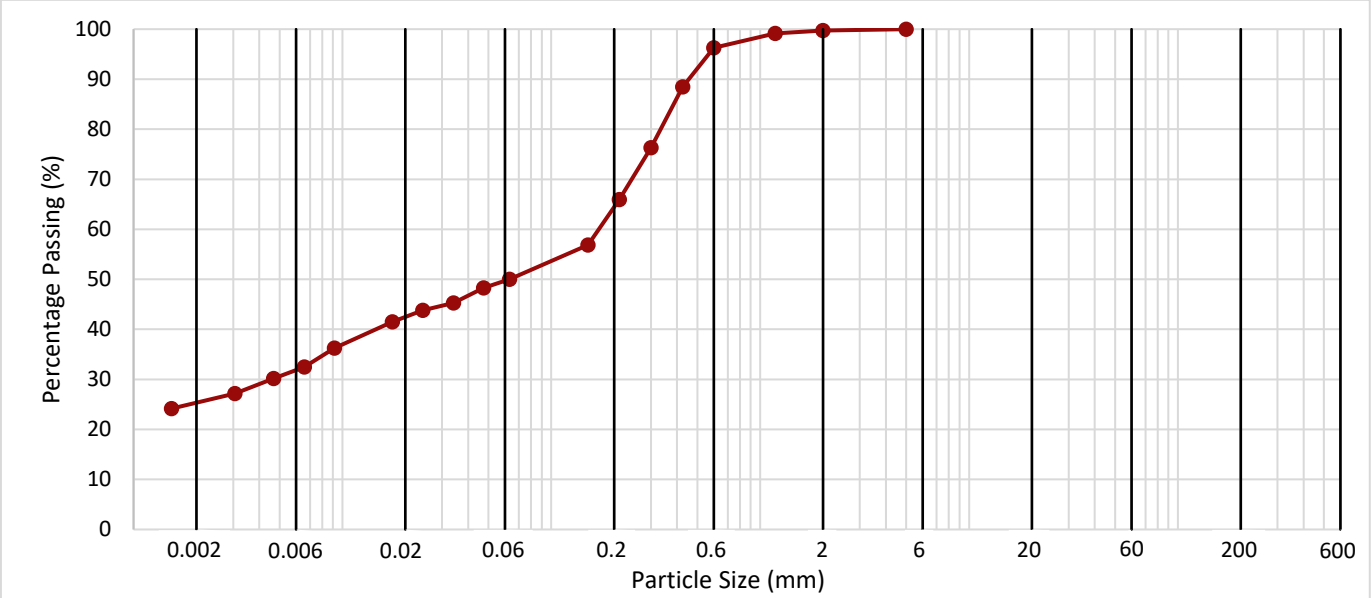
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	13.00 - 13.50	B	35	Very soft dark bluish grey sandy silty organic CLAY with occasional olive and brown mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0475	48	25
	0.0341	45	
	0.0242	44	
	0.0173	42	Clay by Dry Mass (%)
	0.0092	36	
	0.0066	32	
	0.0047	30	25
	0.0031	27	
	0.0015	24	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	50
1.18	99	
0.600	96	
0.425	88	
0.300	76	
0.212	66	
0.150	57	
0.063	50	

Fines By Dry Mass (%)	
<0.063mm	50

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

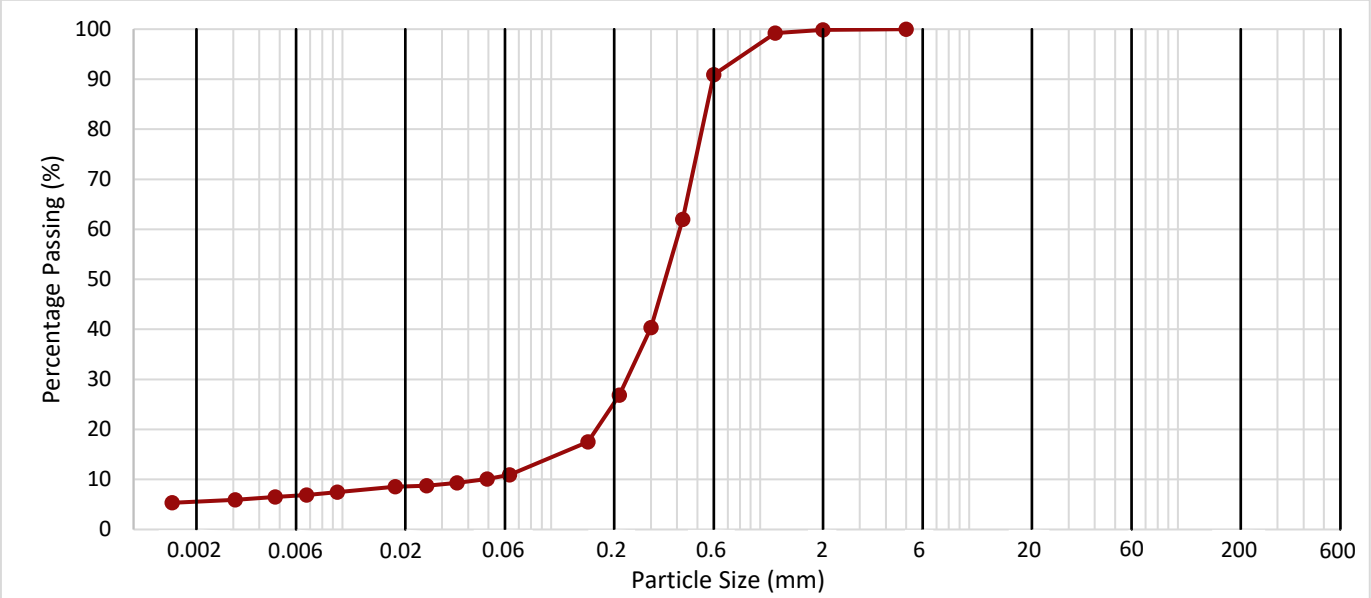
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	14.00 - 14.50	B	37	Olive grey silty clayey organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0493	10	5	
	0.0354	9		
	0.0253	9		
	0.0179	9		6
	0.0094	7		
	0.0067	7		
	0.0048	6		
	0.0031	6		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	99	
0.600	91	
0.425	62	
0.300	40	
0.212	27	
0.150	17	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

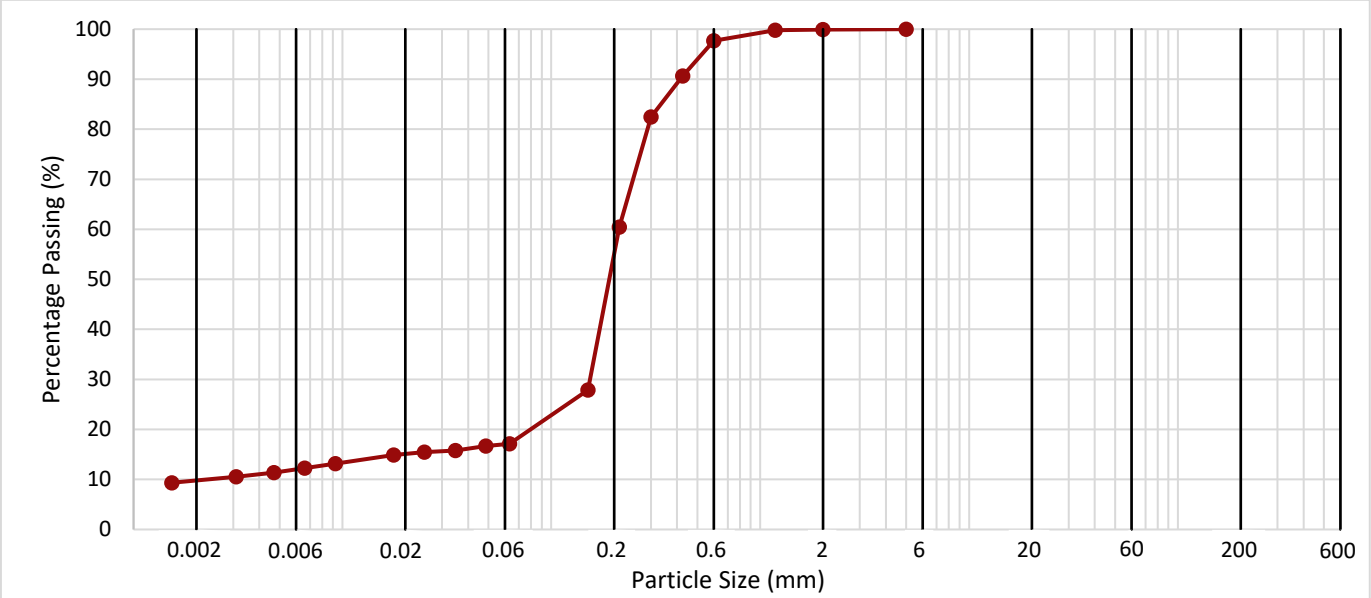
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	16.00 - 16.50	B	41	Dark grey silty clayey organic SAND locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0487	17	7
	0.0348	16	
	0.0247	15	
	0.0176	15	Clay by Dry Mass (%)
	0.0093	13	
	0.0066	12	
	0.0047	11	10
	0.0031	11	
	0.0015	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	83
1.18	100	
0.600	98	
0.425	91	
0.300	82	
0.212	60	
0.150	28	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

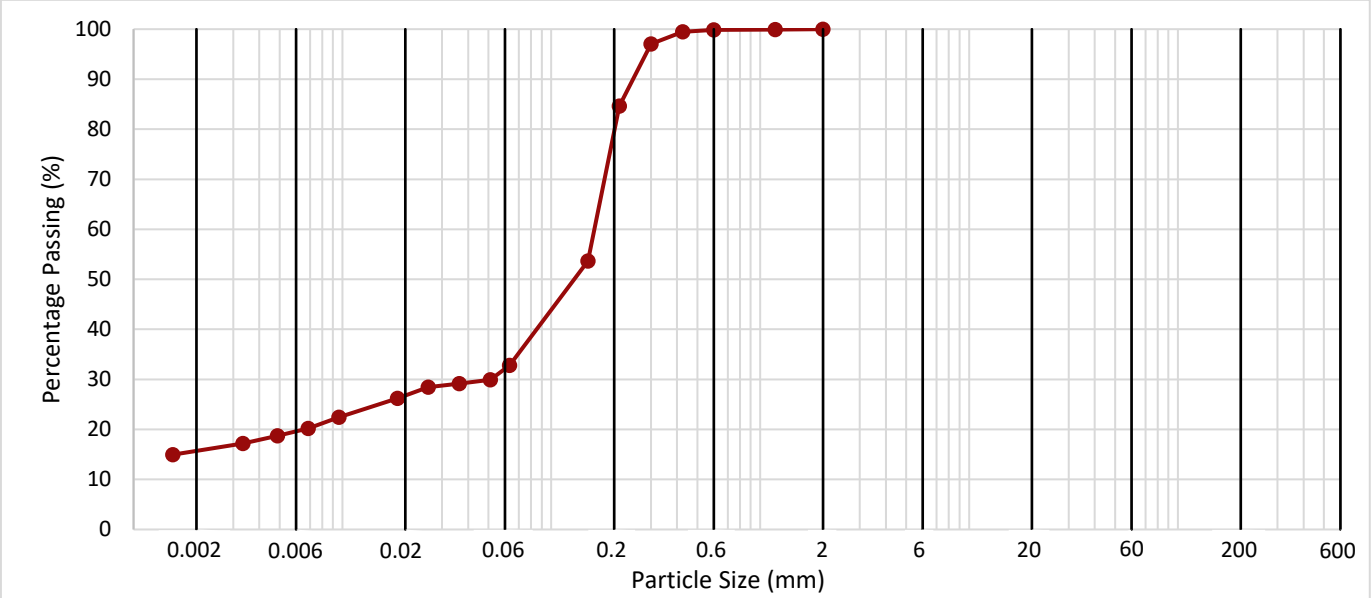
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	18.00 - 18.45	UT	44	Grey sandy silty organic CLAY with occasional laminations. Sand is fine to medium.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0511	30	17
	0.0363	29	
	0.0257	28	
	0.0184	26	Clay by Dry Mass (%)
	0.0096	22	
	0.0069	20	
	0.0049	19	16
	0.0033	17	
	0.0015	15	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	67
1.18	100	
0.600	100	
0.425	99	
0.300	97	
0.212	85	
0.150	54	
0.063	33	

Fines By Dry Mass (%)	
<0.063mm	33

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

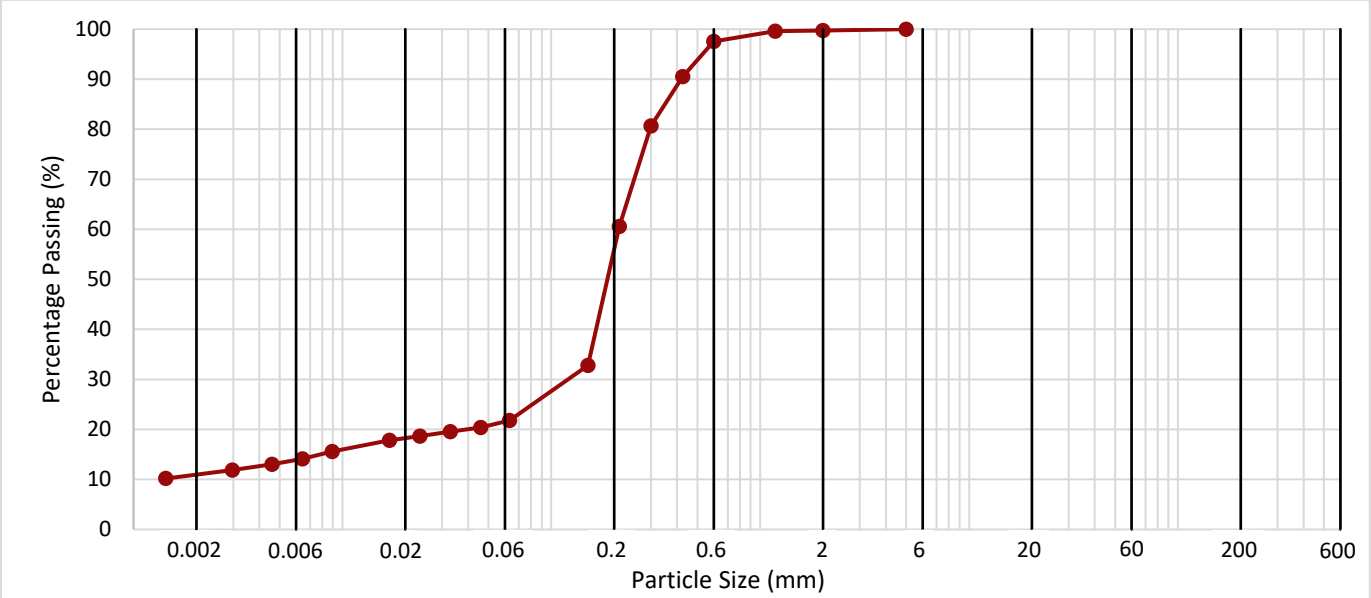
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	18.00 - 18.70	B	46	Dark grey silty clayey slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0459	20	11	
	0.0329	20		
	0.0235	19		
	0.0168	18		
	0.0089	16		
	0.0064	14		
	0.0046	13		11
	0.0030	12		
	0.0014	10		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	78
1.18	100	
0.600	98	
0.425	90	
0.300	81	
0.212	61	
0.150	33	
0.063	22	

Fines By Dry Mass (%)	
<0.063mm	22

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

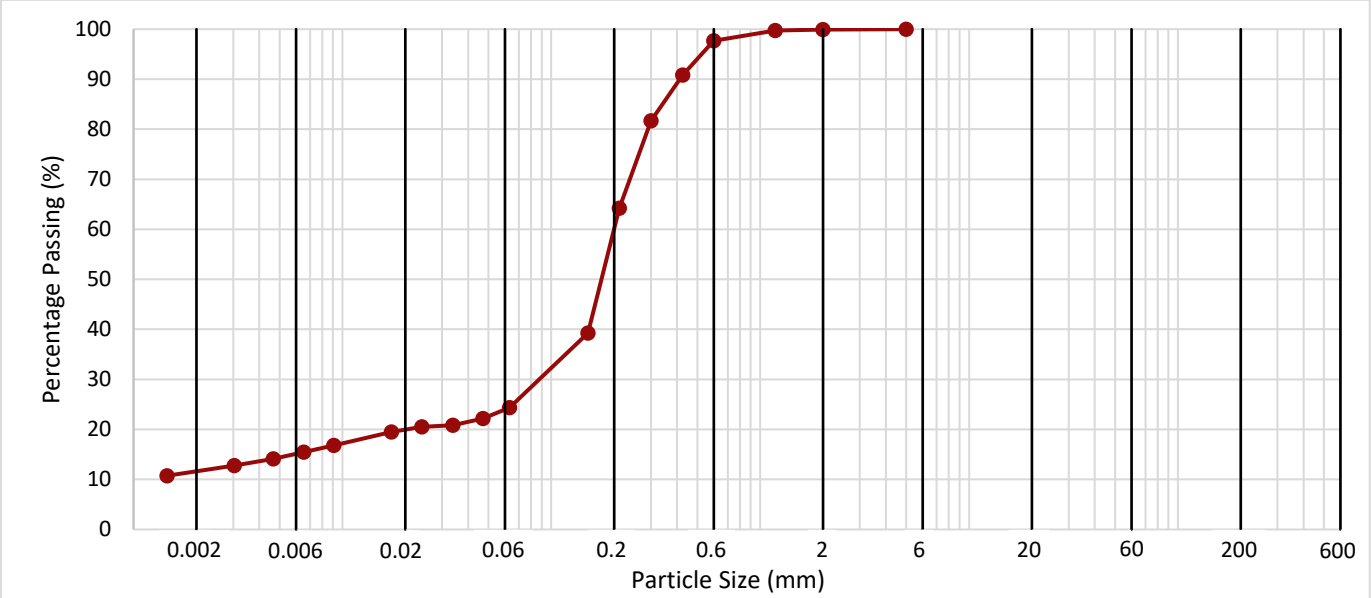
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	19.00 - 19.50	B	48	Dark olive grey organic very sandy silty CLAY/silty clayey SAND.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0470	22	13
0.0338	21	
0.0240	20	
0.0171	19	Clay by Dry Mass (%)
0.0091	17	
0.0065	15	
0.0047	14	11
0.0030	13	
0.0014	11	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	76
1.18	100	
0.600	98	
0.425	91	
0.300	82	
0.212	64	
0.150	39	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

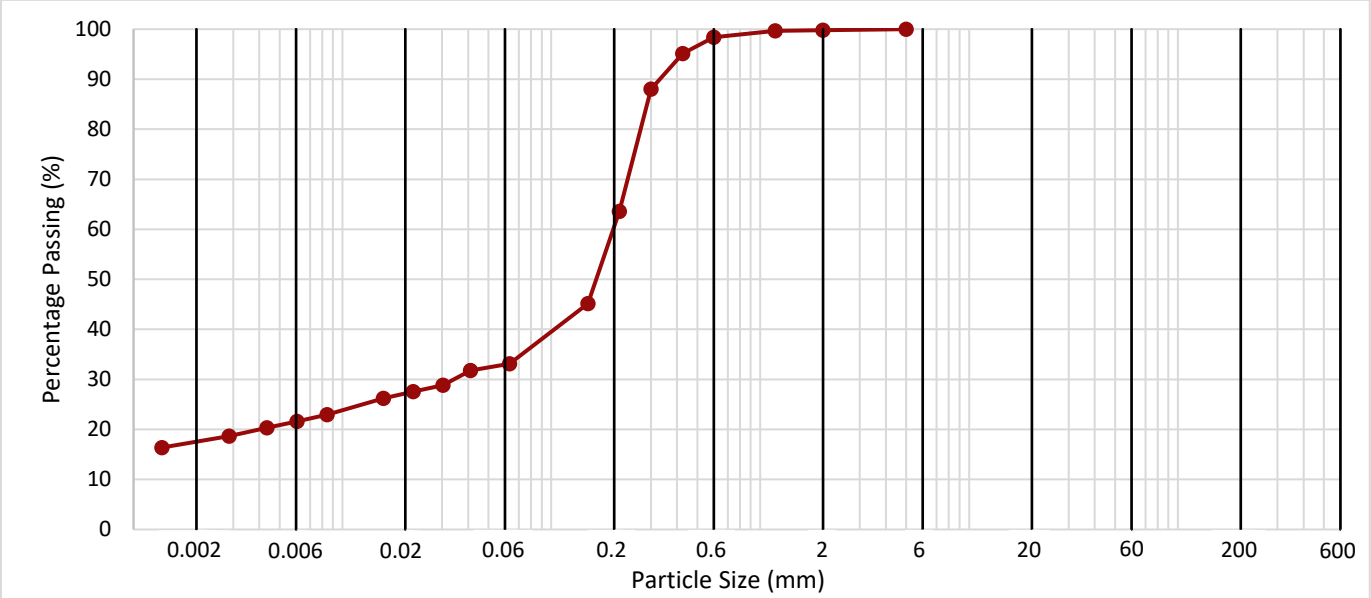
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	21.50 - 22.00	B	53	Very soft dark grey very sandy silty organic CLAY.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0410	32	**16**
	0.0303	29	
	0.0218	28	
	0.0157	26	**Clay by Dry Mass (%)**
	0.0084	23	
	0.0061	22	
	0.0043	20	**17**
	0.0029	19	
	0.0014	16	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	**67**
1.18	100	
0.600	98	
0.425	95	
0.300	88	
0.212	64	
0.150	45	
0.063	33	

Fines By Dry Mass (%)	
<0.063mm	**33**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

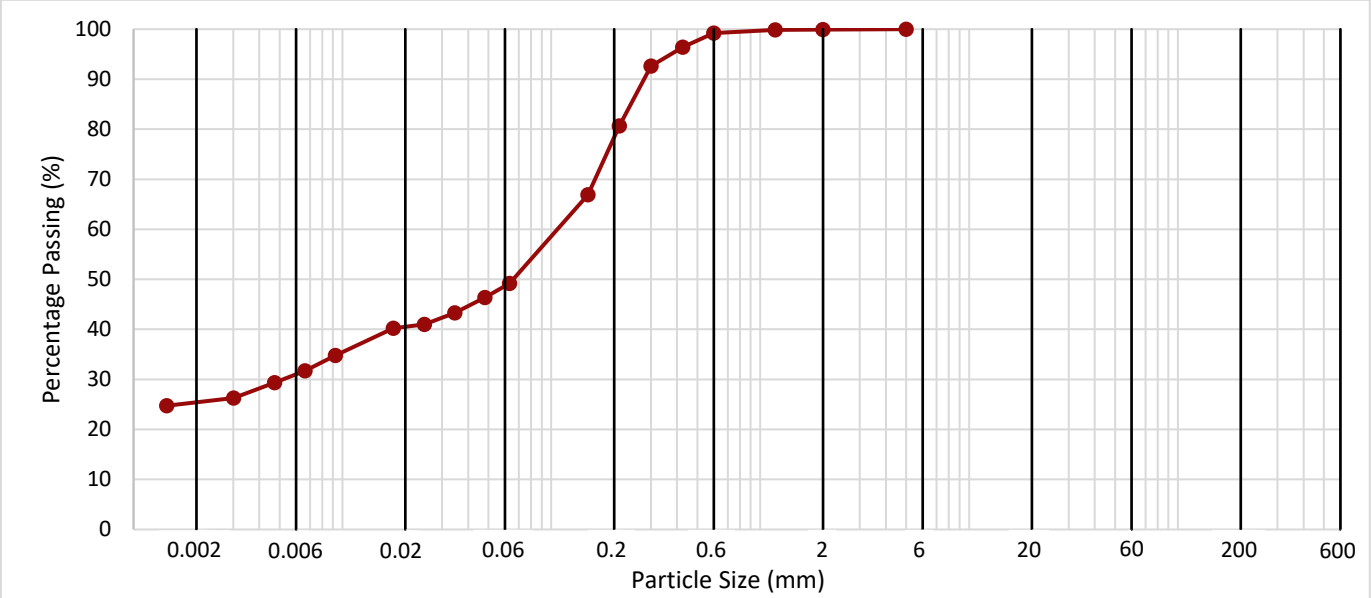
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	23.00 - 23.50	B	58	Very soft dark grey sandy silty slightly organic CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0481	46	24
	0.0345	43	
	0.0247	41	
	0.0175	40	Clay by Dry Mass (%)
	0.0093	35	
	0.0066	32	
	0.0047	29	25
	0.0030	26	
	0.0014	25	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	51
1.18	100	
0.600	99	
0.425	96	
0.300	93	
0.212	81	
0.150	67	
0.063	49	

Fines By Dry Mass (%)	
<0.063mm	49

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

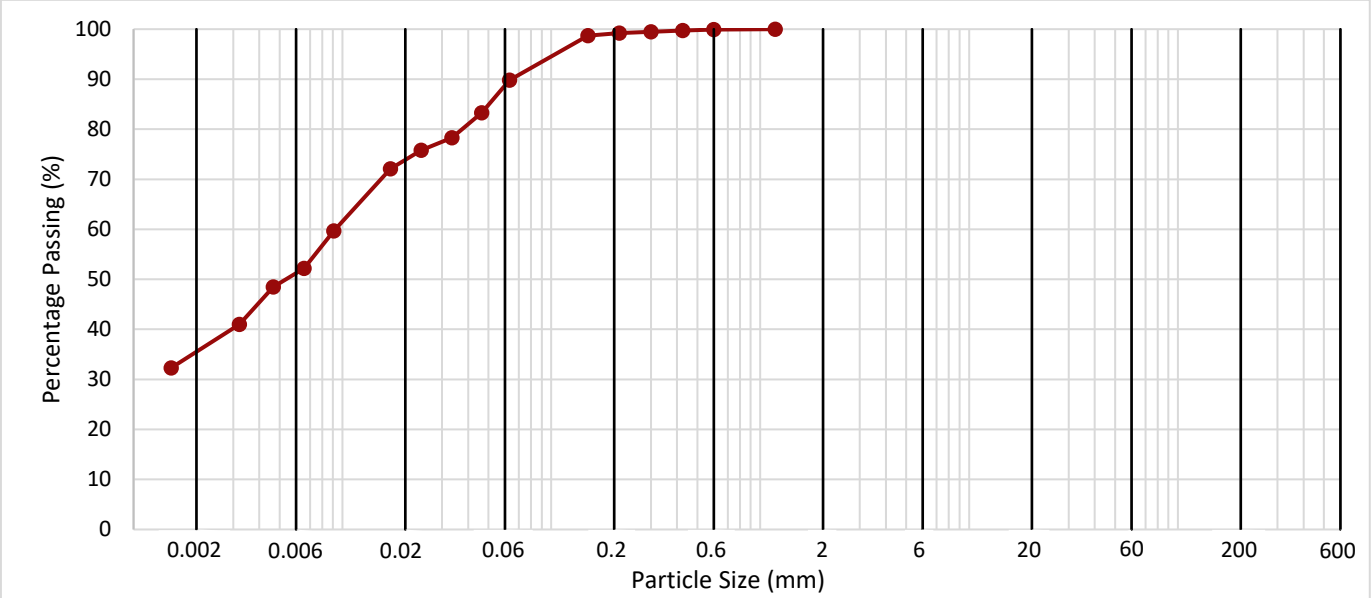
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	24.00 - 24.45	UT	59	Firm (Medium strength) grey slightly sandy silty organic CLAY. Sand is fine.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0465	83	55
0.0334	78	
0.0238	76	
0.0170	72	Clay by Dry Mass (%)
0.0091	60	
0.0065	52	
0.0047	48	35
0.0032	41	
0.0015	32	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00		10
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	99	
0.150	99	
0.063	90	

Fines By Dry Mass (%)	
<0.063mm	90

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

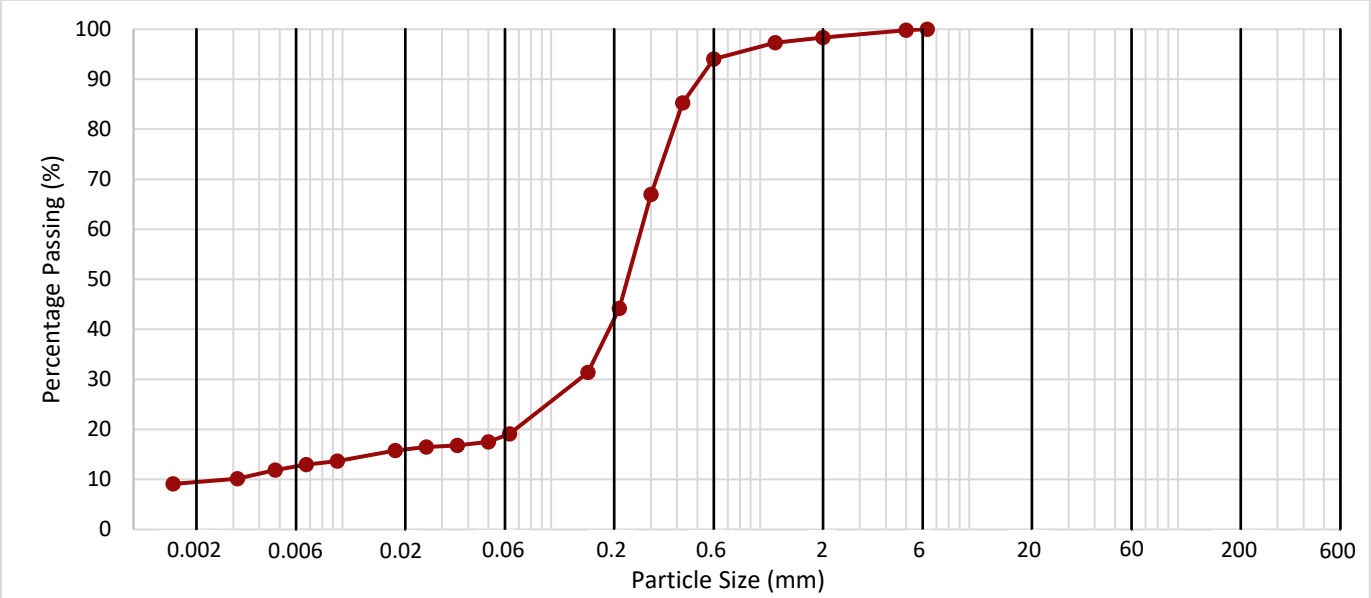
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	25.00 - 25.50	B	63	Dark grey silty clayey slightly organic SAND locally oxidised to brown with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0499	18	10
	0.0355	17	
	0.0252	16	
	0.0179	16	Clay by Dry Mass (%)
	0.0094	14	
	0.0067	13	
	0.0048	12	9
	0.0031	10	
	0.0015	9	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	79
1.18	97	
0.600	94	
0.425	85	
0.300	67	
0.212	44	
0.150	31	
0.063	19	

Fines By Dry Mass (%)	
<0.063mm	19

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

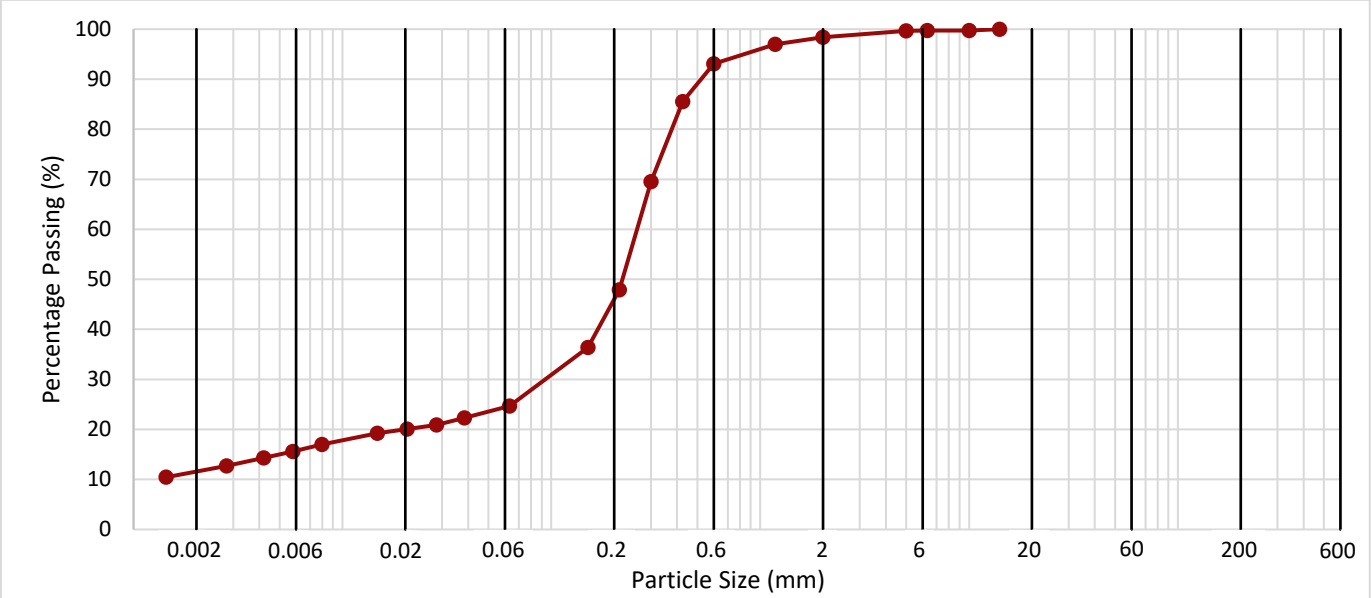
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	27.00 - 27.50	B	67	Dark olive grey silty clayey slightly organic SAND locally oxidised to brown, with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0384	22	14
0.0282	21	
0.0204	20	
0.0147	19	Clay by Dry Mass (%)
0.0080	17	
0.0058	16	
0.0042	14	11
0.0028	13	
0.0014	10	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	73
1.18	97	
0.600	93	
0.425	86	
0.300	70	
0.212	48	
0.150	36	
0.063	25	

Fines By Dry Mass (%)	
<0.063mm	25

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14	100	
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

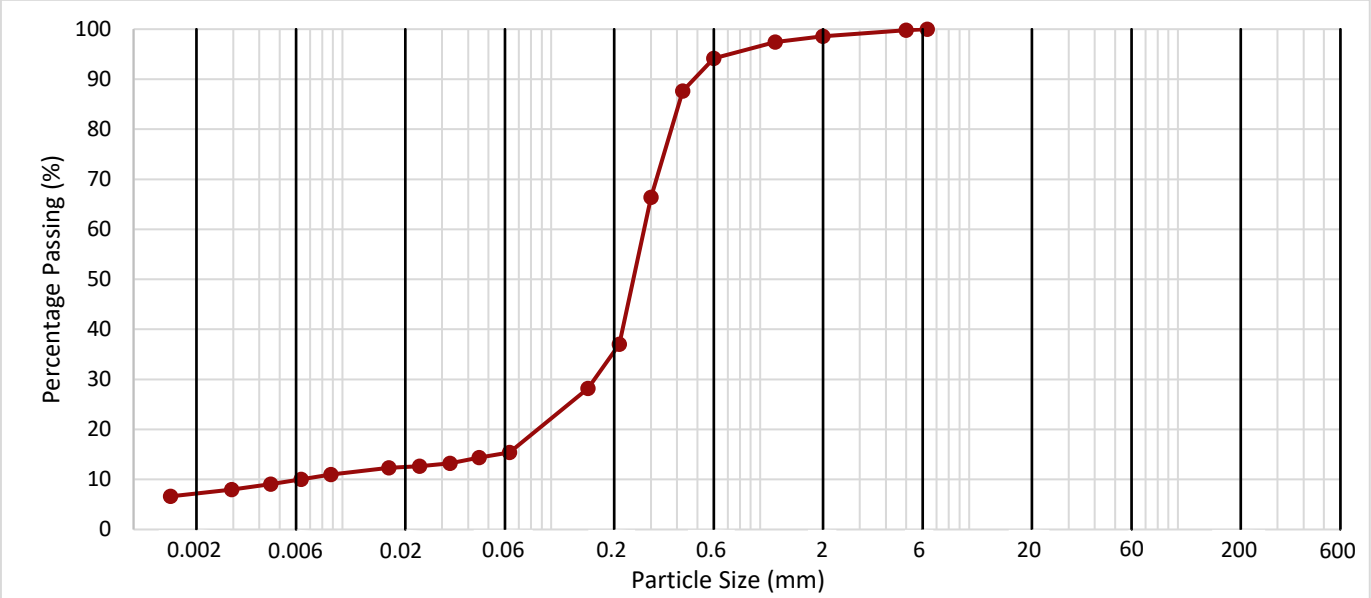
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	29.00 - 29.50	B	71	Dark grey silty clayey slightly organic SAND locally oxidised to brown, with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0451	14	8
	0.0327	13	
	0.0234	13	
	0.0167	12	Clay by Dry Mass (%)
	0.0088	11	
	0.0063	10	
	0.0045	9	7
	0.0030	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	97	
0.600	94	
0.425	88	
0.300	66	
0.212	37	
0.150	28	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

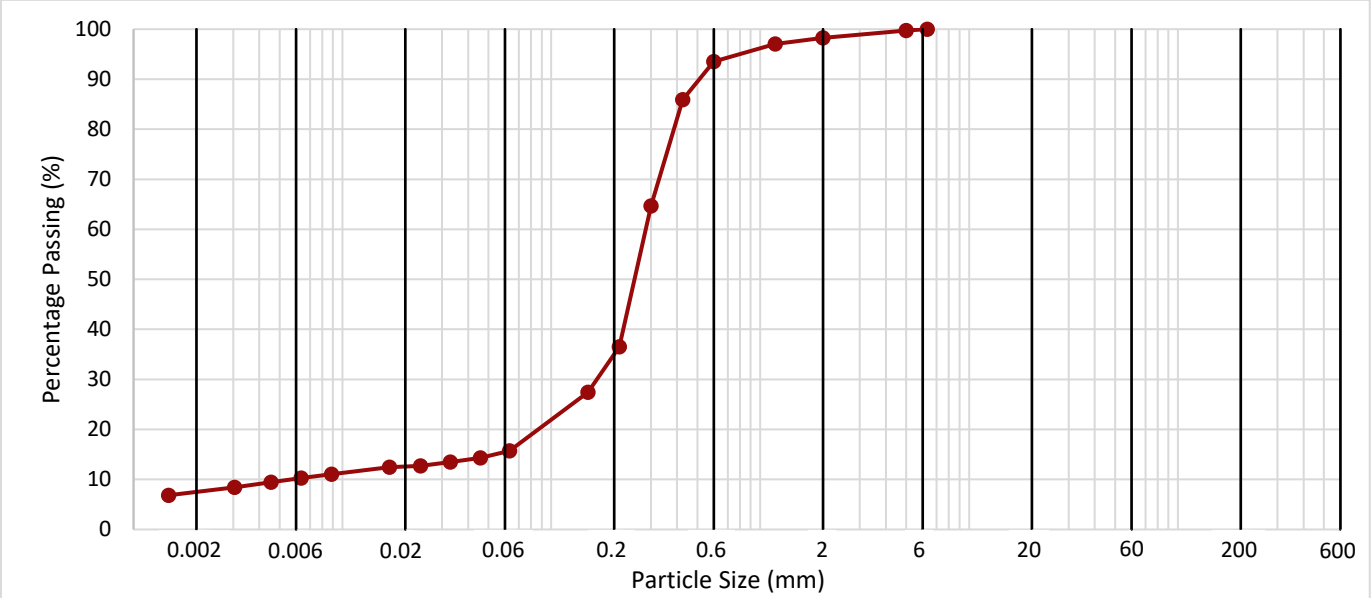
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	31.00 - 31.50	B	75	Olive grey silty clayey SAND with occasional shell and fossil fragments.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0458	14	9
	0.0329	13	
	0.0236	13	
	0.0168	12	Clay by Dry Mass (%)
	0.0089	11	
	0.0064	10	
	0.0046	9	7
	0.0031	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	82
1.18	97	
0.600	94	
0.425	86	
0.300	65	
0.212	37	
0.150	27	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

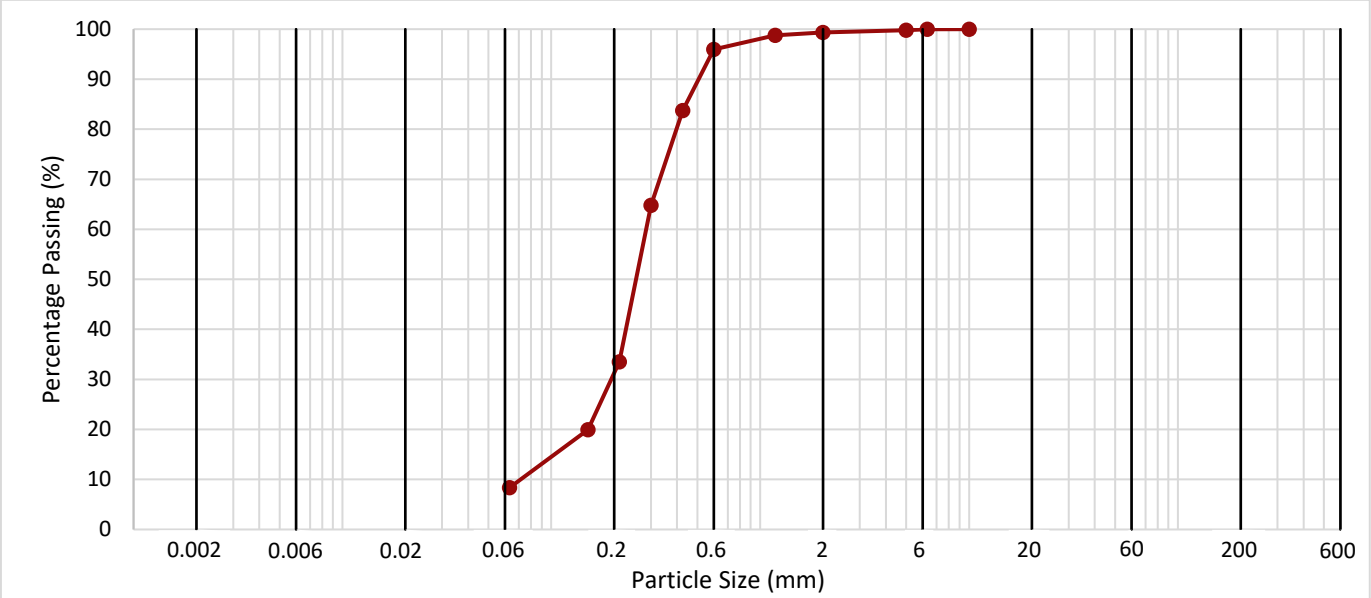
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	33.00 - 33.45	UT	78	Light olive brown silty slightly clayey SAND with occasional shell debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	91
1.18	99	
0.600	96	
0.425	84	
0.300	65	
0.212	34	
0.150	20	
0.063	8	

Fines By Dry Mass (%)	
<0.063mm	8

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

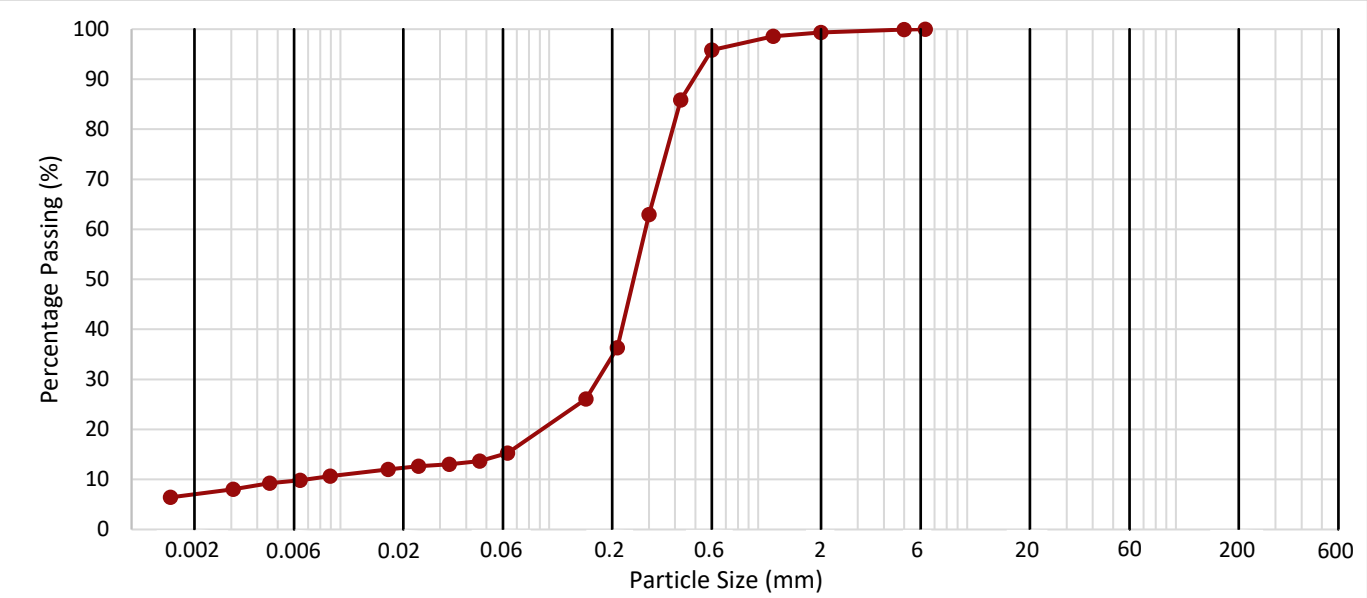
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	34.00 - 34.50	B	82	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0464	14	8	
	0.0332	13		
	0.0237	13		
	0.0169	12		7
	0.0089	11		
	0.0064	10		
	0.0046	9		
	0.0031	8		
	0.0015	6		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	99	
0.600	96	
0.425	86	
0.300	63	
0.212	36	
0.150	26	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

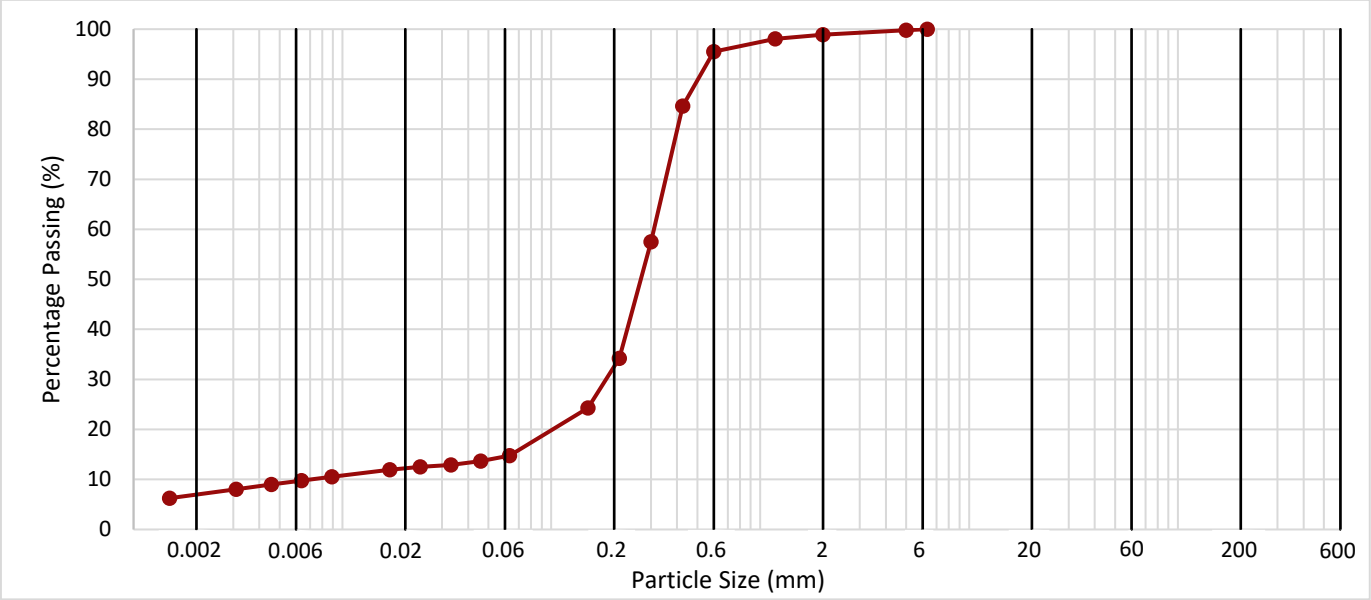
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	36.00 - 36.50	B	86	Olive grey silty clayey SAND with occasional shell and fossil debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0460	14	8
	0.0330	13	
	0.0235	13	
	0.0168	12	Clay by Dry Mass (%)
	0.0089	11	
	0.0064	10	
	0.0046	9	7
	0.0031	8	
	0.0015	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	98	
0.600	96	
0.425	85	
0.300	58	
0.212	34	
0.150	24	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

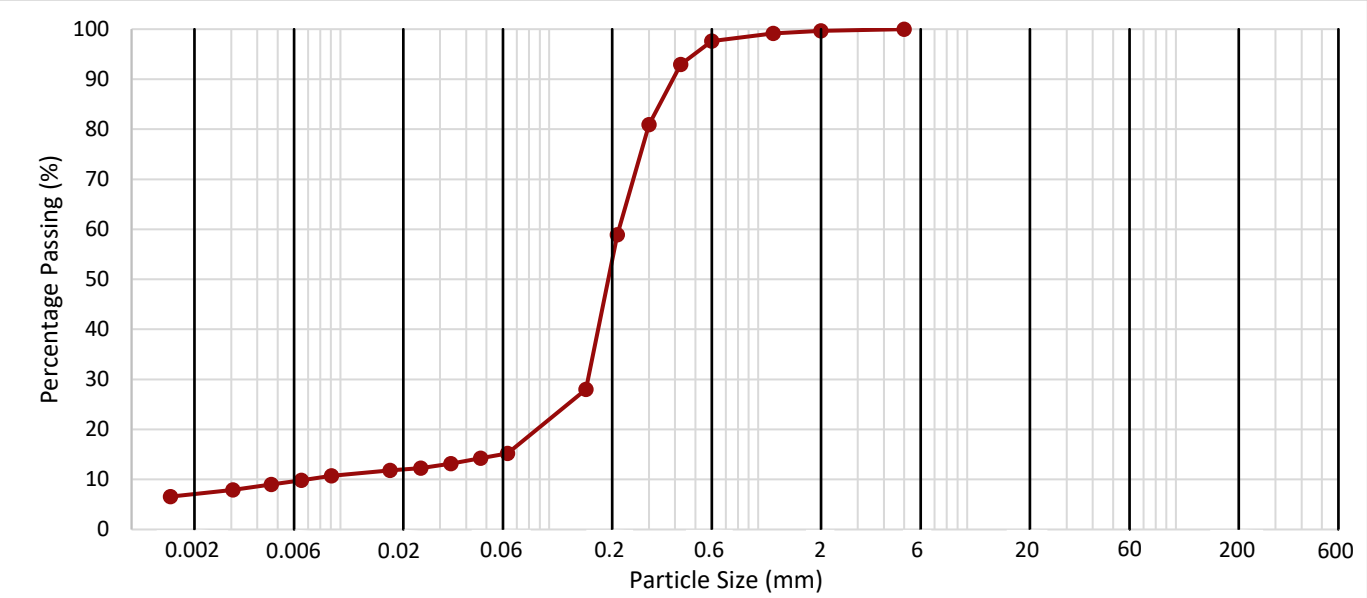
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	38.00 - 38.50	B	90	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0470	14	8	
	0.0338	13		
	0.0243	12		
	0.0173	12		7
	0.0091	11		
	0.0065	10		
	0.0047	9		
	0.0031	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	85
1.18	99	
0.600	98	
0.425	93	
0.300	81	
0.212	59	
0.150	28	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

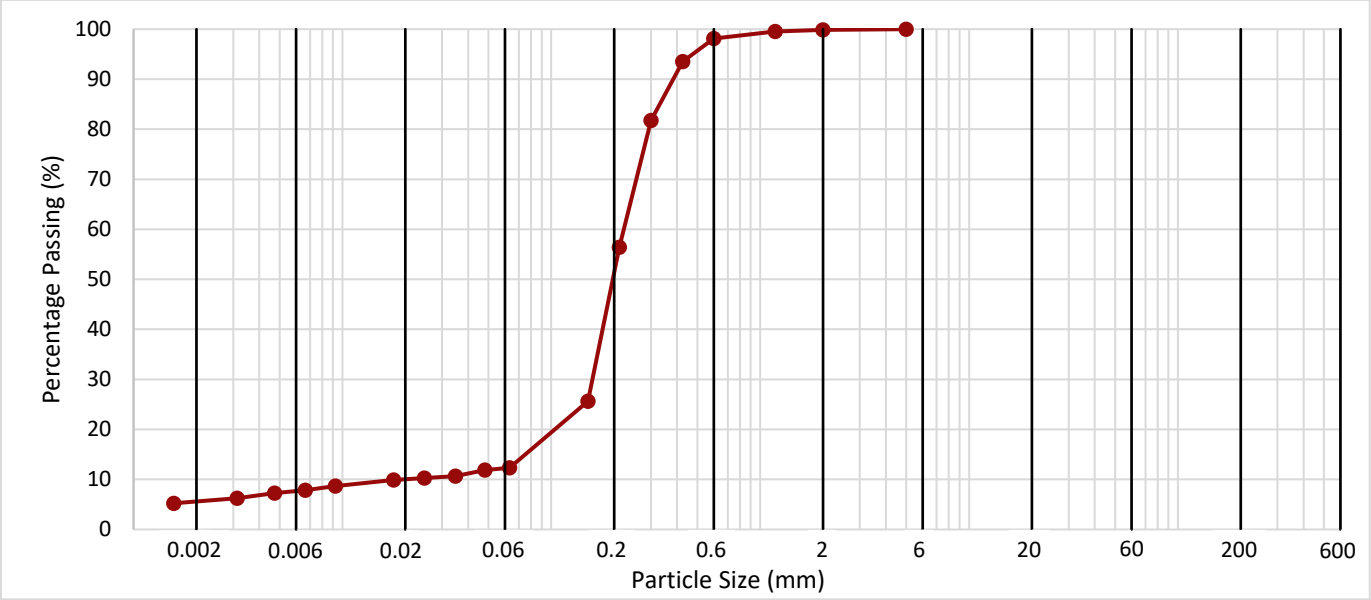
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	40.00 - 40.50	B	94	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0480	12	6	
0.0347	11		
0.0247	10		
0.0176	10		6
0.0093	9		
0.0066	8		
0.0047	7		
0.0031	6		
0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	100	
0.600	98	
0.425	94	
0.300	82	
0.212	56	
0.150	26	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

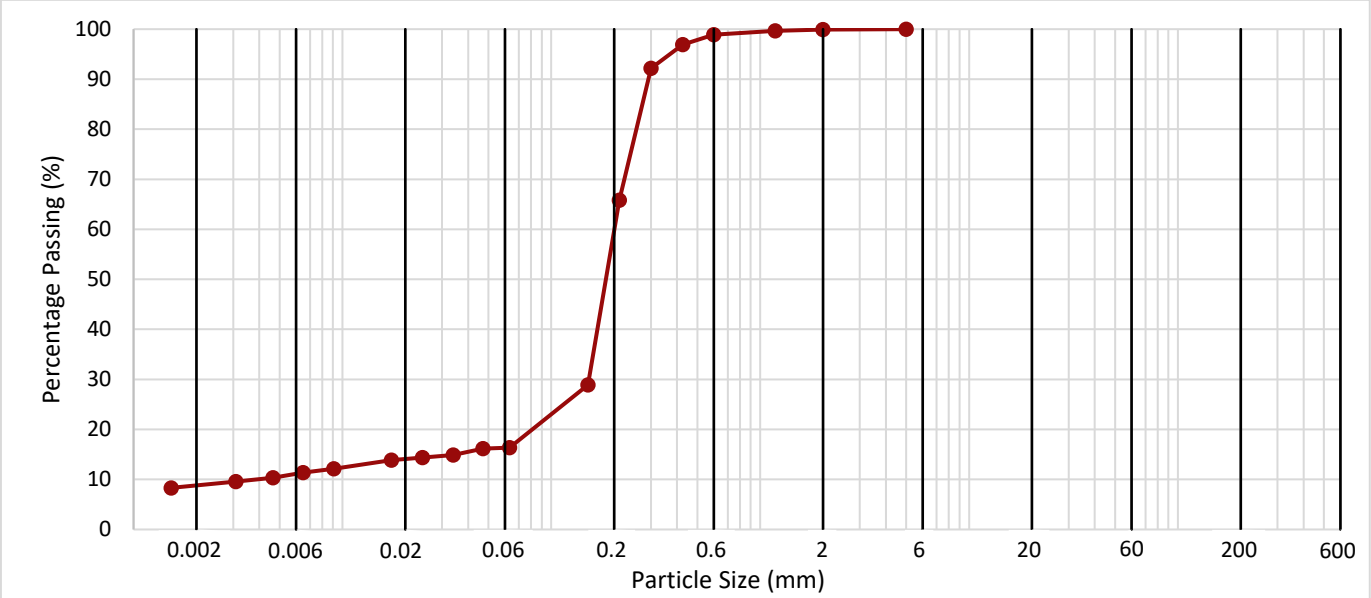
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	44.00 - 44.50	B	102	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0470	16	7	
	0.0339	15		
	0.0242	14		
	0.0172	14		9
	0.0091	12		
	0.0065	11		
	0.0046	10		
	0.0031	10		
	0.0015	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	84
1.18	100	
0.600	99	
0.425	97	
0.300	92	
0.212	66	
0.150	29	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

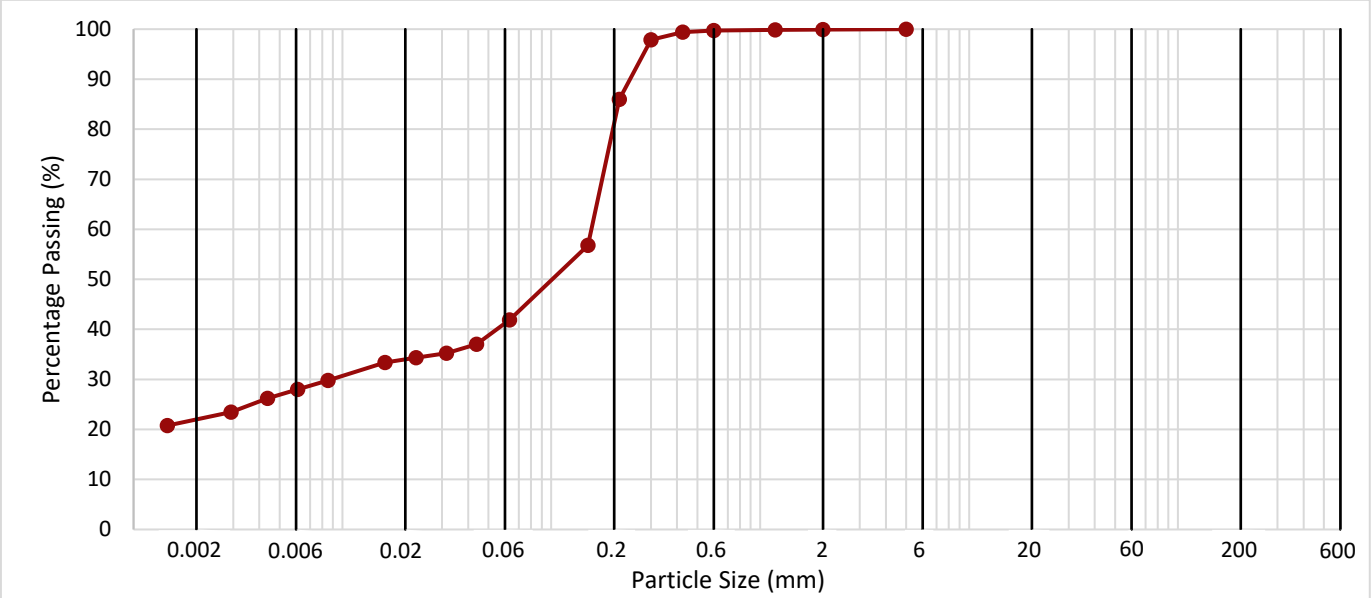
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	45.00 - 45.50	B	104	Dark olive grey sandy silty CLAY.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0438	37	**20**
0.0315	35	
0.0225	34	
0.0160	33	Clay by Dry Mass (%)
0.0085	30	
0.0061	28	
0.0044	26	**22**
0.0029	23	
0.0014	21	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	**58**
1.18	100	
0.600	100	
0.425	99	
0.300	98	
0.212	86	
0.150	57	
0.063	42	

Fines By Dry Mass (%)	
<0.063mm	**42**

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

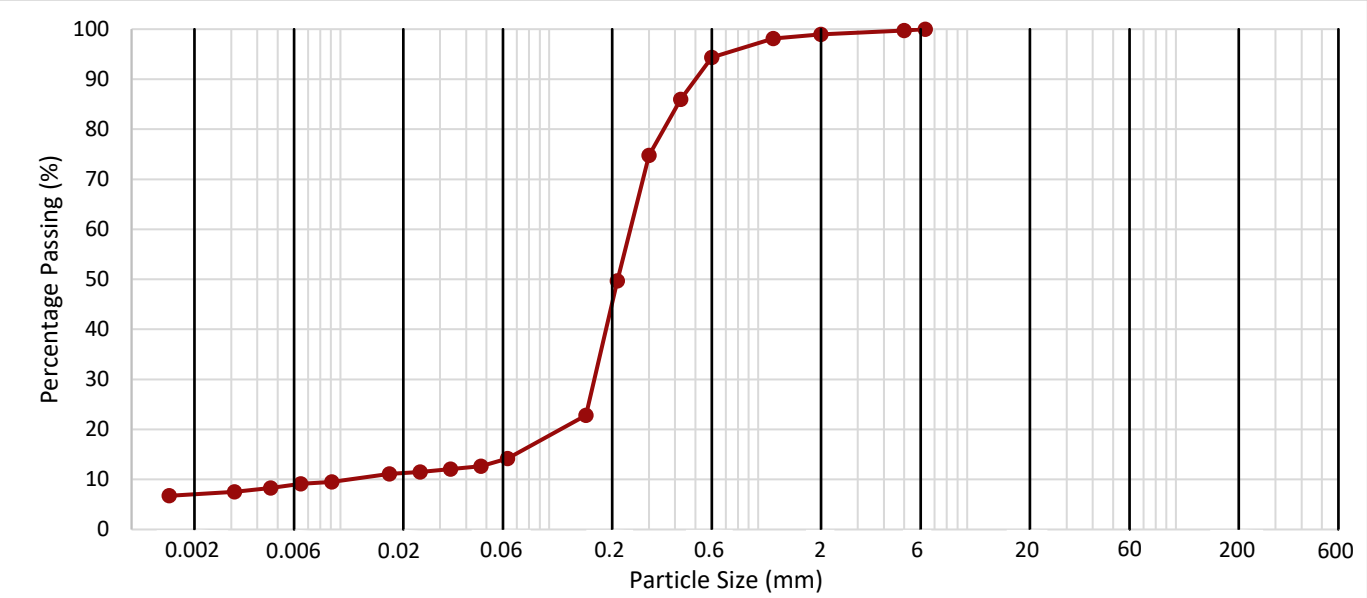
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	46.00 - 46.50	B	106	Dark olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0471	13	7	
	0.0337	12		
	0.0240	11		
	0.0171	11		7
	0.0091	10		
	0.0065	9		
	0.0046	8		
	0.0031	8		
	0.0015	7		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	85
1.18	98	
0.600	94	
0.425	86	
0.300	75	
0.212	50	
0.150	23	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

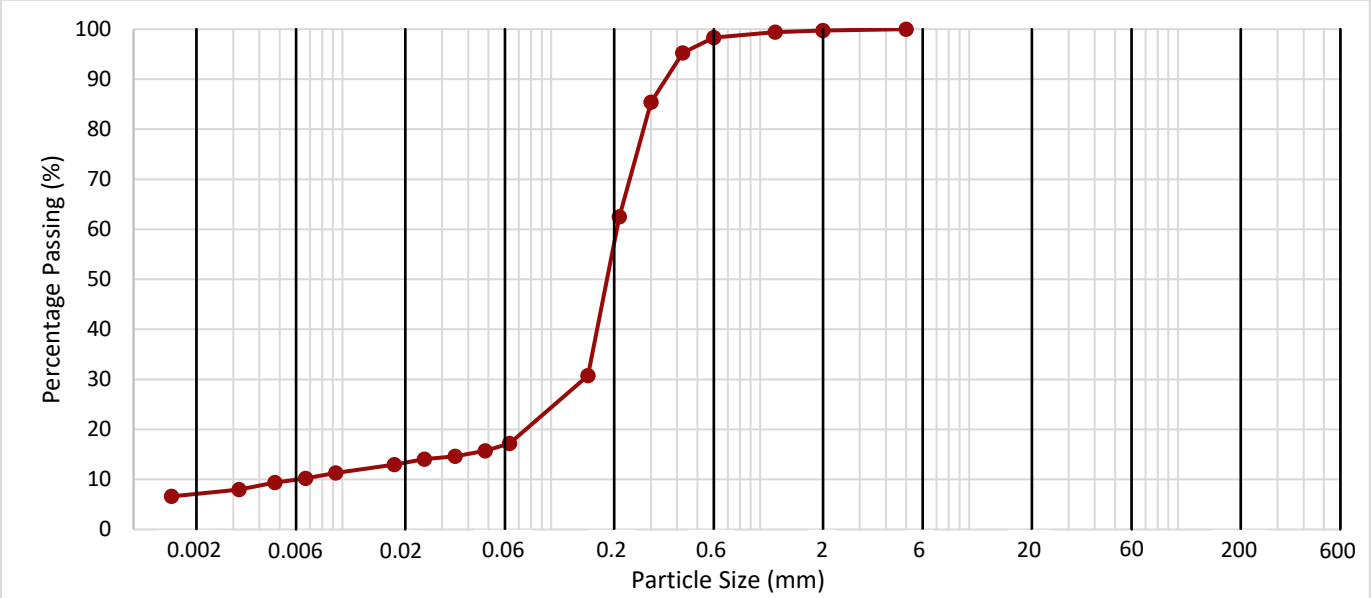
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	48.00 - 48.50	B	110	Olive grey silty clayey SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0483	16	10
	0.0347	15	
	0.0247	14	
	0.0177	13	Clay by Dry Mass (%)
	0.0093	11	
	0.0067	10	
	0.0047	9	7
	0.0032	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	83
1.18	99	
0.600	98	
0.425	95	
0.300	85	
0.212	62	
0.150	31	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

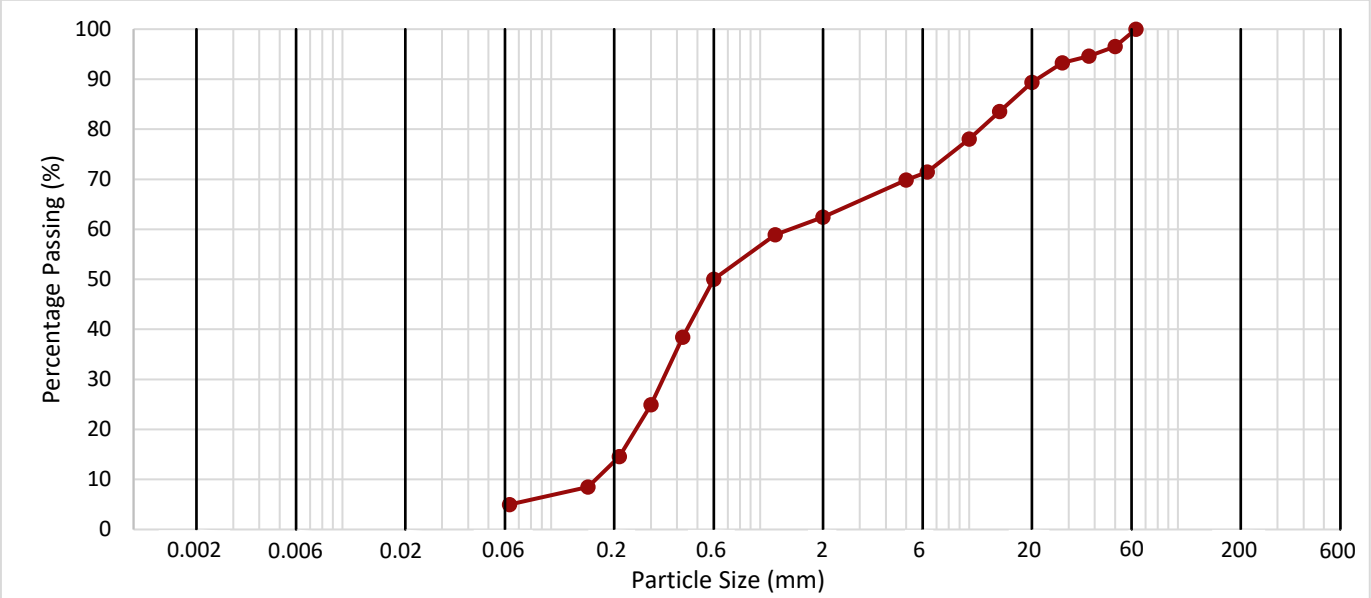
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	0.50 - 0.70	B	1	Orangish brown very gravelly silty SAND. Gravel is brown, black and white angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	62	**57**
1.18	59	
0.600	50	
0.425	38	
0.300	25	
0.212	15	
0.150	8	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	**5**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**38**
125		
90		
63	100	
50	97	
37.5	95	
28	93	
20	89	
14	84	
10	78	
6.3	71	
5	70	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

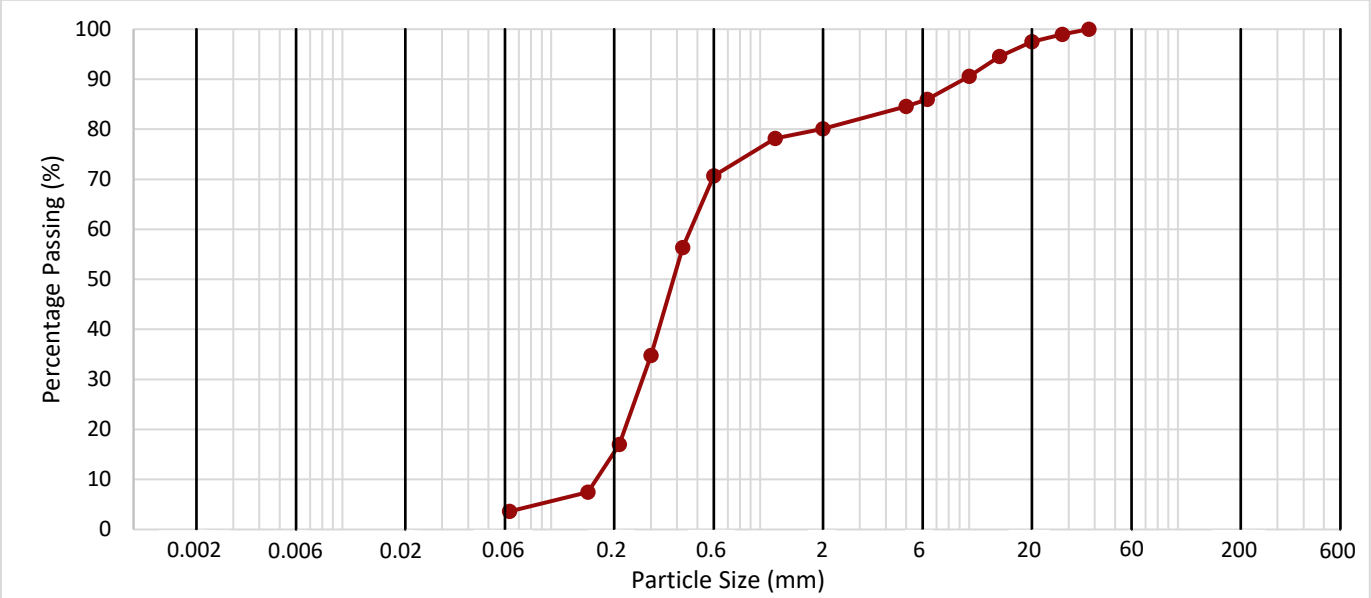
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	1.00 - 1.20	B	3	Dark orangish brown and brown gravelly slightly silty SAND. Gravel is brown, white and black angular to subrounded flint and occasional dark orangish brown angular ferruginous sandstone (occasionally very weak and degradeable).	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	80	**76**
1.18	78	
0.600	71	
0.425	56	
0.300	35	
0.212	17	
0.150	7	
0.063	4	

Fines By Dry Mass (%)	
<0.063mm	**4**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**20**
125		
90		
63		
50		
37.5	100	
28	99	
20	97	
14	95	
10	91	
6.3	86	
5	85	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

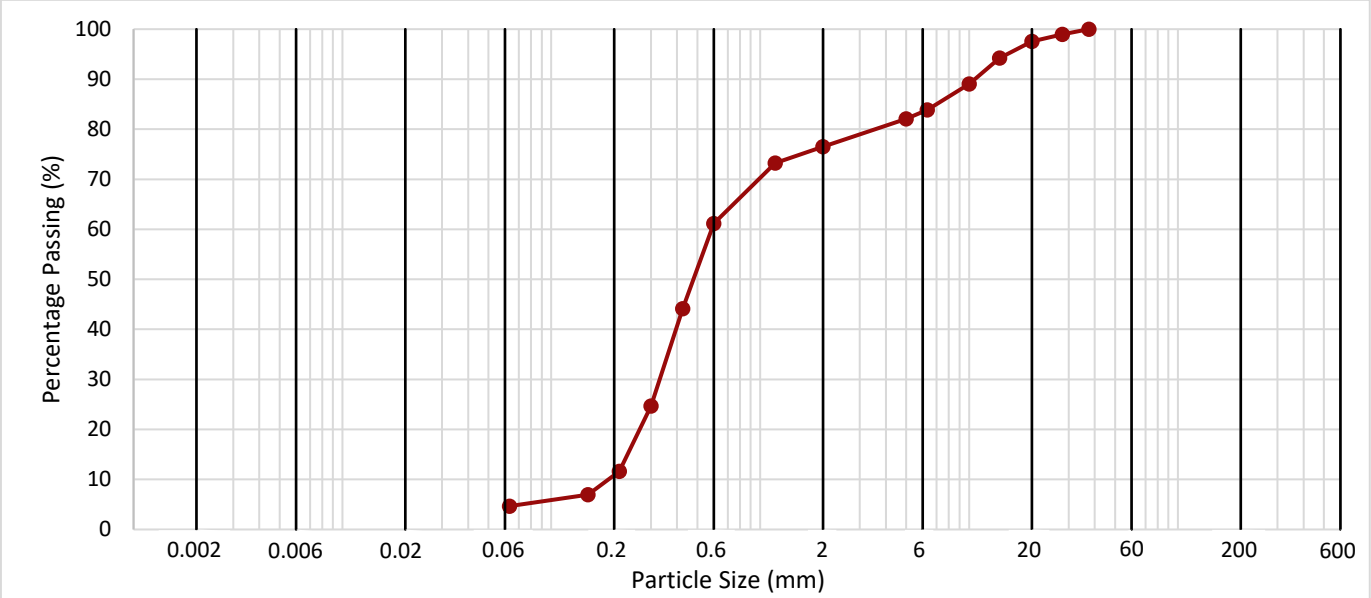
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	1.80	B	6	Orangish brown very gravelly silty SAND. Gravel is black, white and brown angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	76	71
1.18	73	
0.600	61	
0.425	44	
0.300	25	
0.212	12	
0.150	7	
0.063	5	

Fines By Dry Mass (%)	
<0.063mm	5

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		24
125		
90		
63		
50		
37.5	100	
28	99	
20	98	
14	94	
10	89	
6.3	84	
5	82	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

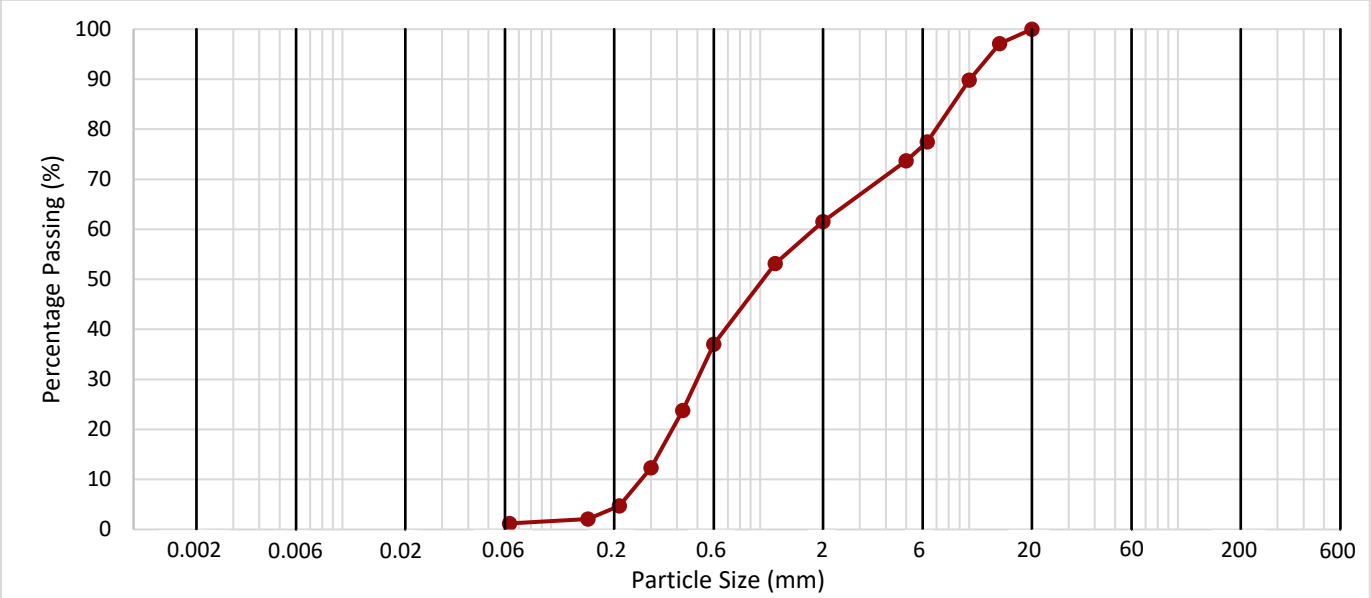
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	3.80	B	10	Orangish brown very gravelly slightly silty SAND. Gravel is black, white and brown angular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	62	61
1.18	53	
0.600	37	
0.425	24	
0.300	12	
0.212	5	
0.150	2	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		38
125		
90		
63		
50		
37.5		
28		
20	100	
14	97	
10	90	
6.3	77	
5	74	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

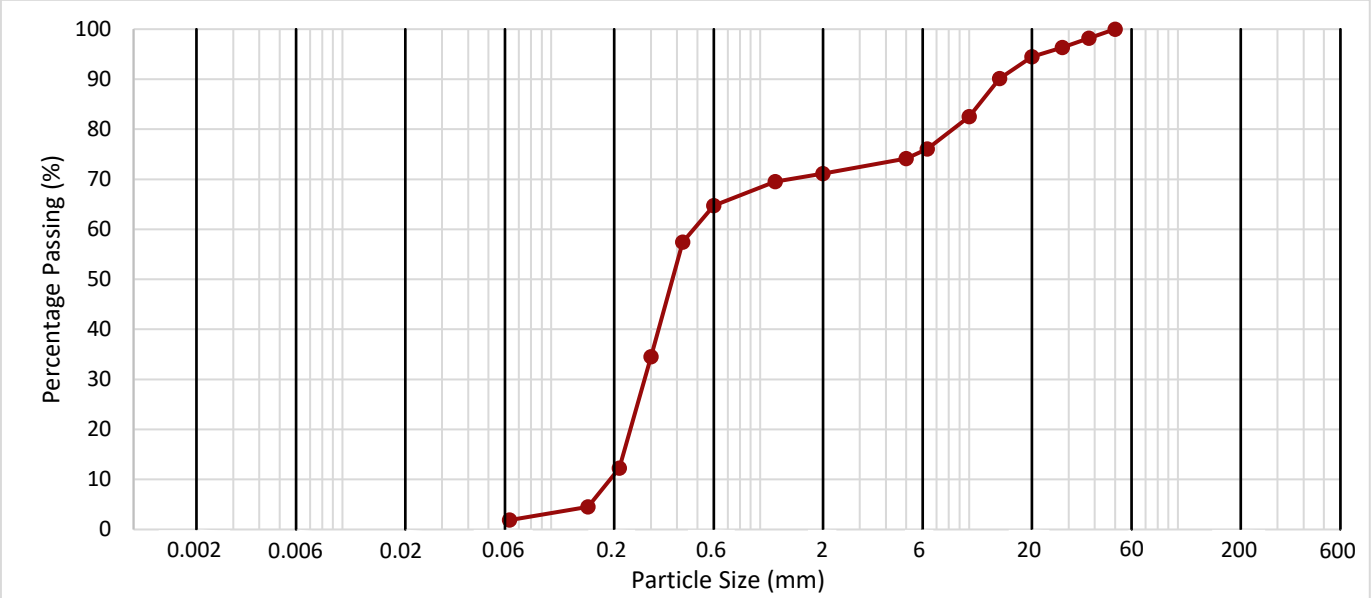
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	5.70	B	14	Orangish brown very gravelly slightly silty SAND. Gravel is black, brown and white subangular to rounded flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	71	69
1.18	70	
0.600	65	
0.425	57	
0.300	35	
0.212	12	
0.150	5	
0.063	2	

Fines By Dry Mass (%)	
<0.063mm	2

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		29
125		
90		
63		
50	100	
37.5	98	
28	96	
20	94	
14	90	
10	82	
6.3	76	
5	74	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

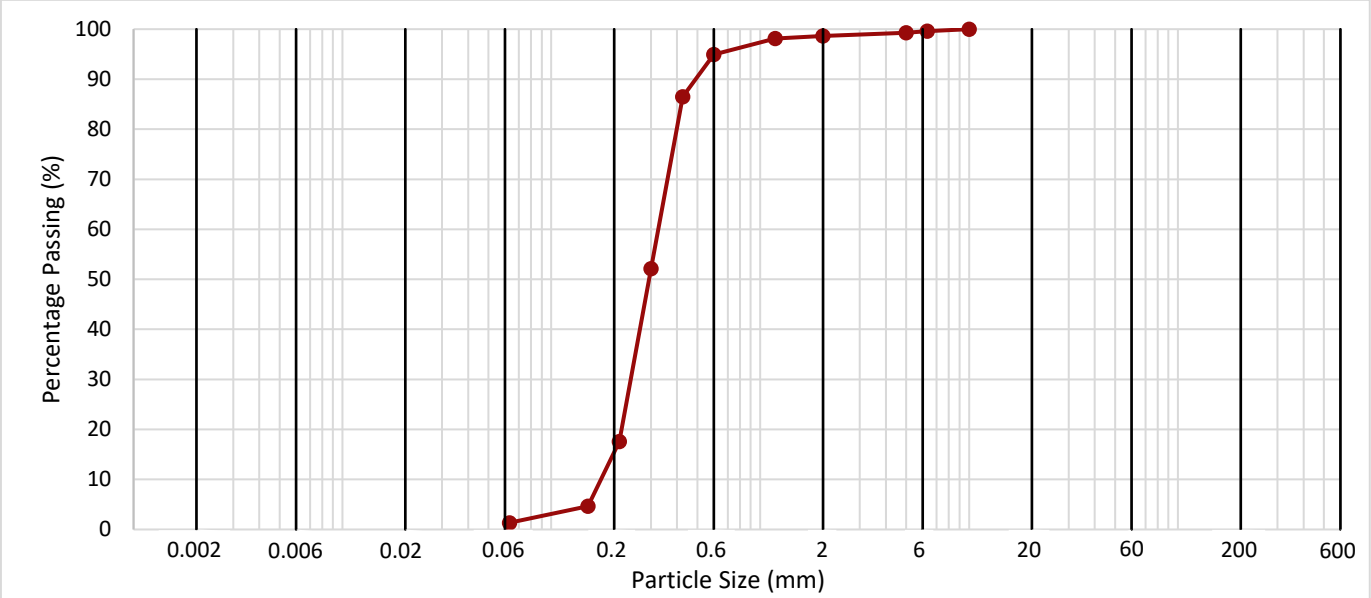
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	7.70	B	18	Yellowish brown slightly gravelly slightly silty SAND. Gravel is brown, black and white angular to subangular flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	98
1.18	98	
0.600	95	
0.425	87	
0.300	52	
0.212	18	
0.150	5	
0.063	1	

Fines By Dry Mass (%)	
<0.063mm	1

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

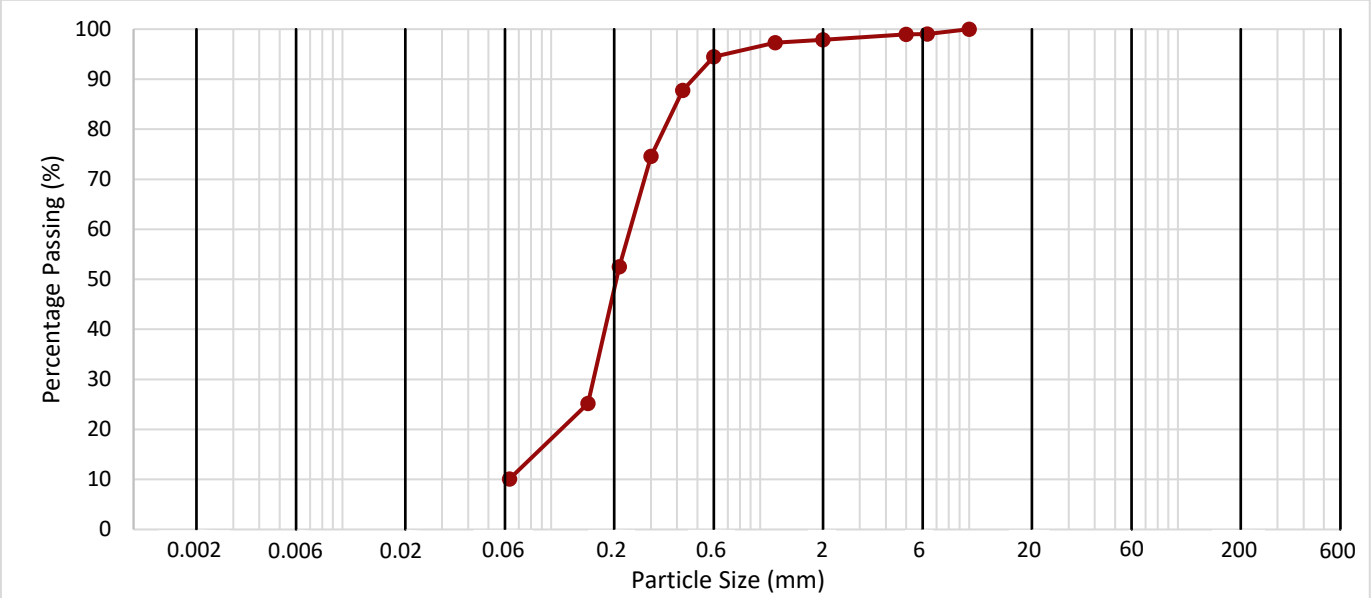
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	9.70	B	22	Pale yellow slightly gravelly silty slightly clayey SAND. Gravel is fine to medium flint.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	98	88
1.18	97	
0.600	94	
0.425	88	
0.300	75	
0.212	53	
0.150	25	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	10

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		2
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	99	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

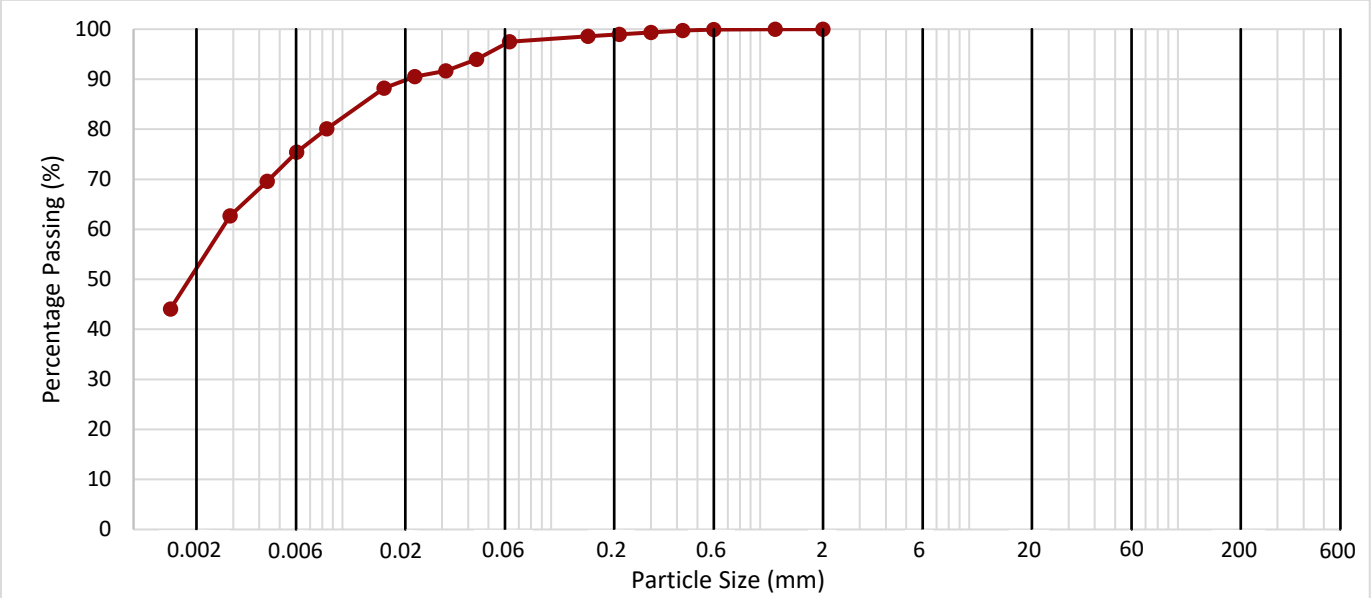
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	11.70	B	26	Soft light bluish grey slightly sandy silty slightly organic CLAY with rare dark grey mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0438	94	46	
	0.0313	92		
	0.0222	91		
	0.0159	88		
	0.0084	80		
	0.0060	75		
	0.0044	70		51
	0.0029	63		
	0.0015	44		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	3
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	99	
0.150	99	
0.063	97	

Fines By Dry Mass (%)	
<0.063mm	97

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

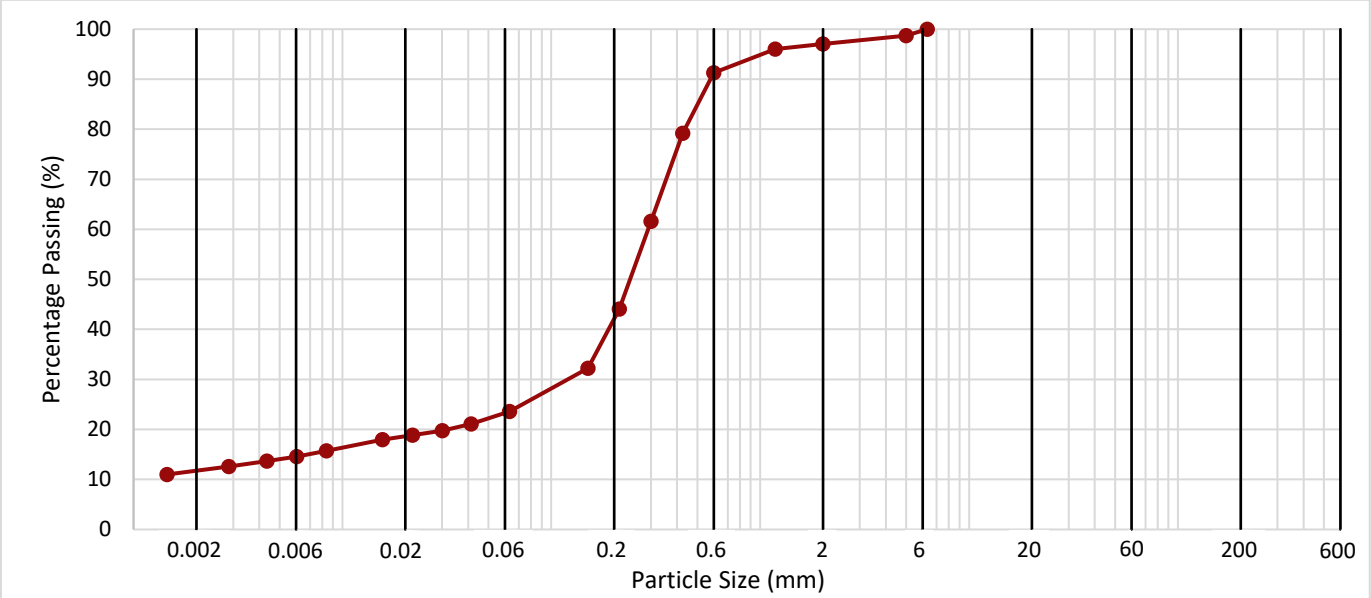
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	13.70	B	30	Olive brown slightly gravelly silty clayey slightly organic SAND with occasional dark olive grey mottling.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0413	21	12
	0.0300	20	
	0.0216	19	
	0.0156	18	Clay by Dry Mass (%)
	0.0084	16	
	0.0060	15	
	0.0043	14	12
	0.0029	13	
	0.0014	11	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	97	73
1.18	96	
0.600	91	
0.425	79	
0.300	62	
0.212	44	
0.150	32	
0.063	24	

Fines By Dry Mass (%)	
<0.063mm	24

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		3
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	99	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

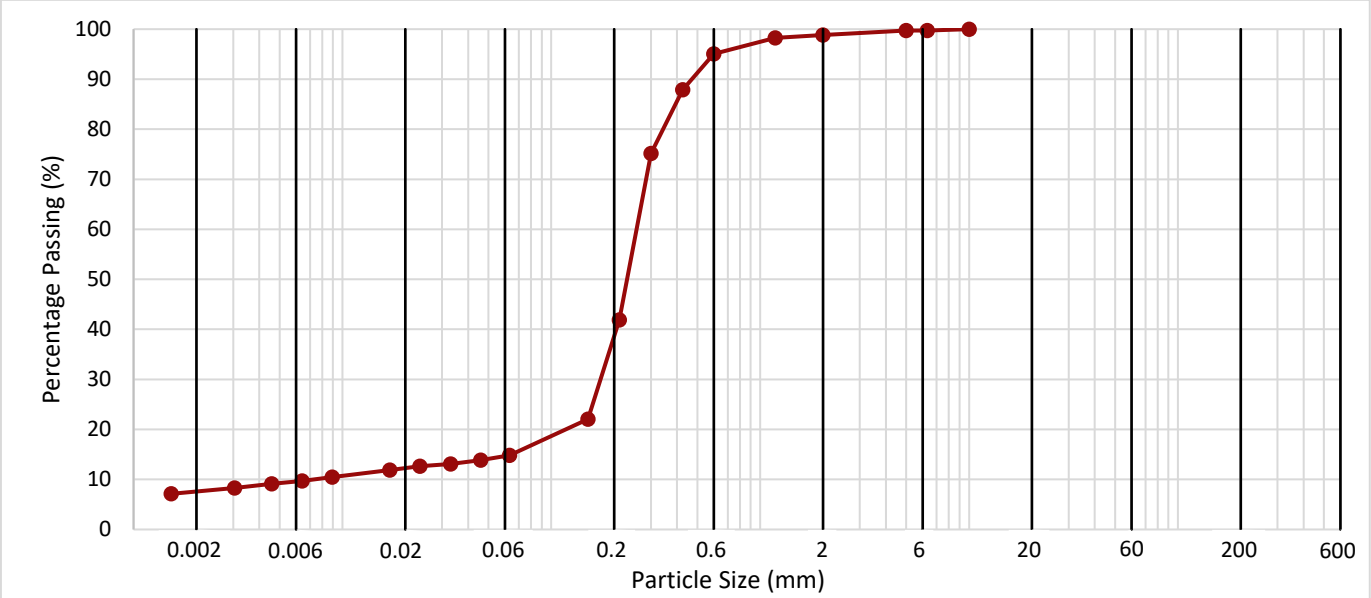
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	15.70	B	34	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0459	14	7
	0.0330	13	
	0.0235	13	
	0.0169	12	Clay by Dry Mass (%)
	0.0089	10	
	0.0064	10	8
	0.0046	9	
	0.0030	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	84
1.18	98	
0.600	95	
0.425	88	
0.300	75	
0.212	42	
0.150	22	
0.063	15	

Fines By Dry Mass (%)	
<0.063mm	15

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

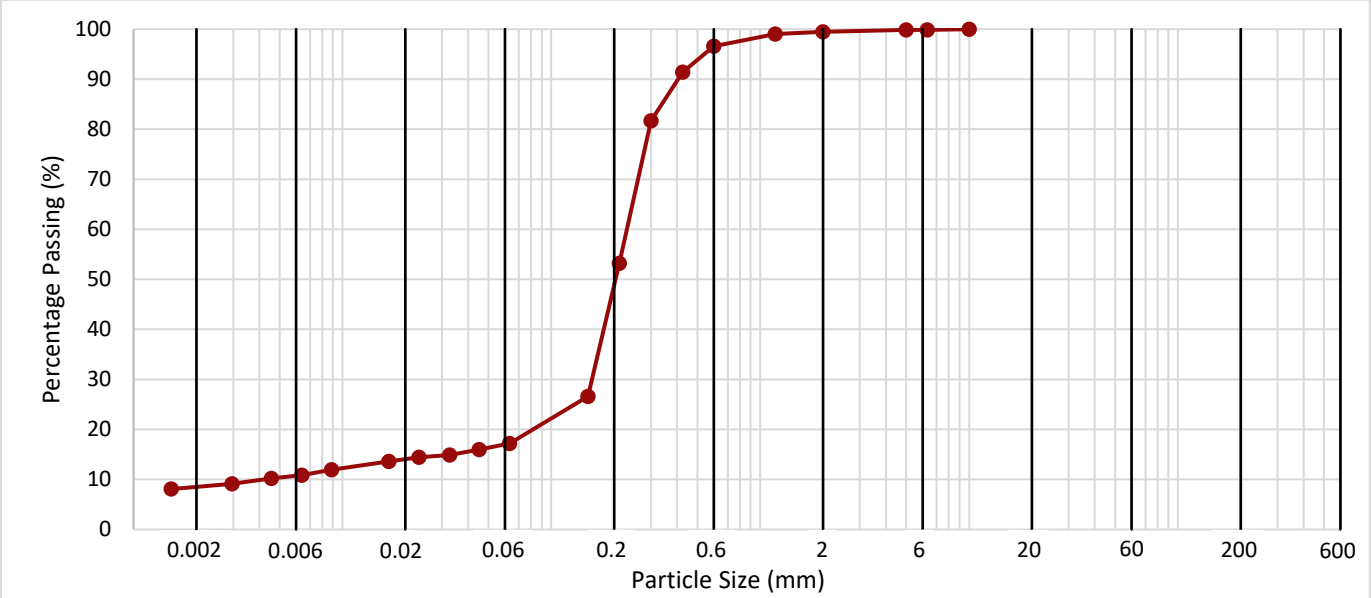
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	17.60	B	38	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0452	16	9
	0.0326	15	
	0.0232	14	
	0.0167	14	Clay by Dry Mass (%)
	0.0089	12	
	0.0064	11	
	0.0046	10	8
	0.0030	9	
	0.0015	8	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	82
1.18	99	
0.600	97	
0.425	91	
0.300	82	
0.212	53	
0.150	27	
0.063	17	

Fines By Dry Mass (%)	
<0.063mm	17

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

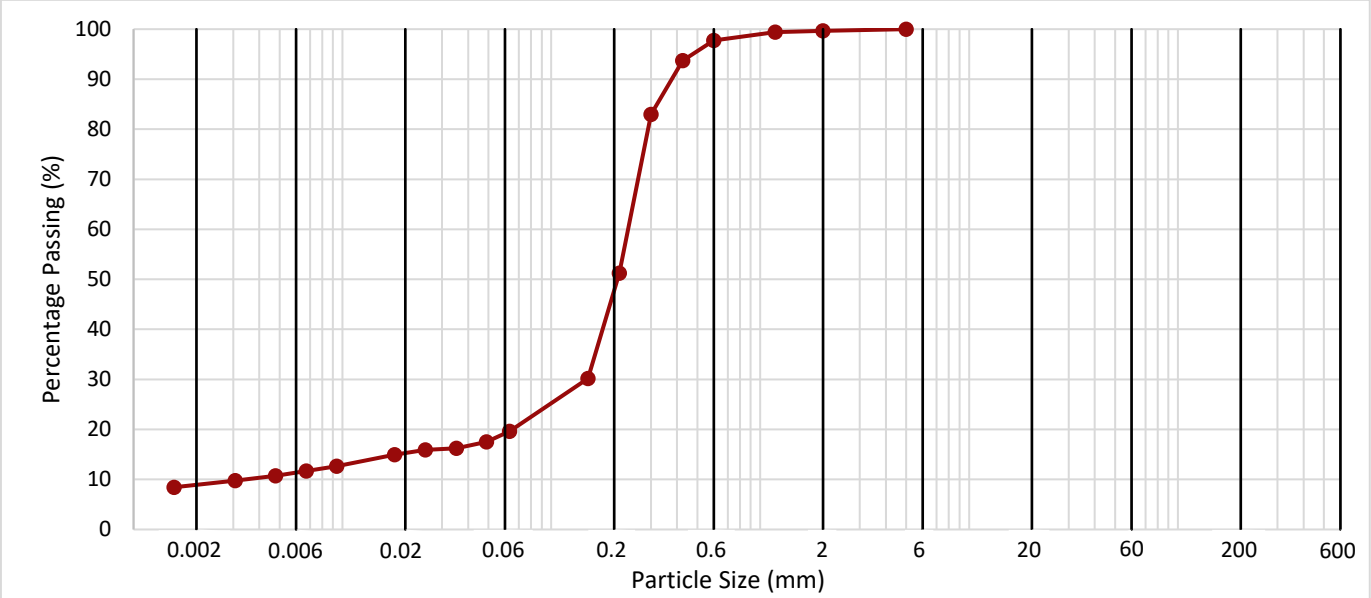
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	19.70	B	42	Dark grey silty clayey slightly organic SAND locally oxidised to brown.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0490	18	11	
0.0351	16		
0.0249	16		
0.0178	15		9
0.0094	13		
0.0067	12		
0.0048	11		
0.0031	10		
0.0016	8		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	80
1.18	99	
0.600	98	
0.425	94	
0.300	83	
0.212	51	
0.150	30	
0.063	20	

Fines By Dry Mass (%)	
<0.063mm	20

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

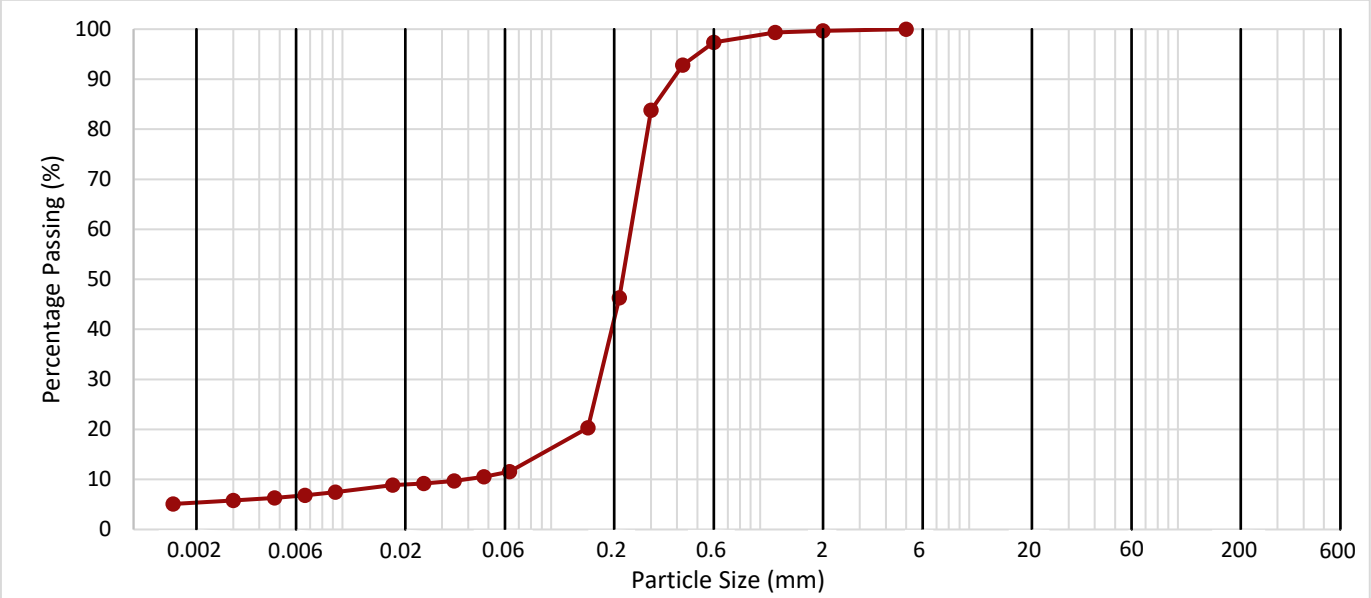
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	21.70	B	46	Olive grey silty clayey possibly slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0475	11	7	
	0.0342	10		
	0.0245	9		
	0.0174	9		
	0.0092	7		
	0.0066	7		5
	0.0047	6		
	0.0030	6		
	0.0015	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	88
1.18	99	
0.600	97	
0.425	93	
0.300	84	
0.212	46	
0.150	20	
0.063	12	

Fines By Dry Mass (%)	
<0.063mm	12

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

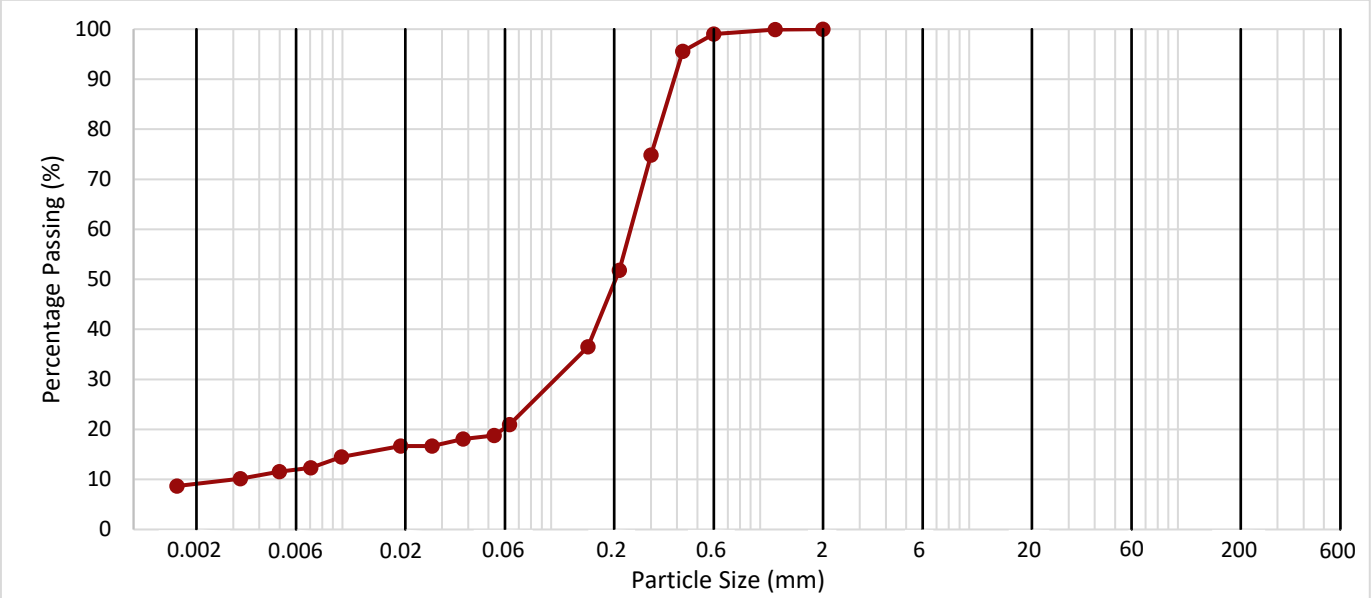
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	23.00	UT	48	Dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	Description based on possible engineering behaviour.

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)
0.0533	19
0.0378	18
0.0269	17
0.0190	17
0.0099	14
0.0070	12
0.0050	12
0.0032	10
0.0016	9

Silt by Dry Mass (%): **12**

Clay by Dry Mass (%): **9**

Sieve Size (mm)	Passing (%)
2.00	100
1.18	100
0.600	99
0.425	96
0.300	75
0.212	52
0.150	36
0.063	21

Sand By Dry Mass (%): **79**

Fines By Dry Mass (%)	
<0.063mm	**21**

Sieve Size (mm)	Passing (%)
150	
125	
90	
63	
50	
37.5	
28	
20	
14	
10	
6.3	
5	

Gravel By Dry Mass (%): **0**

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

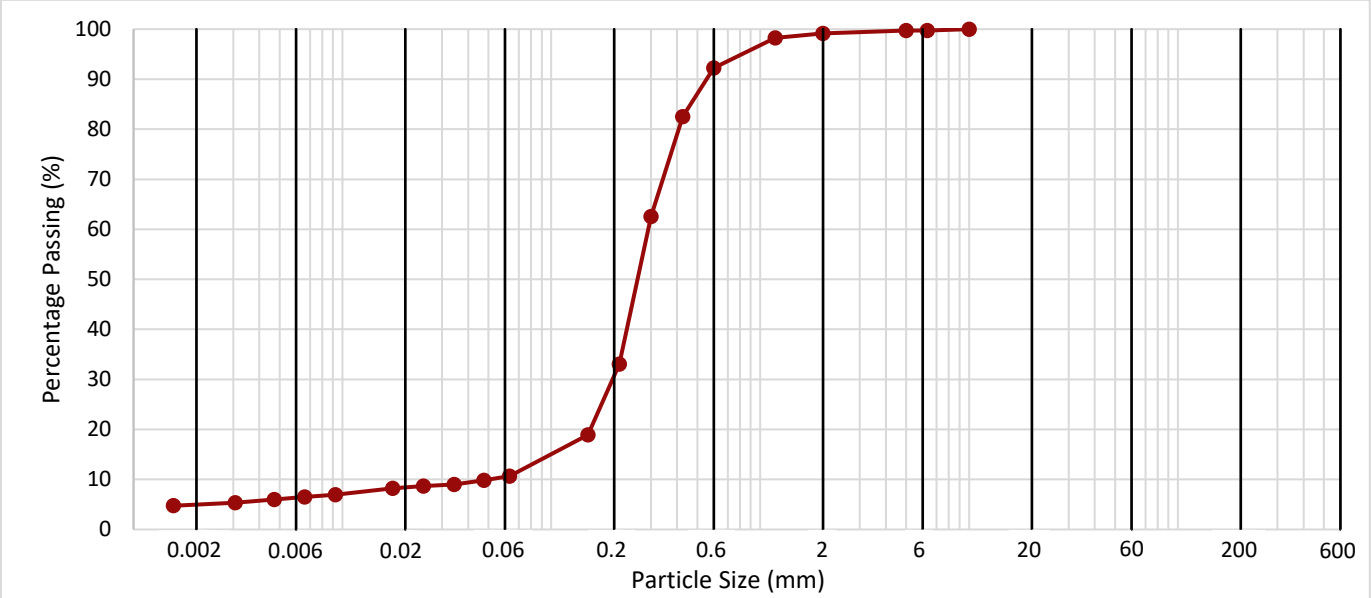
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	24.60	B	53	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0475	10	6
	0.0342	9	
	0.0244	9	
	0.0174	8	Clay by Dry Mass (%)
	0.0092	7	
	0.0066	6	
	0.0047	6	5
	0.0031	5	
	0.0016	5	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	88
1.18	98	
0.600	92	
0.425	83	
0.300	63	
0.212	33	
0.150	19	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10	100	
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

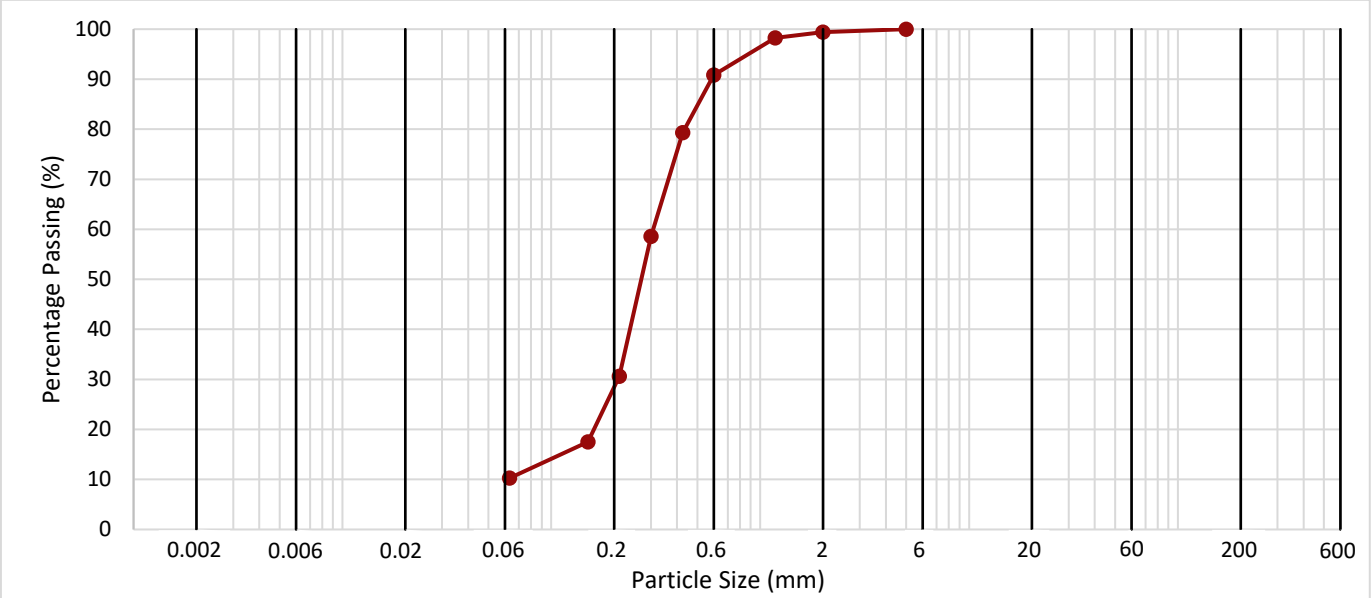
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	26.70	B	57	Olive grey silty clayey possibly slightly organic SAND with rare shell debris	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**89**
1.18	98	
0.600	91	
0.425	79	
0.300	59	
0.212	31	
0.150	17	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	**10**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

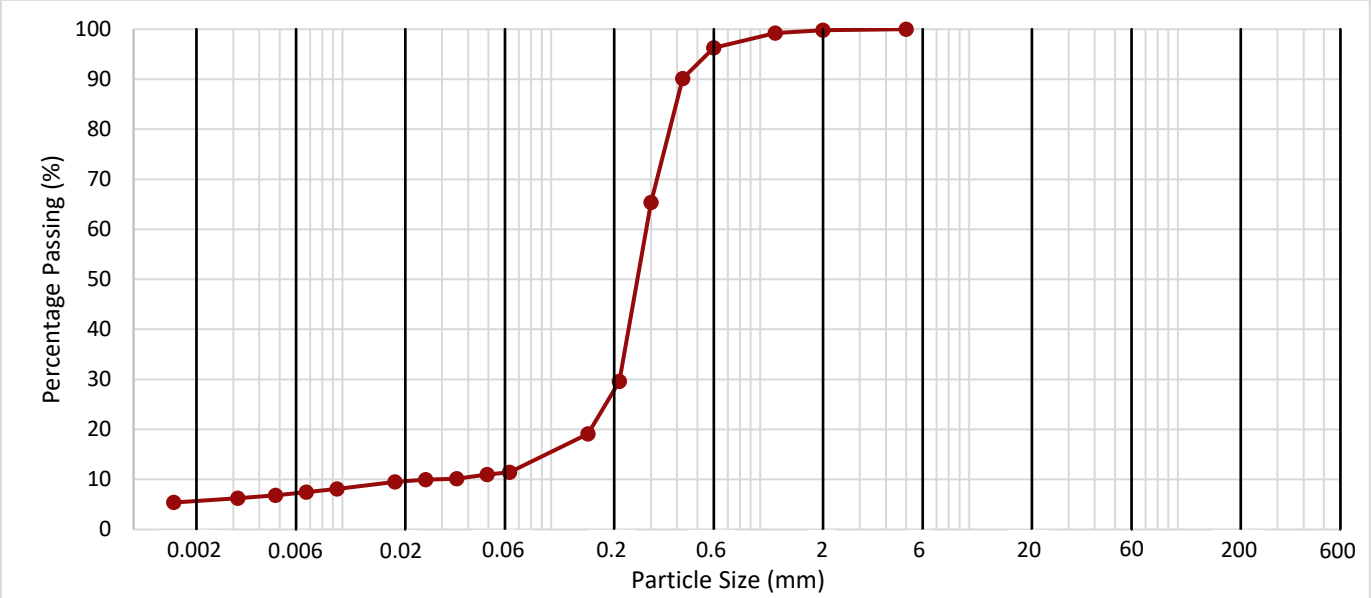
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	28.70	B	61	Olive grey silty clayey possibly slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
	0.0492	11	5	
	0.0353	10		
	0.0250	10		
	0.0178	10		6
	0.0094	8		
	0.0067	7		
	0.0048	7		
	0.0032	6		
	0.0016	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	89
1.18	99	
0.600	96	
0.425	90	
0.300	65	
0.212	30	
0.150	19	
0.063	11	

Fines By Dry Mass (%)	
<0.063mm	11

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

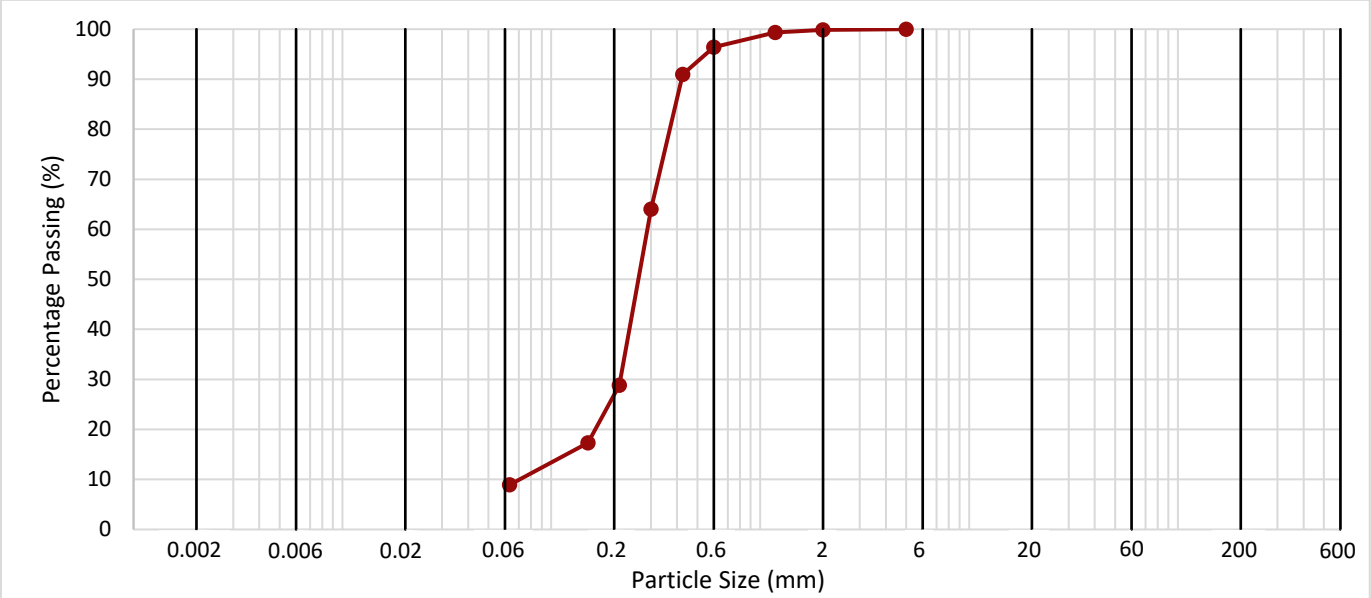
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	30.70	B	65	Olive grey silty slightly clayey possibly slightly organic SAND.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
		Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	100	**91**
1.18	99	
0.600	96	
0.425	91	
0.300	64	
0.212	29	
0.150	17	
0.063	9	

Fines By Dry Mass (%)	
<0.063mm	**9**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**0**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

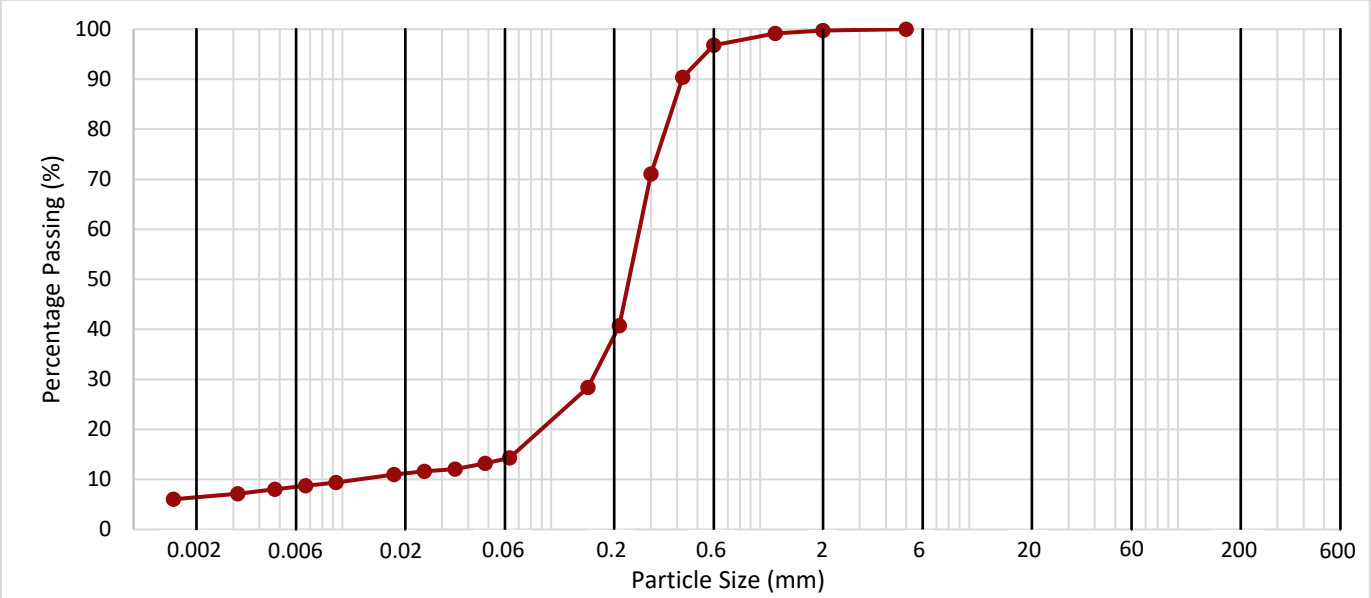
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	32.70	B	69	Olive grey silty clayey possibly slightly organic SAND with occasional shell debris.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0482	13	8
	0.0347	12	
	0.0247	12	
	0.0177	11	Clay by Dry Mass (%)
	0.0093	9	
	0.0067	9	
	0.0047	8	6
	0.0032	7	
	0.0016	6	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	86
1.18	99	
0.600	97	
0.425	90	
0.300	71	
0.212	41	
0.150	28	
0.063	14	

Fines By Dry Mass (%)	
<0.063mm	14

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

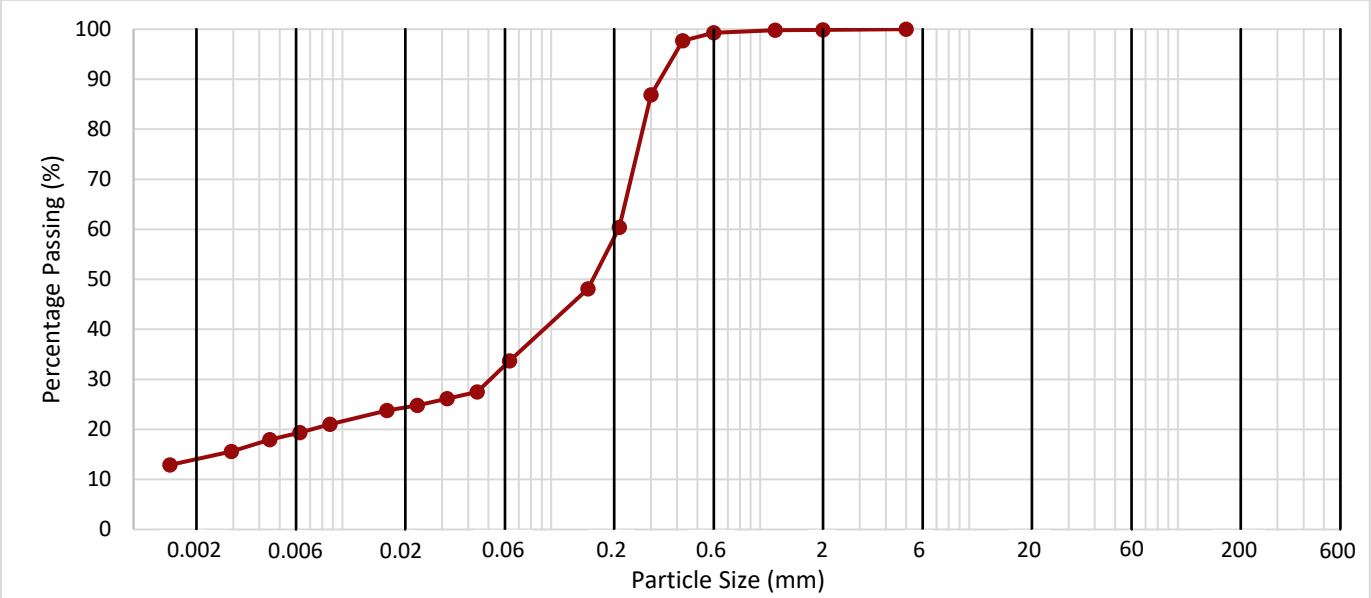
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	34.70	B	73	Olive silty clayey possibly slightly organic SAND.	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
0.0441	27	20
0.0317	26	
0.0228	25	
0.0163	24	Clay by Dry Mass (%)
0.0087	21	
0.0063	19	
0.0045	18	14
0.0029	16	
0.0015	13	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	66
1.18	100	
0.600	99	
0.425	98	
0.300	87	
0.212	60	
0.150	48	
0.063	34	

Fines By Dry Mass (%)	
<0.063mm	34

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

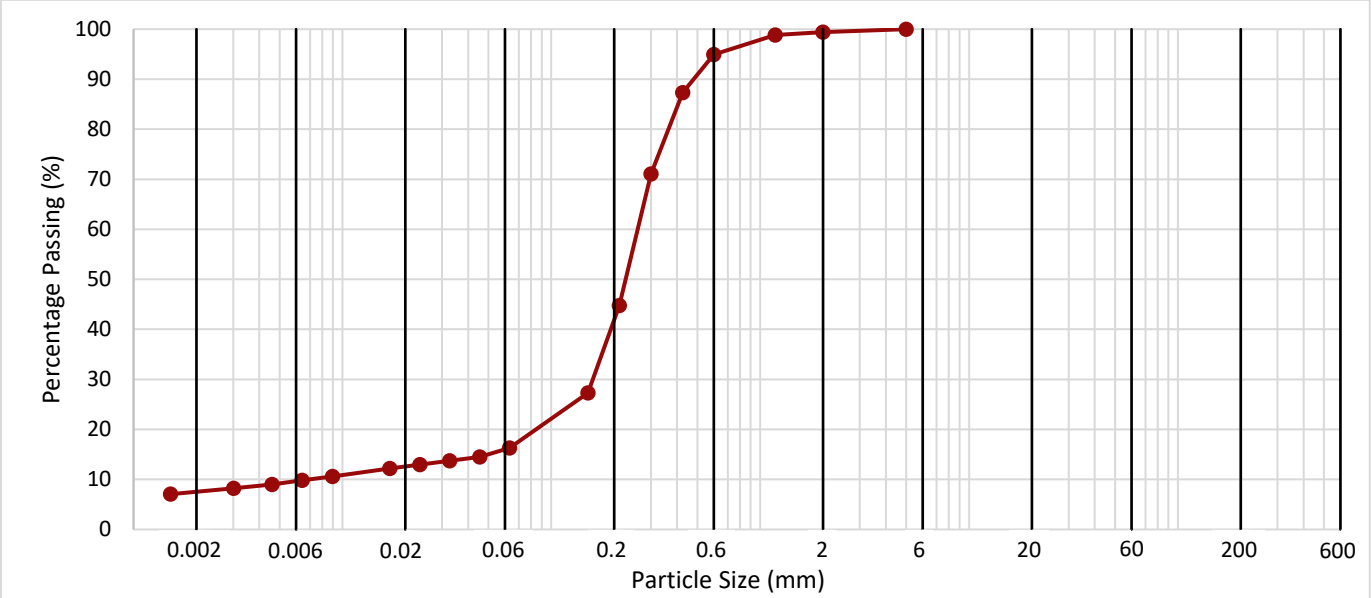
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	36.70	B	77	Dark grey silty clayey slightly organic SAND locally oxidised to brown with rare shell debris	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0455	15	9
	0.0327	14	
	0.0235	13	
	0.0168	12	Clay by Dry Mass (%)
	0.0090	11	
	0.0064	10	
	0.0046	9	7
	0.0030	8	
	0.0015	7	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	99	83
1.18	99	
0.600	95	
0.425	87	
0.300	71	
0.212	45	
0.150	27	
0.063	16	

Fines By Dry Mass (%)	
<0.063mm	16

Sieve Size (mm)	Passing (%)	Gravel By Dry Mass (%)
150		1
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2, 9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

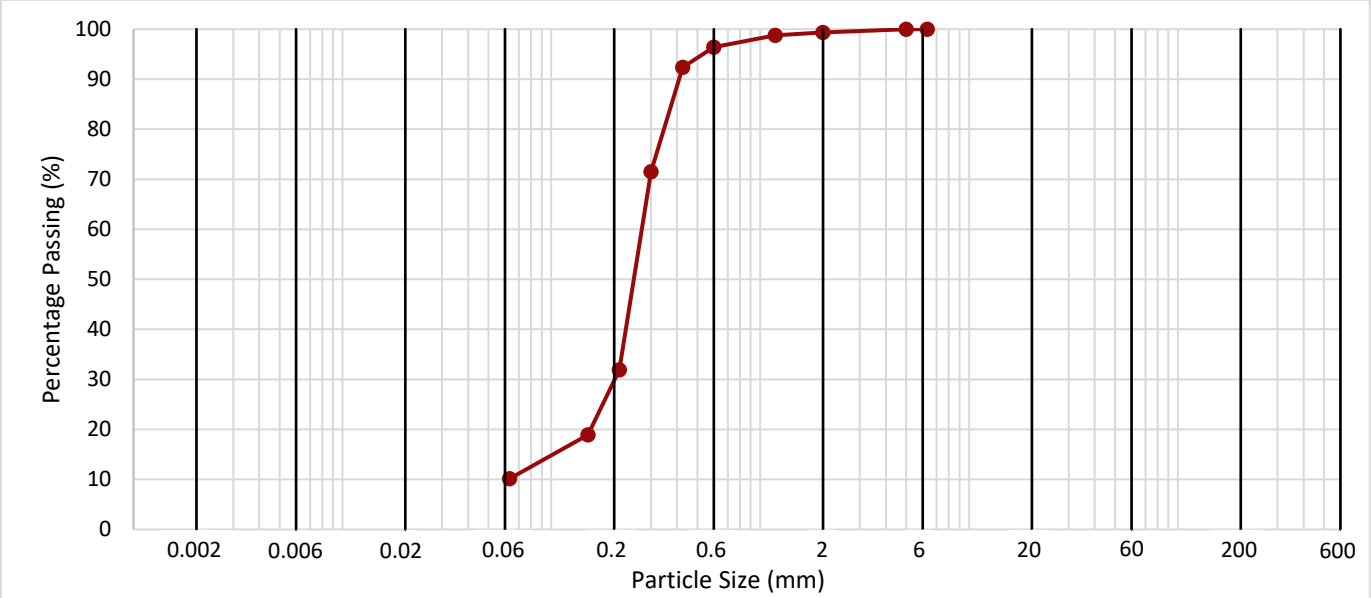
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	38.70	B	81	Olive grey silty slightly clayey possibly slightly organic SAND with occasional shell debris.	

Method of Test:	Wet Sieve	Method of Pretreatment:	Tested from natural - pretreatment for organics not carried out



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	**Silt by Dry Mass (%)**
			Clay by Dry Mass (%)

Sieve Size (mm)	Passing (%)	**Sand By Dry Mass (%)**
2.00	99	**89**
1.18	99	
0.600	96	
0.425	92	
0.300	72	
0.212	32	
0.150	19	
0.063	10	

Fines By Dry Mass (%)	
<0.063mm	**10**

Sieve Size (mm)	Passing (%)	**Gravel By Dry Mass (%)**
150		**1**
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3	100	
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC01	14.50 - 14.95	UT	31	21.2	2.15	1.77	597	203	102			Yellowish brown silty slightly clayey SAND with occasional grey mottling changing to dark grey slightly sandy silty CLAY.
BHC01	14.50 - 14.95	UT	31	34.6	1.96	1.46	301	83	42			Firm (Medium strength) grey slightly sandy silty CLAY with rare dark grey mottling, and sandy pockets. Sand is fine.
BHC09	19.00 - 19.45	UT	40	17.4	2.18	1.86	396	343	172			Stiff (High strength) grey sandy locally very sandy silty CLAY with rare yellowish brown and dark grey mottling. Sand is fine to medium.
BHC09	19.00 - 19.45	UT	40	19.0	2.26	1.90	598	115	58			Firm (Medium strength) grey sandy silty CLAY with rare yellowish brown and dark grey mottling, and rare laminations. Sand is fine to medium.
BHC09	21.00 - 21.45	UT	45	25.8	2.13	1.69	451	171	86			Stiff (High strength) fissured grey CLAY with rare fine sand laminations.
BHC09	21.00 - 21.45	UT	45	24.5	2.11	1.69	597	197	99			Stiff (High strength) fissured grey CLAY with rare fine sand laminations.
BHC09	23.00 - 23.45	UT	50	30.3	1.94	1.49	501	153	77			Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC09	23.00 - 23.45	UT	50	34.0	1.92	1.43	747	144	72			Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.
BHC10	3.00 - 3.45	UT	9	27.6	1.96	1.54	102	57	29			Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.
BHC10	3.00 - 3.45	UT	9	25.8	2.10	1.67	201	47	24			Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.
BHC10	5.00 - 5.45	UT	15	78.4	1.68	0.94	201	54	27			Soft (Low strength) brown silty organic CLAY with occasional grey mottling.
BHC10	5.00 - 5.45	UT	15	54.6	1.69	1.09	398	63	32			Soft (Low strength) brown silty organic CLAY with occasional grey mottling.
BHC10	13.10 - 13.55	UT	33	32.5	1.93	1.46	301	113	57			Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.
BHC10	13.10 - 13.55	UT	33	31.5	1.97	1.50	598	122	61			Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC10	18.00 - 18.45	UT	44	21.7	2.11	1.73	402	118	59			Firm (Medium strength) grey slightly sandy silty organic CLAY locally oxidised to yellowish brown with occasional laminations. Sand is fine.
BHC10	18.00 - 18.45	UT	44	22.1	2.10	1.72	598	204	102			(High strength) grey sandy silty organic CLAY with rare laminations. Sand is fine to medium.
BHC10	20.00 - 20.45	UT	49	23.9	2.07	1.67	401	201	101			Stiff (High strength) grey slightly sandy CLAY with rare dark grey mottling changing to slightly sandy silty clay at bottom of specimen.
BHC10	20.00 - 20.45	UT	49	22.2	2.04	1.67	597	242	121			Stiff (High strength) grey CLAY with occasional silt/fine sand laminations changing to fissured clay with occasional olive grey mottling.
BHC10	22.00 - 22.45	UT	54	29.7	1.92	1.48	502	251	126			Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.
BHC10	22.00 - 22.45	UT	54	28.9	1.95	1.51	750	299	150			Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.
BHC10	24.00 - 24.45	UT	59	34.4	1.99	1.48	602	125	63			Firm (Medium strength) grey sandy silty CLAY changing to slightly sandy silty CLAY. Sand is fine to medium.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DENSITY, WATER CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASURMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Mohrs Circle Analysis		Description
										Cu (kPa)	Ø degrees	
BHC10	24.00 - 24.45	UT	59	31.8	1.94	1.47	751	154	77			Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand/silt laminations, and very dark grey and grey mottling.
BHC20	23.00	UT	48	15.9	2.19	1.89	450	625	313			Very stiff (Very high strength) dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.
BHC20	23.00	UT	48	17.5	2.16	1.84	598	340	170			Stiff (High strength) dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.

Method of Preparation:	BS 1377: Part 1: 1990: 7.4.2 & 8, Part 2: 1990: 7.2, Part 7: 1990: 8.3
Method of Test:	BS 1377: Part 2: 1990:3 Determination of Moisture Content, Part2: 1990:7 Determination of Density, Part 7: 1990: 8 Undrained Shear Strenth
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

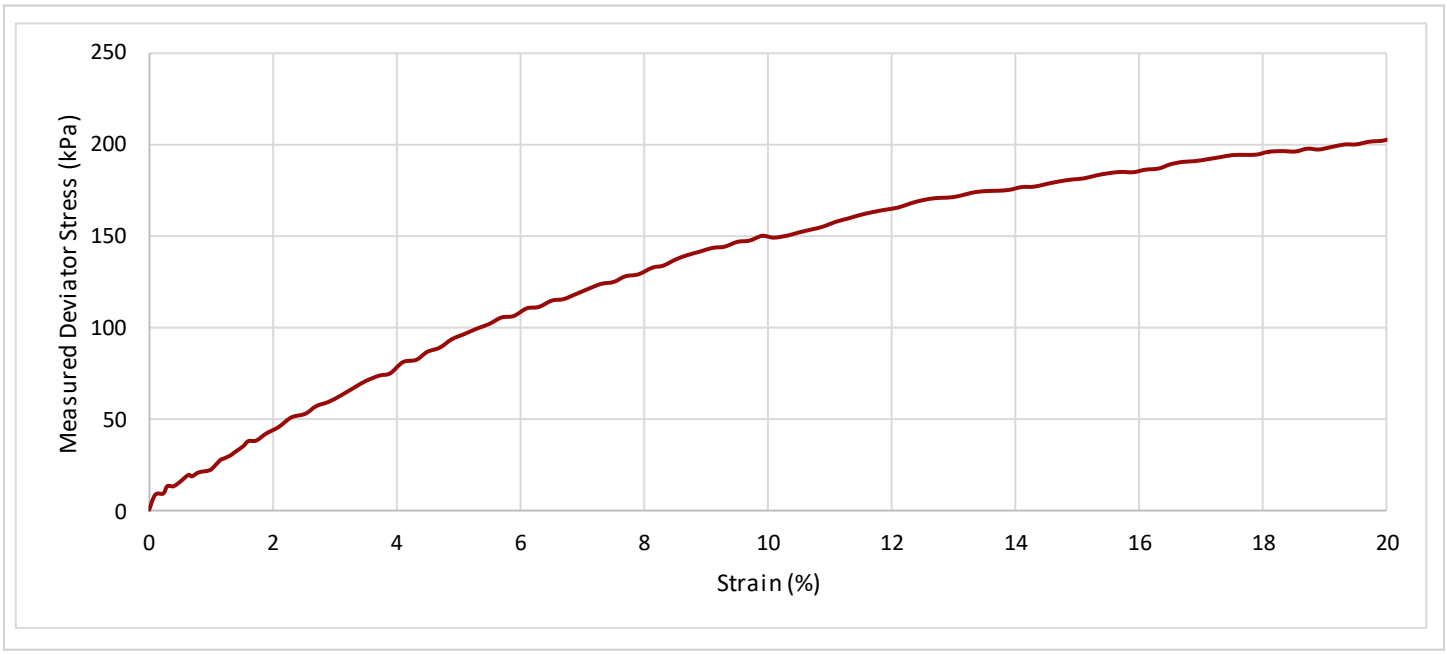
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

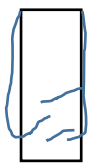
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC01	14.50 - 14.95	UT	31	Yellowish brown silty slightly clayey SAND with occasional grey mottling changing to dark grey slightly sandy silty CLAY.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 14.56	185.0	101.7	3223	21.2	2.15	1.77

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	597	20.1	1.1	\	203	102		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

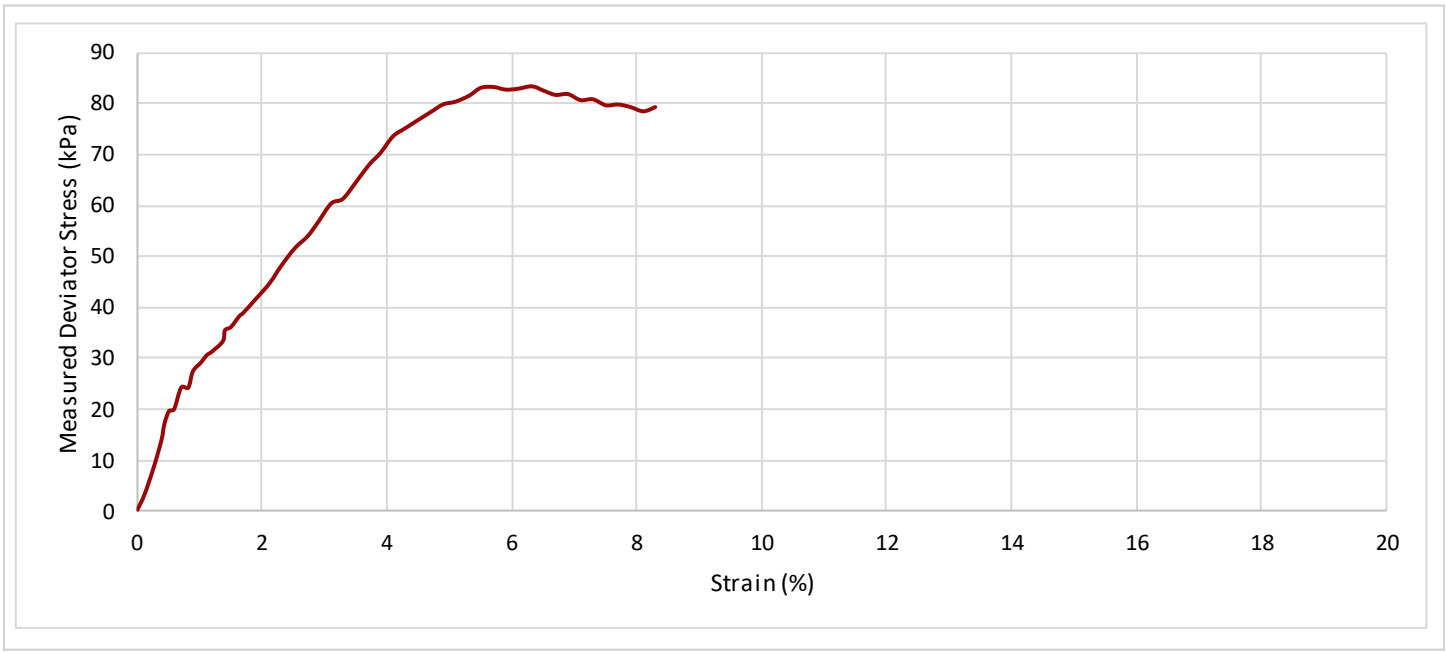
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC01	14.50 - 14.95	UT	31	Firm (Medium strength) grey slightly sandy silty CLAY with rare dark grey mottling, and sandy pockets. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 14.75	161.0	102.4	2597	34.6	1.96	1.46

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	301	6.3	0.5	\	83	42		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING 0998

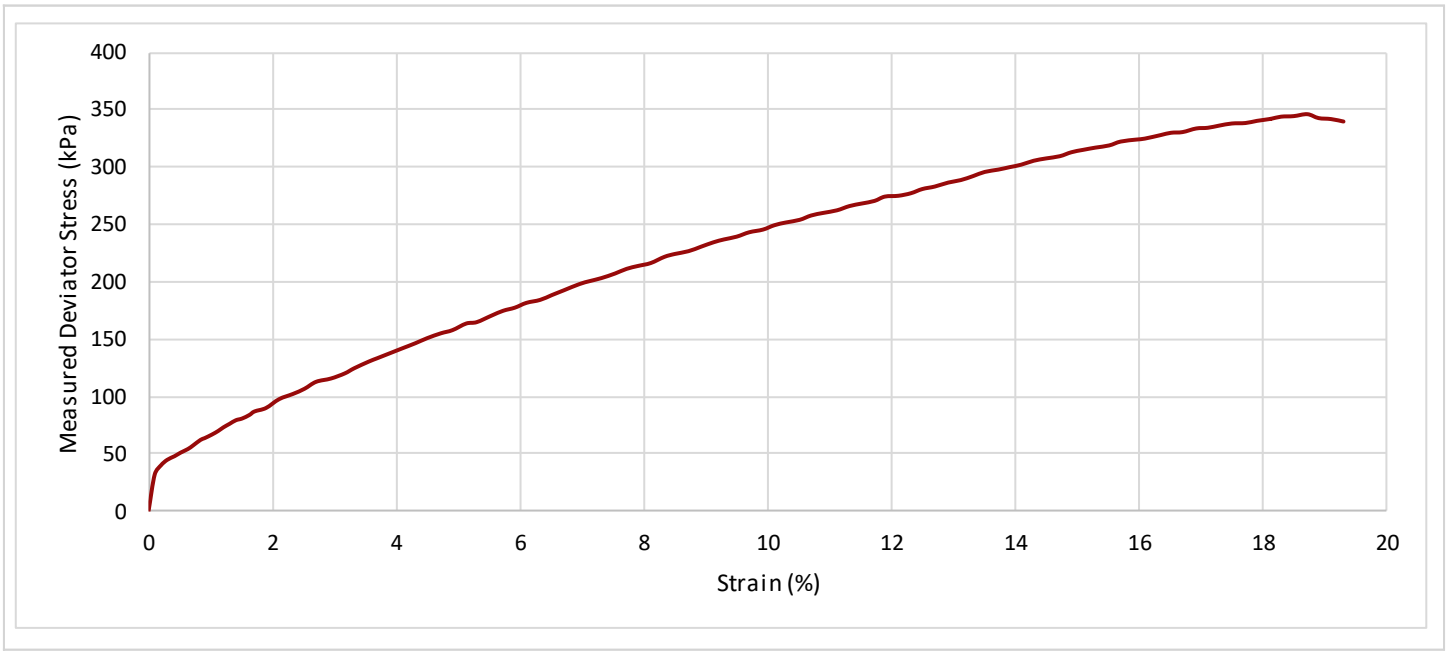
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

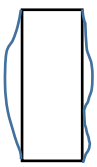
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	19.00 - 19.45	UT	40	Stiff (High strength) grey sandy locally very sandy silty CLAY with rare yellowish brown and dark grey mottling. Sand is fine to medium.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 19.02	75.5	37.1	178	17.4	2.18	1.86

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	396	18.7	2.9	\	343	172		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

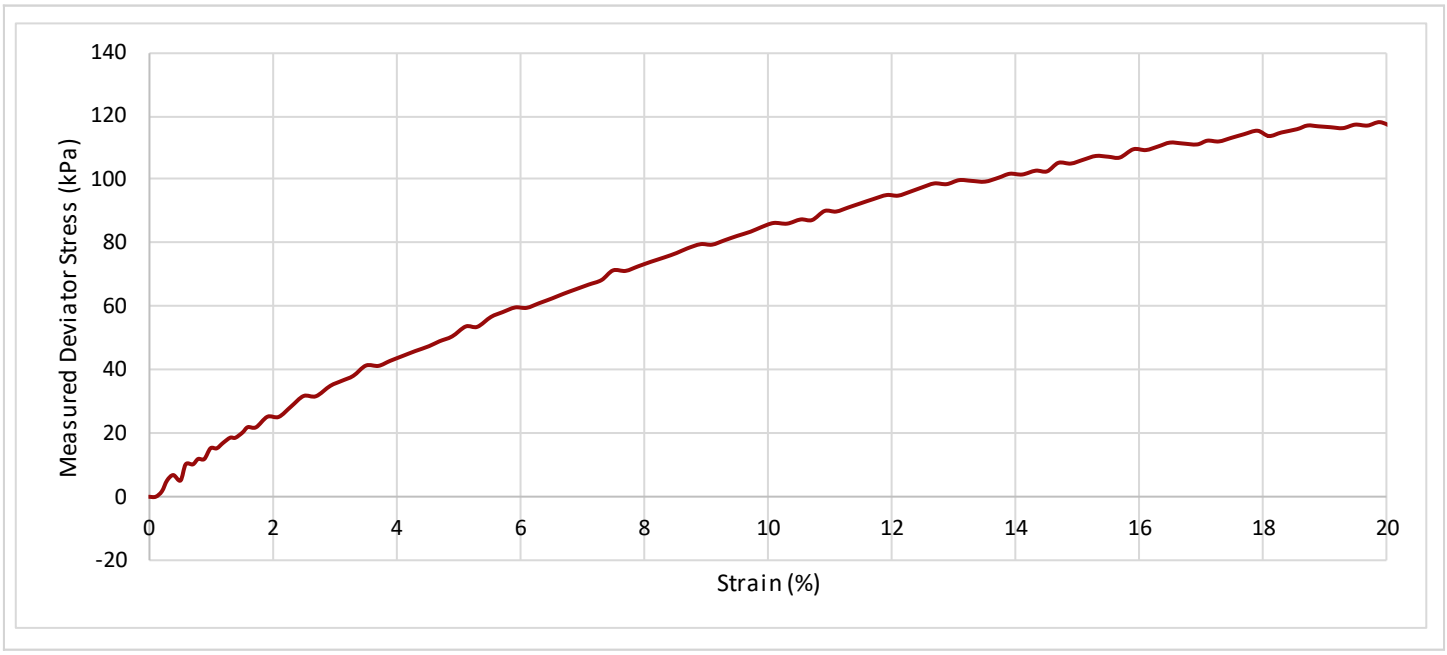
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	19.00 - 19.45	UT	40	Firm (Medium strength) grey sandy silty CLAY with rare yellowish brown and dark grey mottling, and rare laminations. Sand is fine to medium.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 19.02	76.0	36.1	175	19.0	2.26	1.90

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	19.9	3.2	\	115	58		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

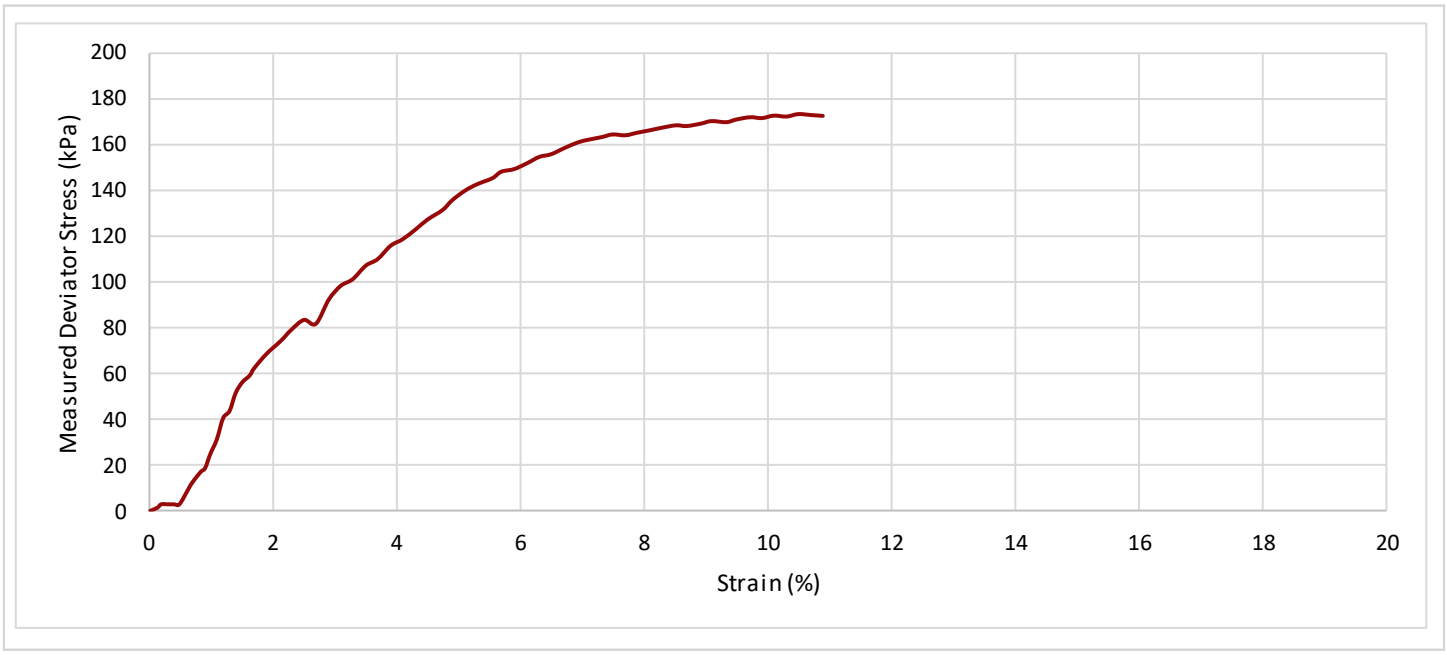
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	21.00 - 21.45	UT	45	Stiff (High strength) fissured grey CLAY with rare fine sand laminations.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 21.02	73.6	37.5	173	25.8	2.13	1.69

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	451	10.5	1.9	\	171	86		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

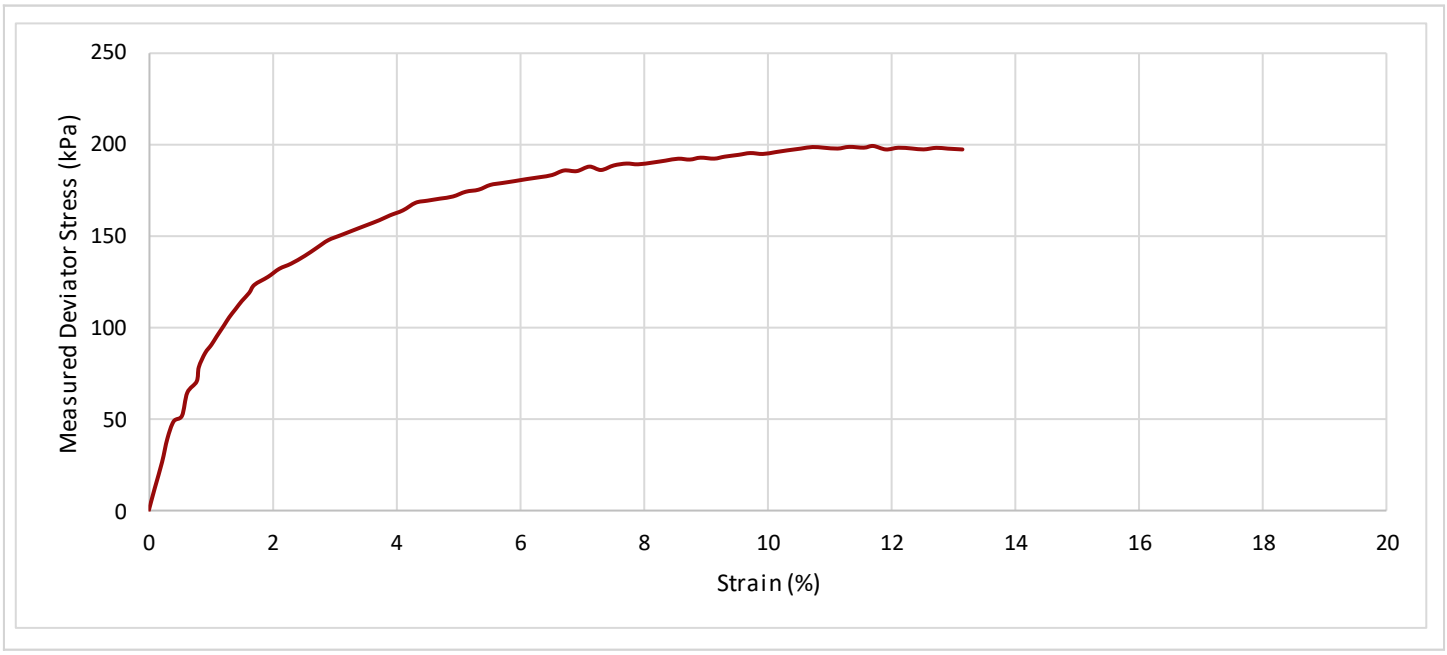
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	21.00 - 21.45	UT	45	Stiff (High strength) fissured grey CLAY with rare fine sand laminations.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 21.02	75.0	37.2	172	24.5	2.11	1.69

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	597	11.7	2.0	\	197	99		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING
0998

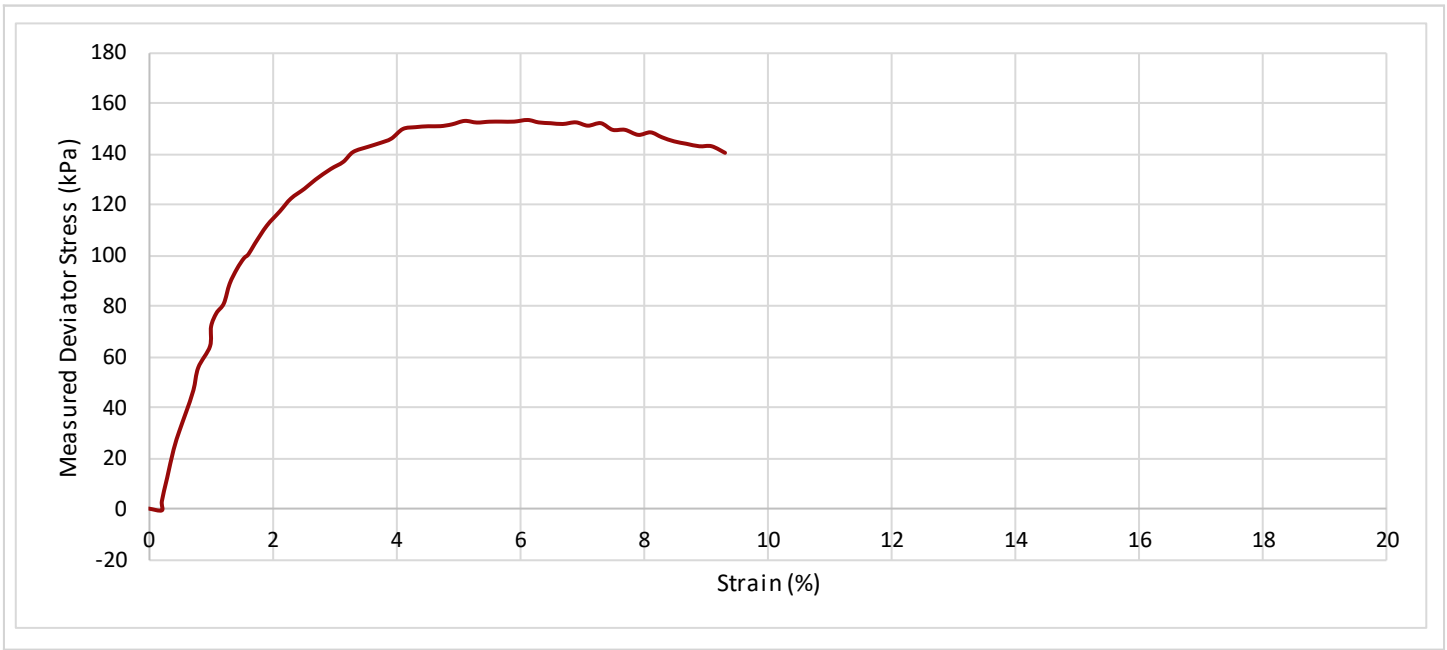
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	23.00 - 23.45	UT	50	Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.03	154.7	102.4	2466	30.3	1.94	1.49

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	501	6.1	0.5	\	153	77		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

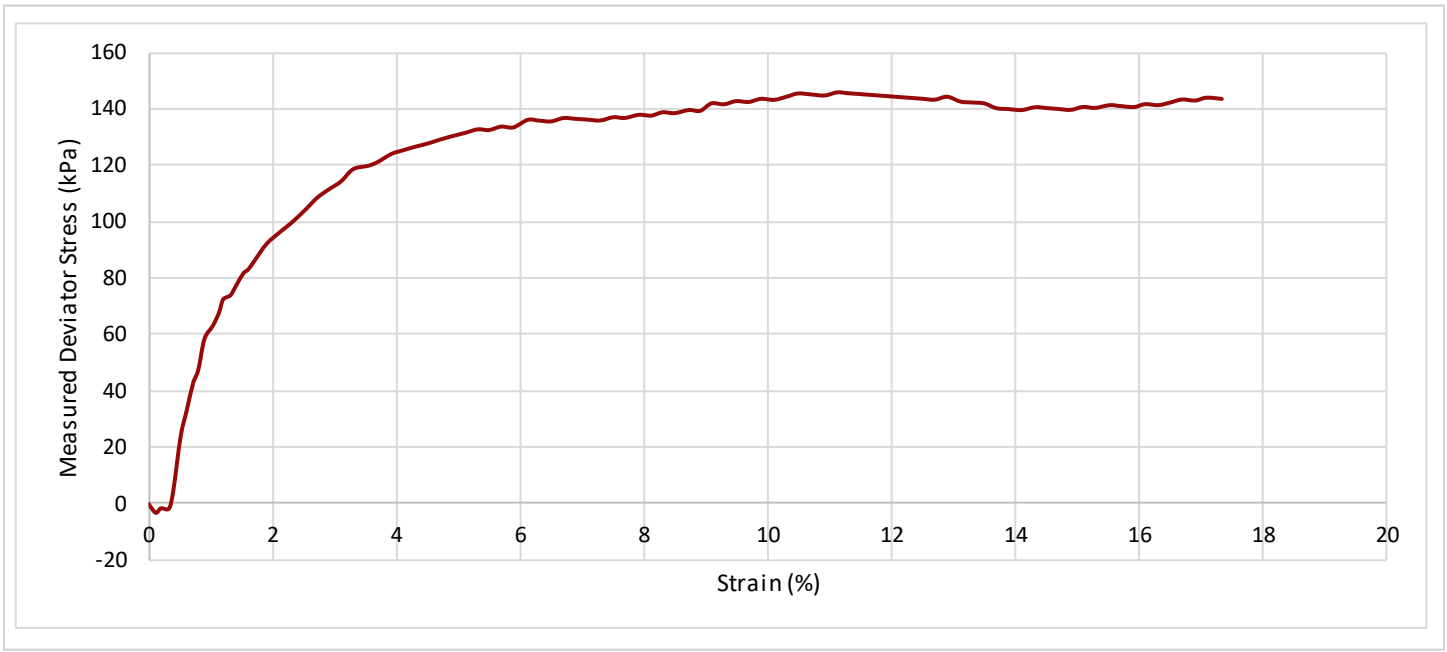
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	23.00 - 23.45	UT	50	Firm (Medium strength) slightly fissured dark grey CLAY with occasional grey mottling and silty pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.19	76.9	37.4	162	34.0	1.92	1.43

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	747	11.1	1.9	\	144	72		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING
0998

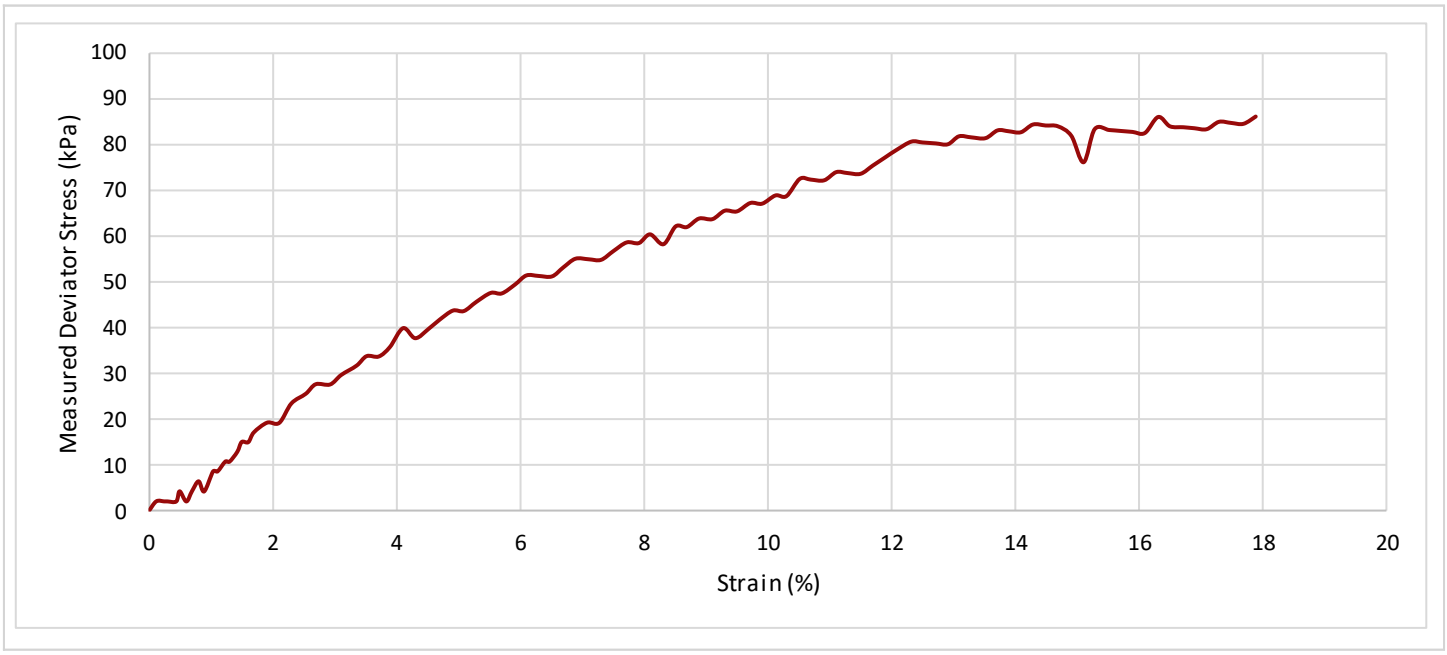
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	3.00 - 3.45	UT	9	Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 3.06	76.0	38.0	169	27.6	1.96	1.54

TEST INFORMATION	Rate of Strain	1.2	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	102	17.9	2.8	\	57	29		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

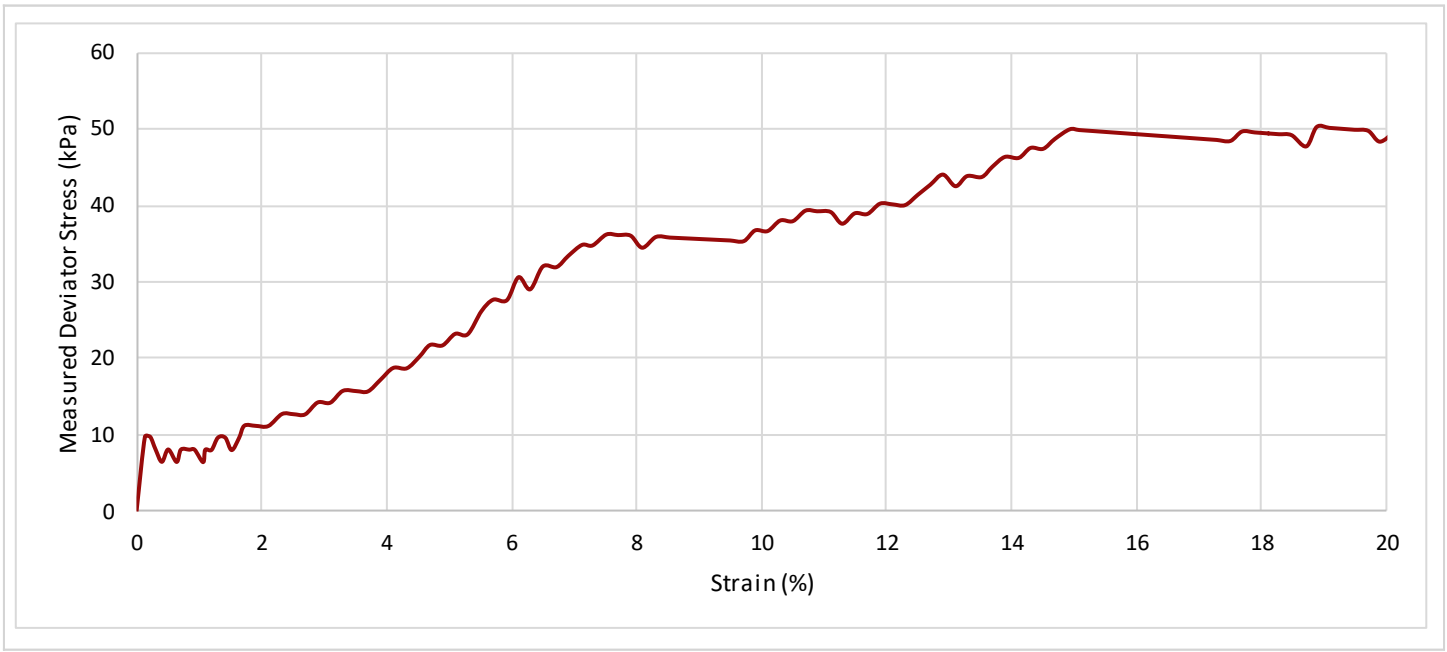
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	3.00 - 3.45	UT	9	Soft (Low strength) very dark grey silty organic CLAY with occasional black mottling, and fine sand pockets.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 3.06	75.6	37.0	170	25.8	2.10	1.67

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	201	18.9	3.0	\	47	24		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

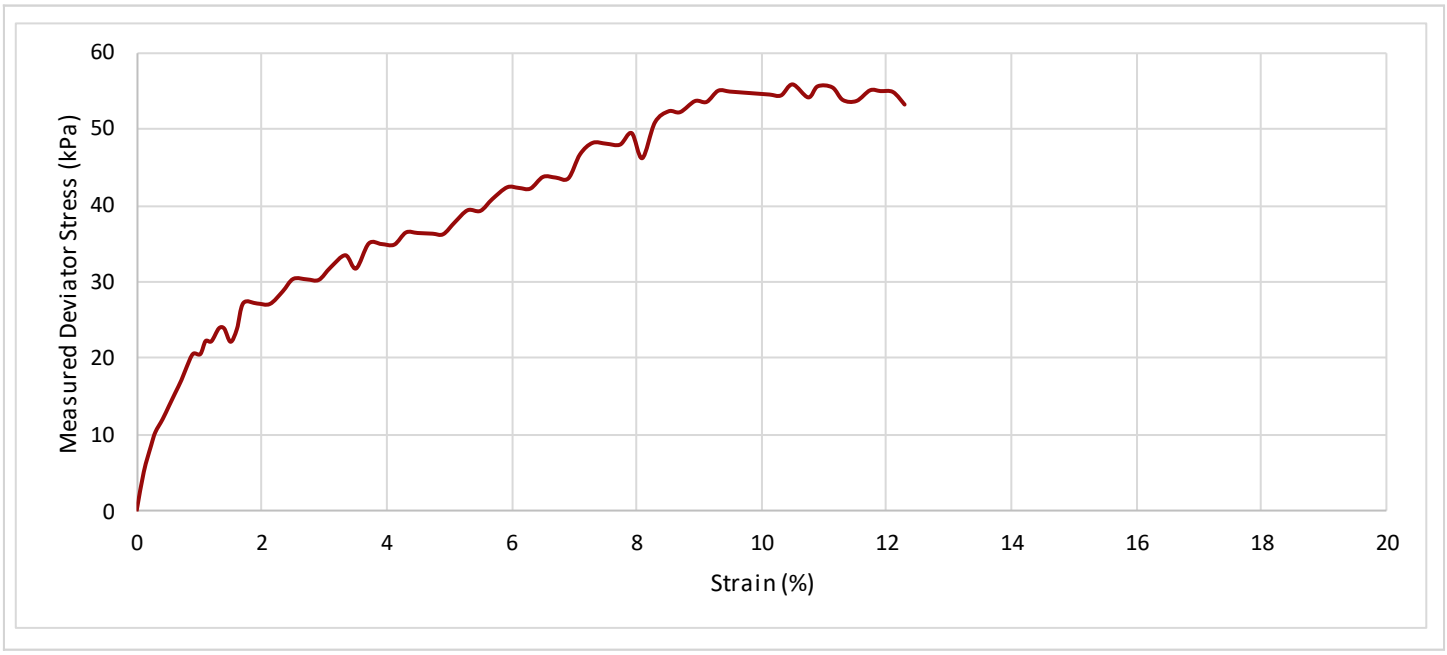
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

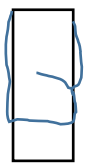
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	5.00 - 5.45	UT	15	Soft (Low strength) brown silty organic CLAY with occasional grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 5.05	75.8	35.9	129	78.4	1.68	0.94

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	201	10.5	1.9	\	54	27		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

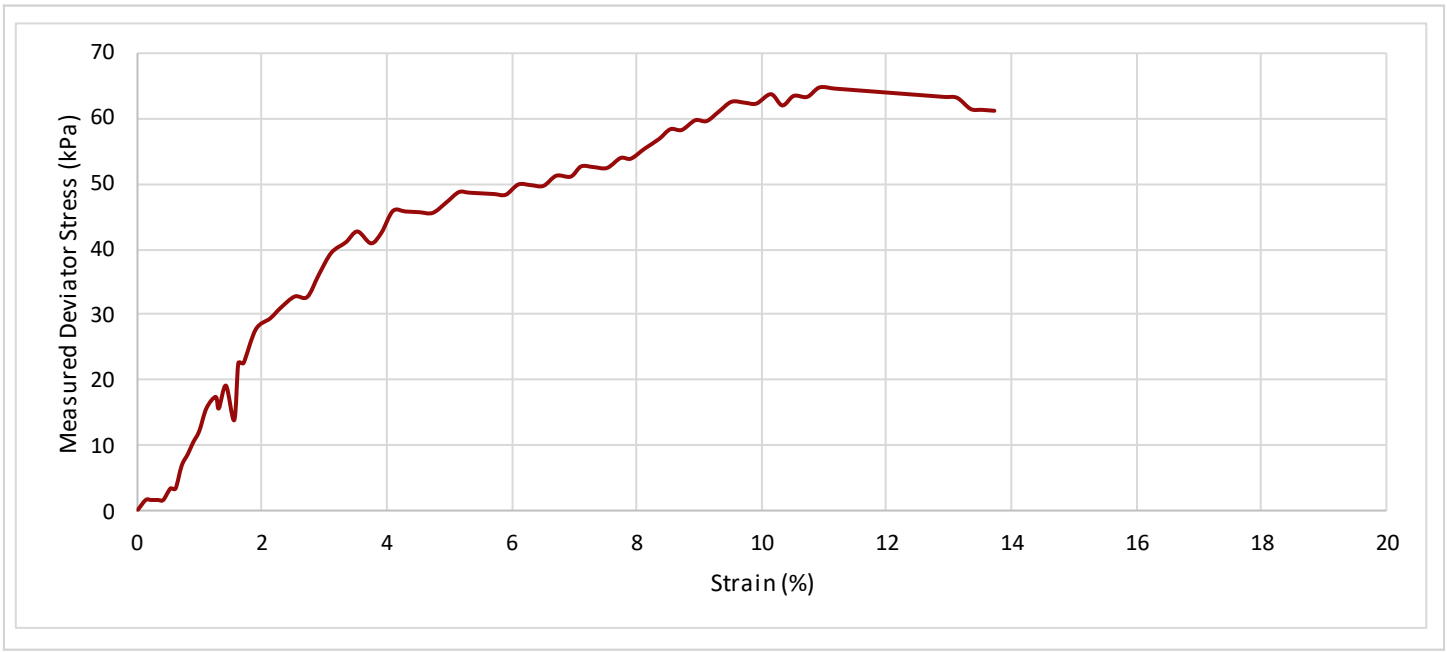
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

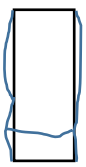
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	5.00 - 5.45	UT	15	Soft (Low strength) brown silty organic CLAY with occasional grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 5.05	77.2	35.5	129	54.6	1.69	1.09

TEST INFORMATION — Rate of Strain 1.3 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	398	10.9	2.0	\	63	32		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

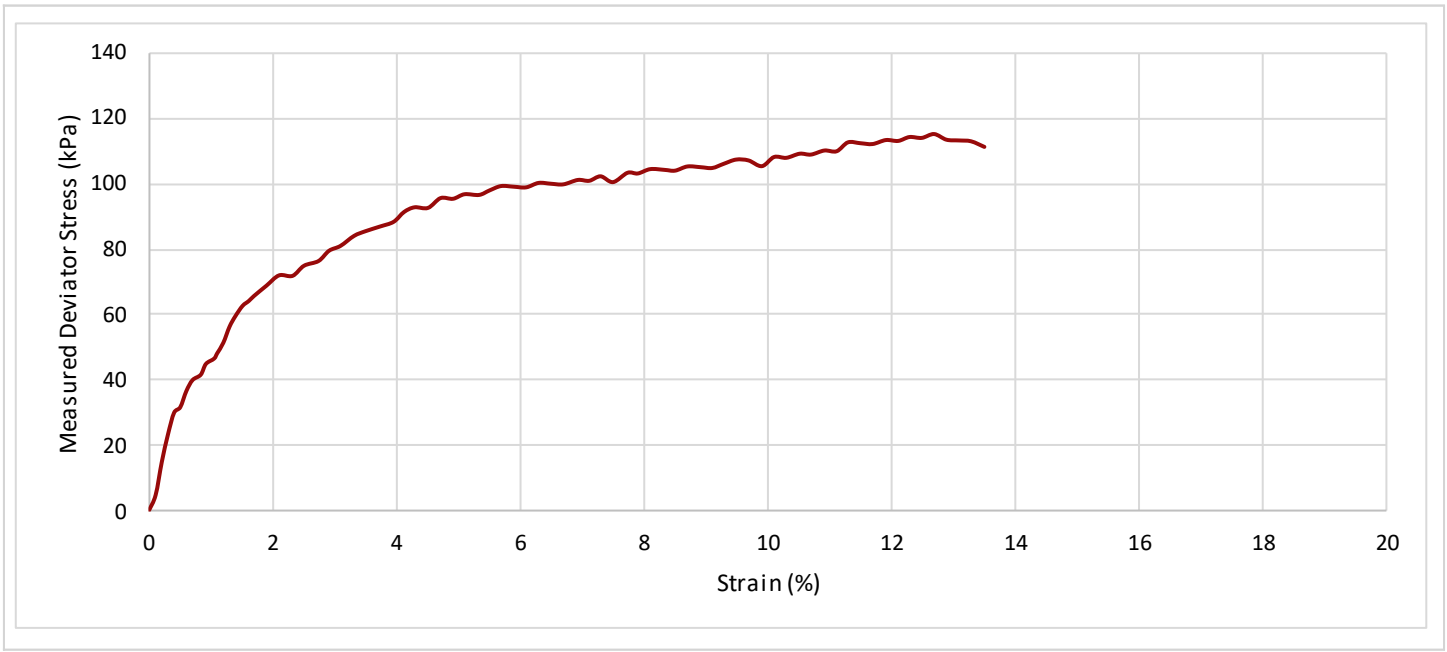
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

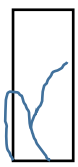
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	13.10 - 13.55	UT	33	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 13.20	76.6	36.2	152	32.5	1.93	1.46

TEST INFORMATION — Rate of Strain 1.1 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	301	12.7	2.2	\	113	57		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

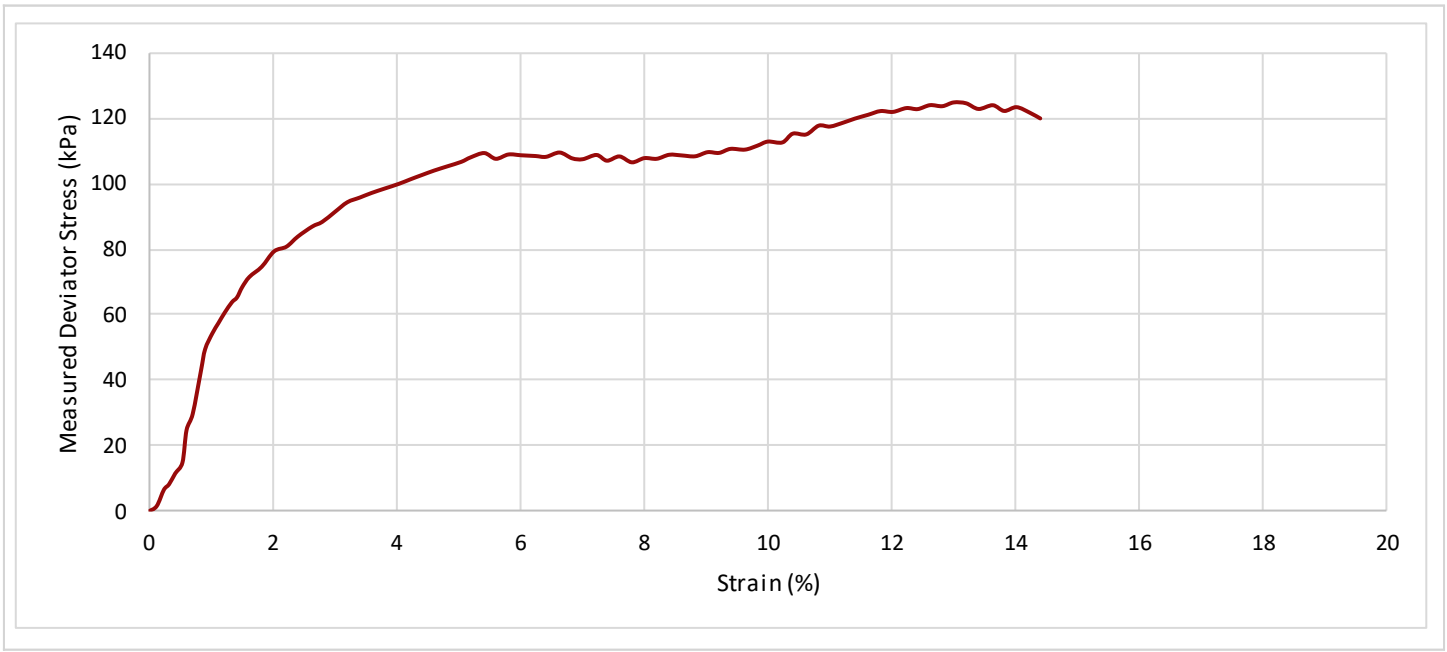
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	13.10 - 13.55	UT	33	Firm (Medium strength) dark grey CLAY with occasional olive grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 13.20	76.3	36.4	156	31.5	1.97	1.50

TEST INFORMATION — Rate of Strain 1.4 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	13.0	2.2	\	122	61		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

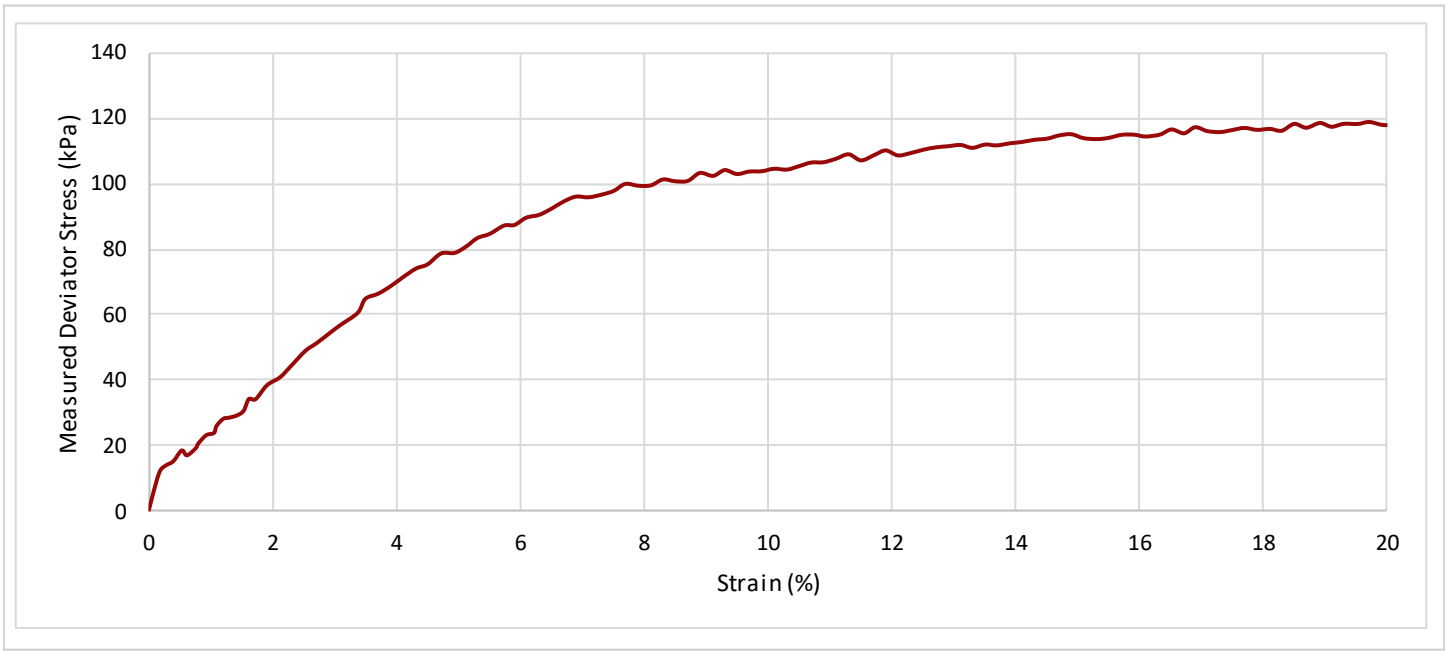
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	18.00 - 18.45	UT	44	Firm (Medium strength) grey slightly sandy silty organic CLAY locally oxidised to yellowish brown with occasional laminations. Sand is fine.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 18.06	155.8	101.4	2653	21.7	2.11	1.73

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	402	19.7	1.1	\	118	59		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

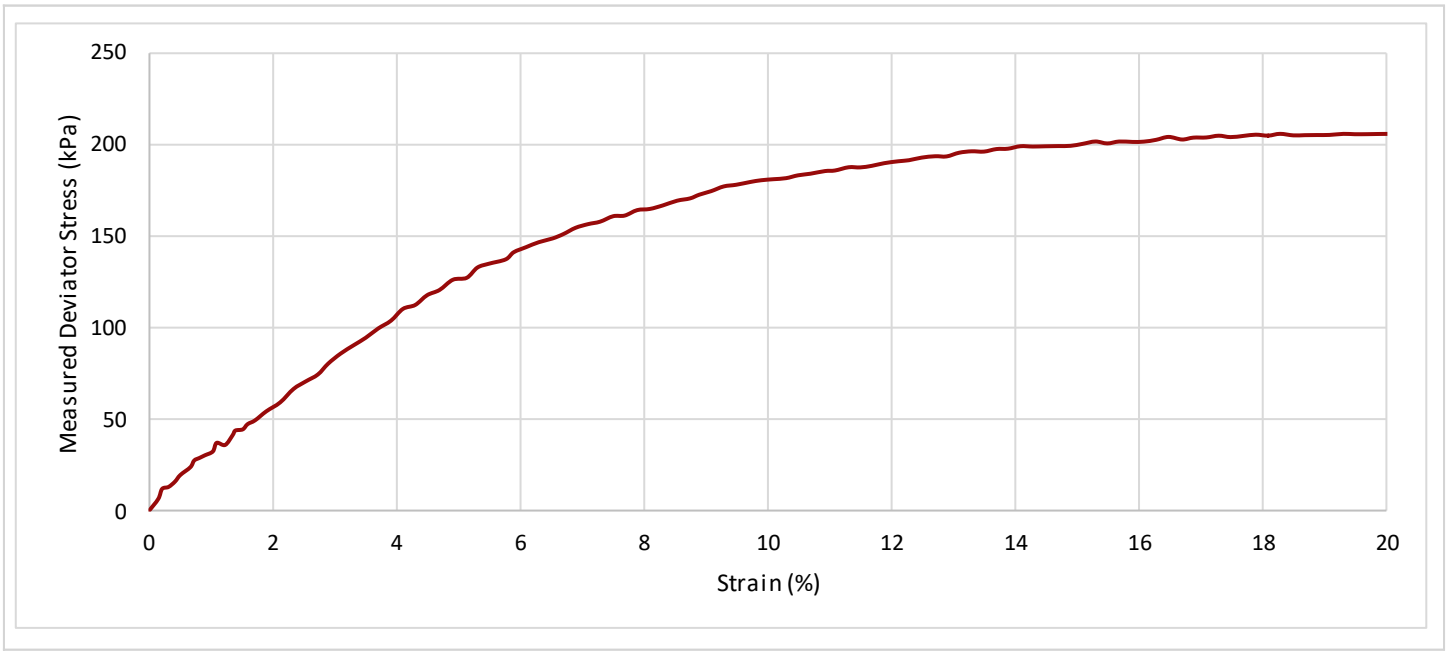
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	18.00 - 18.45	UT	44	(High strength) grey sandy silty organic CLAY with rare laminations. Sand is fine to medium.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 18.22	151.7	102.0	2600	22.1	2.10	1.72

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	18.3	1.1	\	204	102		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING
0998

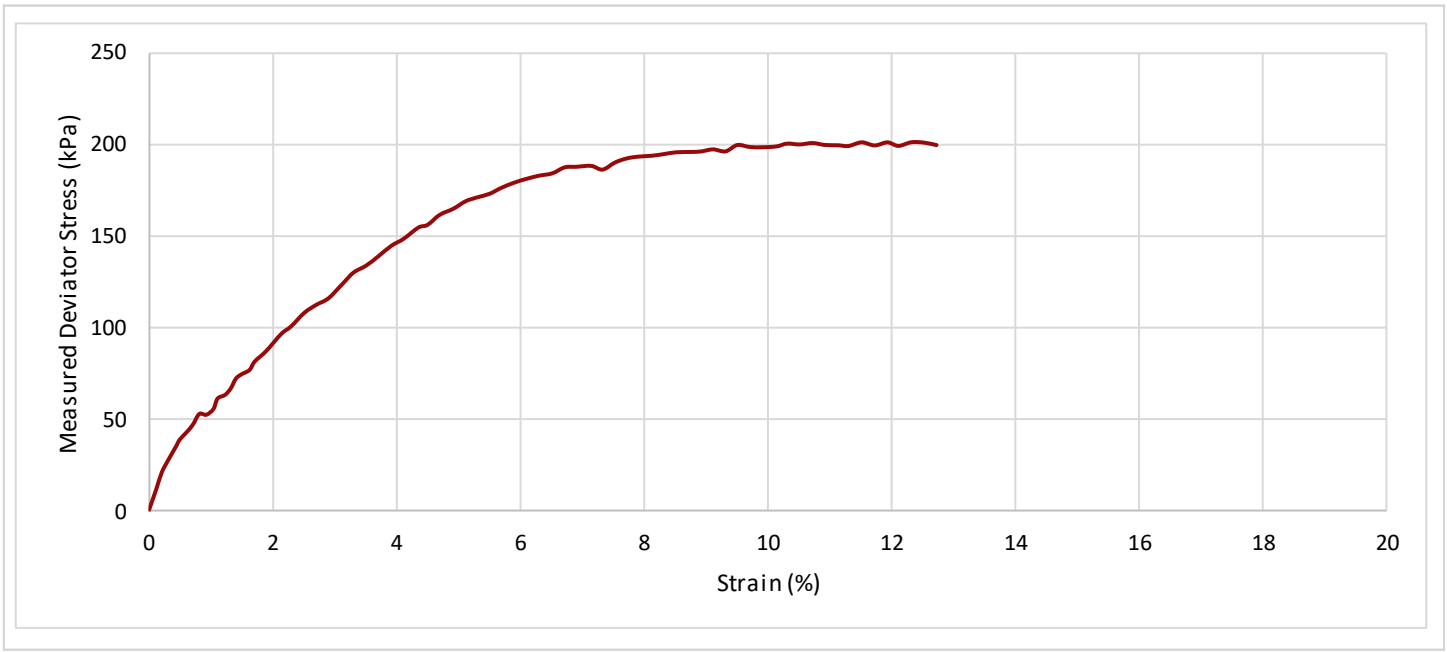
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

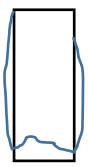
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	20.00 - 20.45	UT	49	Stiff (High strength) grey slightly sandy CLAY with rare dark grey mottling changing to slightly sandy silty clay at bottom of specimen.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 20.03	159.8	102.4	2728	23.9	2.07	1.67

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	401	12.3	0.8	\	201	101		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

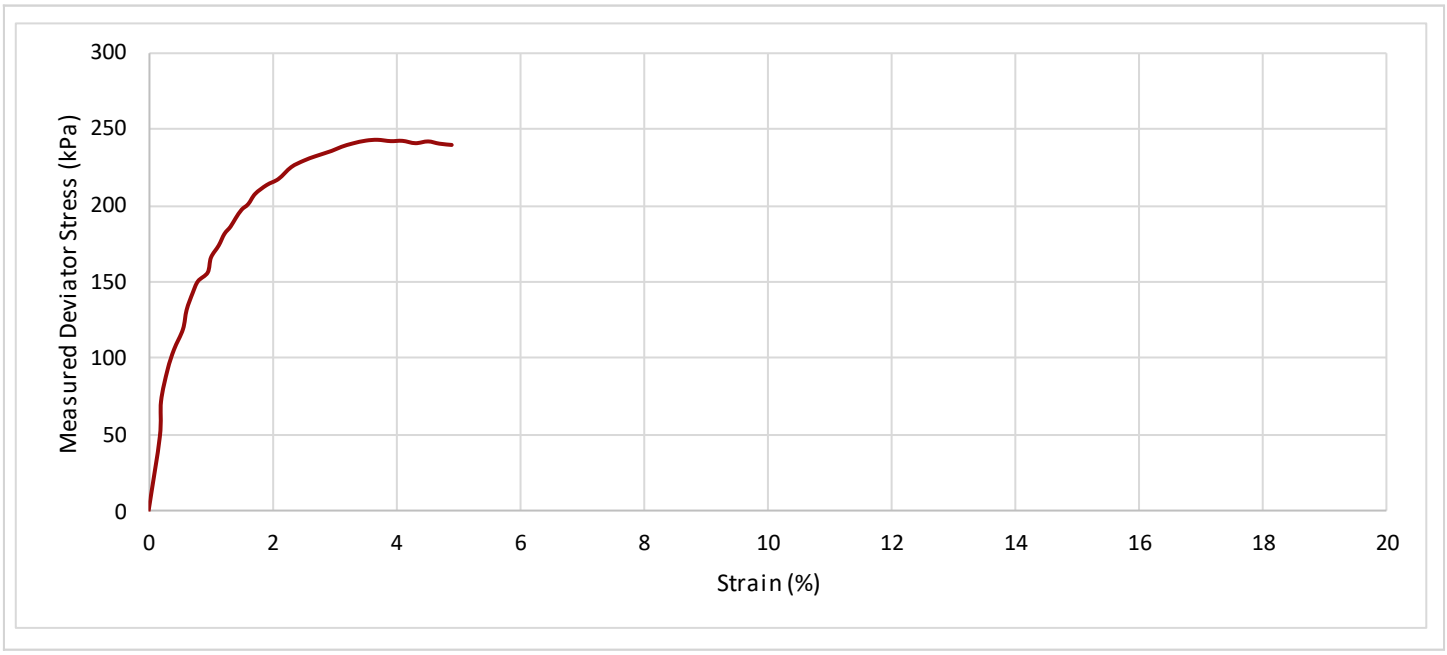
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

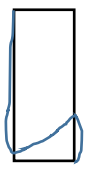
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	20.00 - 20.45	UT	49	Stiff (High strength) grey CLAY with occasional silt/fine sand laminations changing to fissured clay with occasional olive grey mottling.	Premature failure at 3.7% strain.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 20.20	199.6	102.9	3381	22.2	2.04	1.67

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	597	3.7	0.3	\	242	121		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING

0998

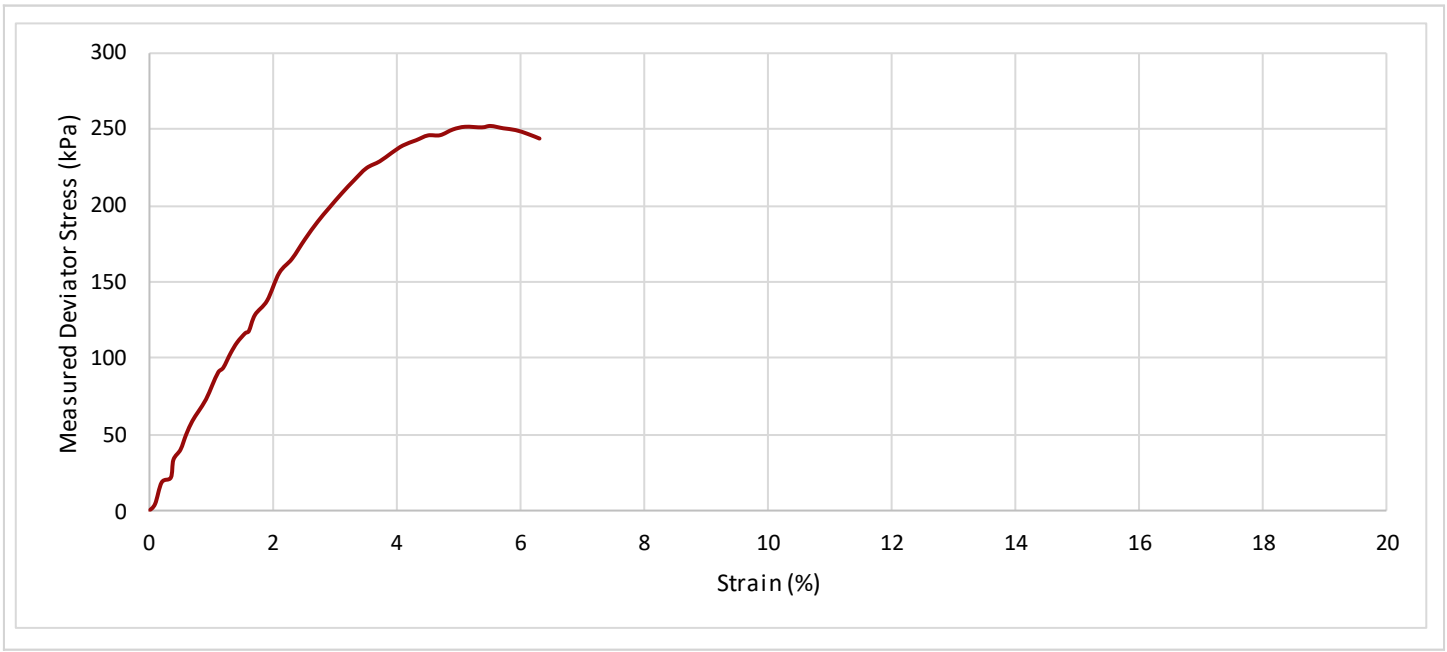
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	22.00 - 22.45	UT	54	Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.07	159.5	103.3	2564	29.7	1.92	1.48

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	502	5.5	0.4	\	251	126		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

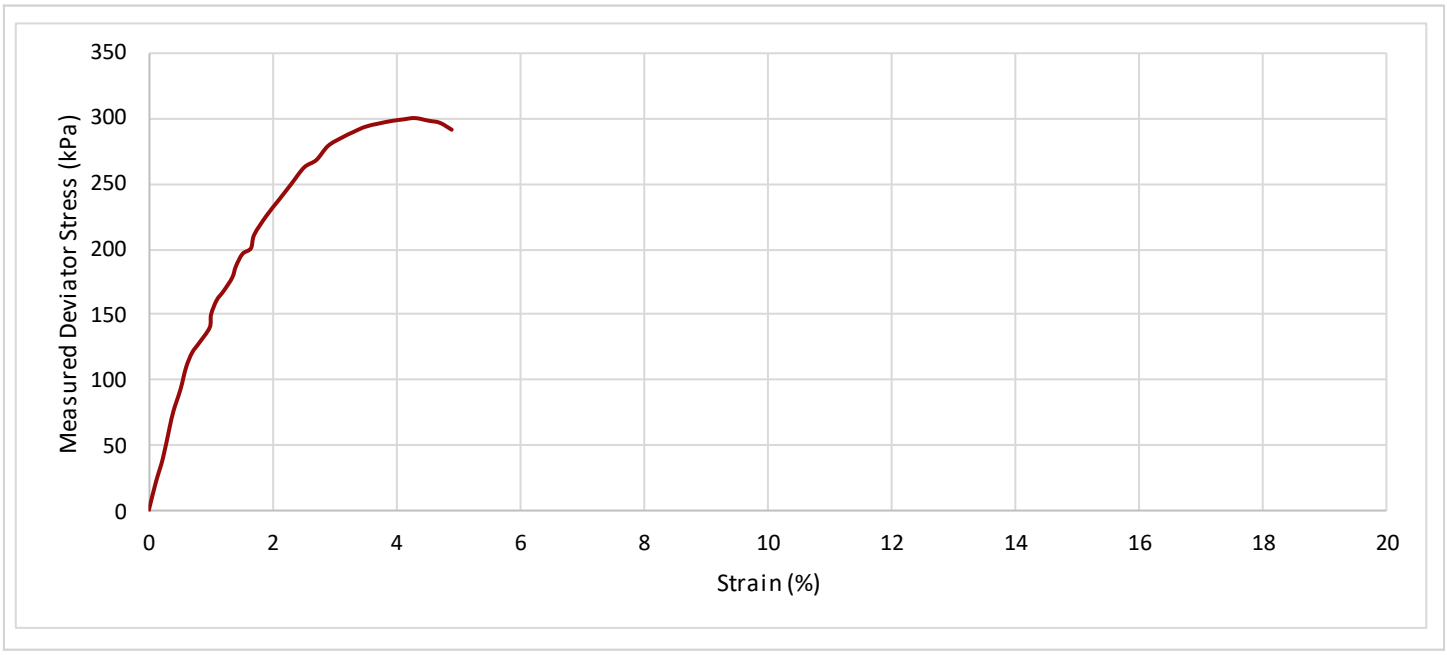
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	22.00 - 22.45	UT	54	Stiff (High strength) locally fissured CLAY with fine sand/silty laminations and dark grey mottling.	Premature failure at 4.3% strain.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 22.24	174.7	102.3	2791	28.9	1.95	1.51

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	750	4.3	0.4	\	299	150		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

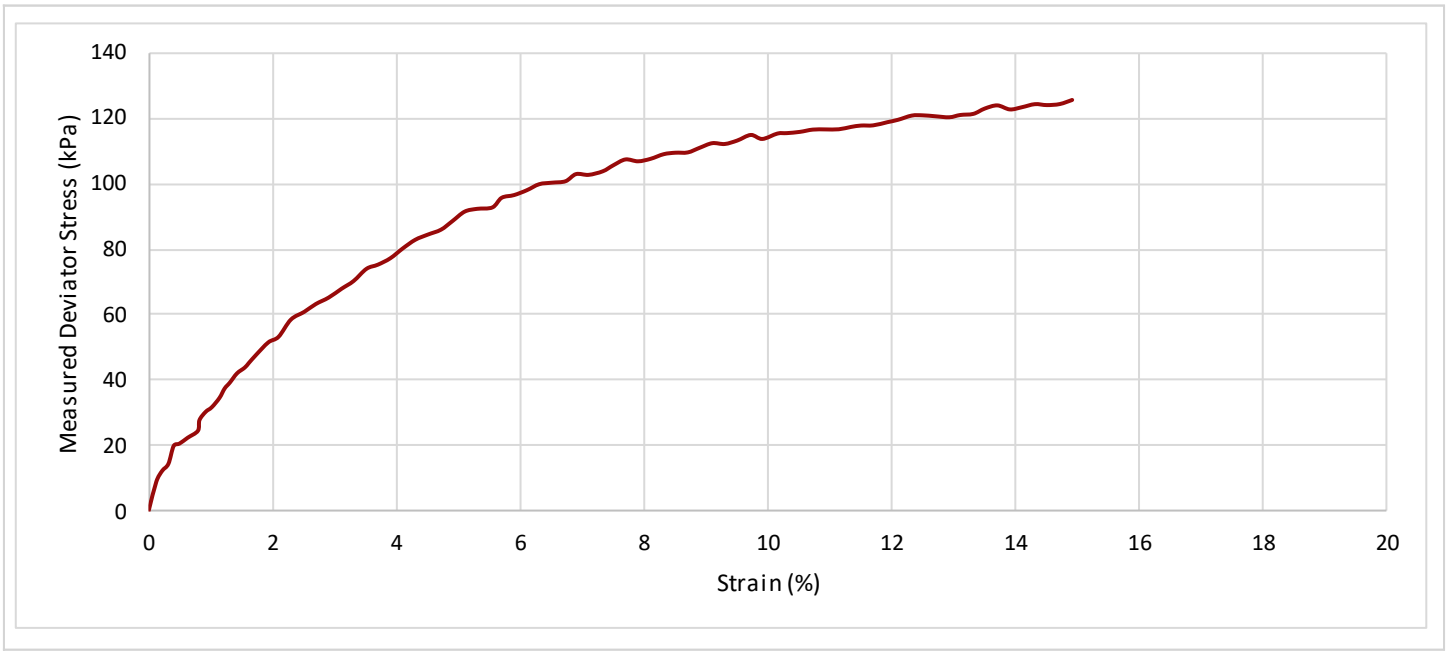
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

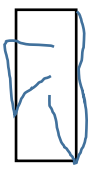
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	24.00 - 24.45	UT	59	Firm (Medium strength) grey sandy silty CLAY changing to slightly sandy silty CLAY. Sand is fine to medium.	Water content of sand portion - 25.2%

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.05	158.0	101.6	2542	34.4	1.99	1.48

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	602	14.9	0.9	\	125	63		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

UKAS TESTING
0998

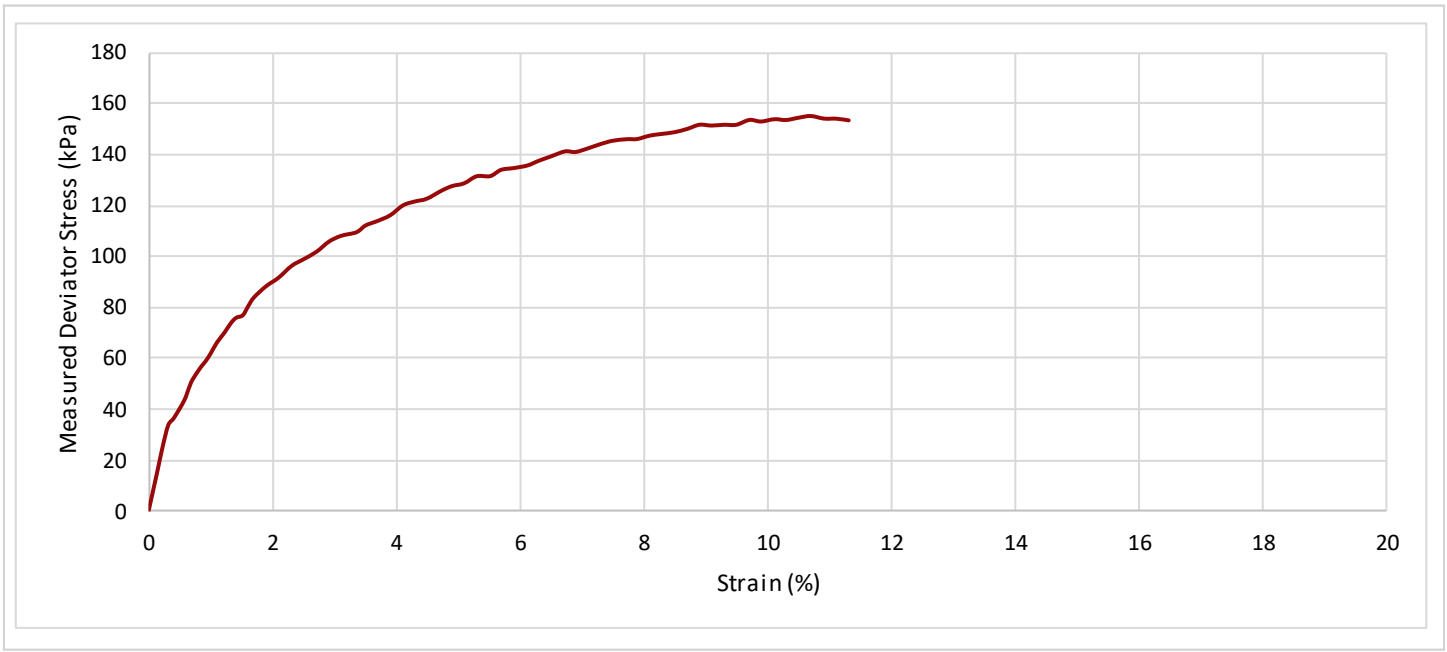
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	24.00 - 24.45	UT	59	Stiff (High strength) slightly fissured dark grey CLAY with occasional fine sand/silt laminations, and very dark grey and grey mottling.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 24.21	183.7	102.2	2919	31.8	1.94	1.47

TEST INFORMATION — Rate of Strain 1.0 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	751	10.7	0.7	\	154	77		

Method of Preparation: BS 1377: Part 1: 1990
Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: Tested in Vertical Condition
UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

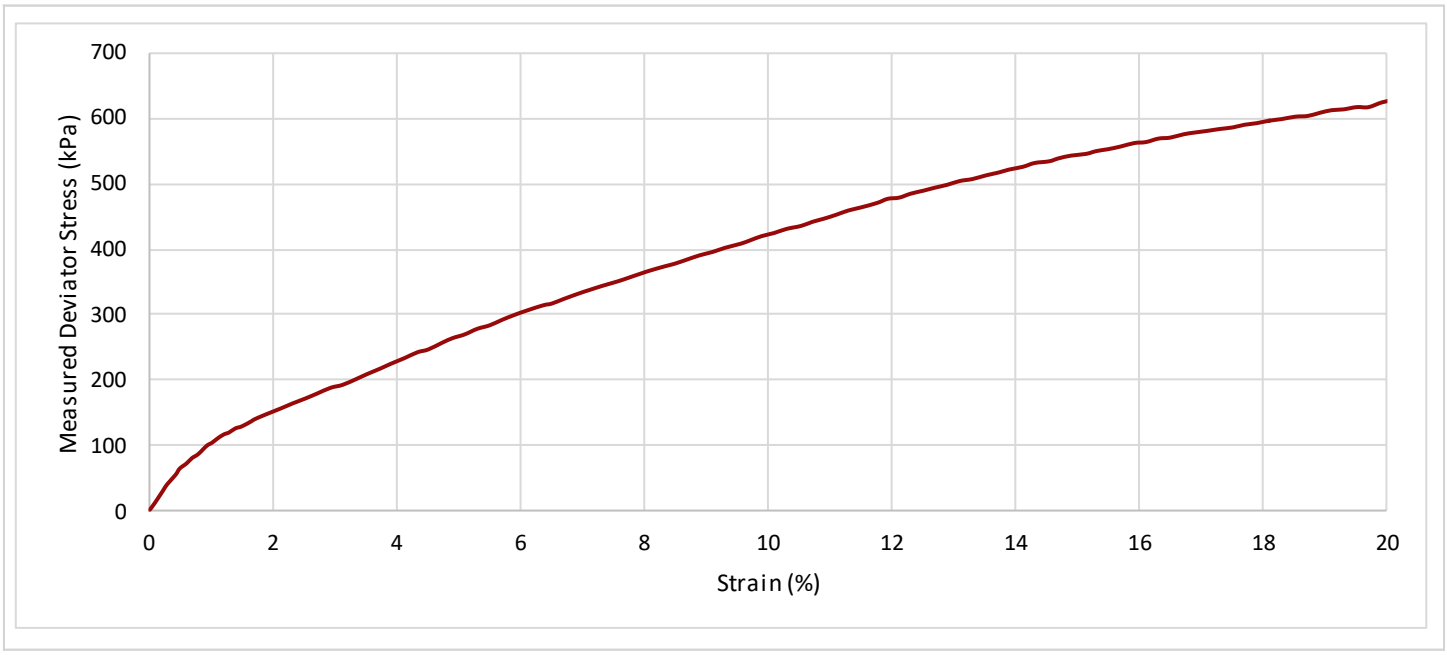
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC20	23.00	UT	48	Very stiff (Very high strength) dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	Short sample recovery - U38 specimen prepared.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.02	75.4	37.2	179	15.9	2.19	1.89

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	450	20.1	3.1	\	625	313		

Method of Preparation: BS 1377: Part 1: 1990

Method of Test: BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: Tested in Vertical Condition

UKAS Calibration - loads from 0.2 to 10kN

Remarks to Include: Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

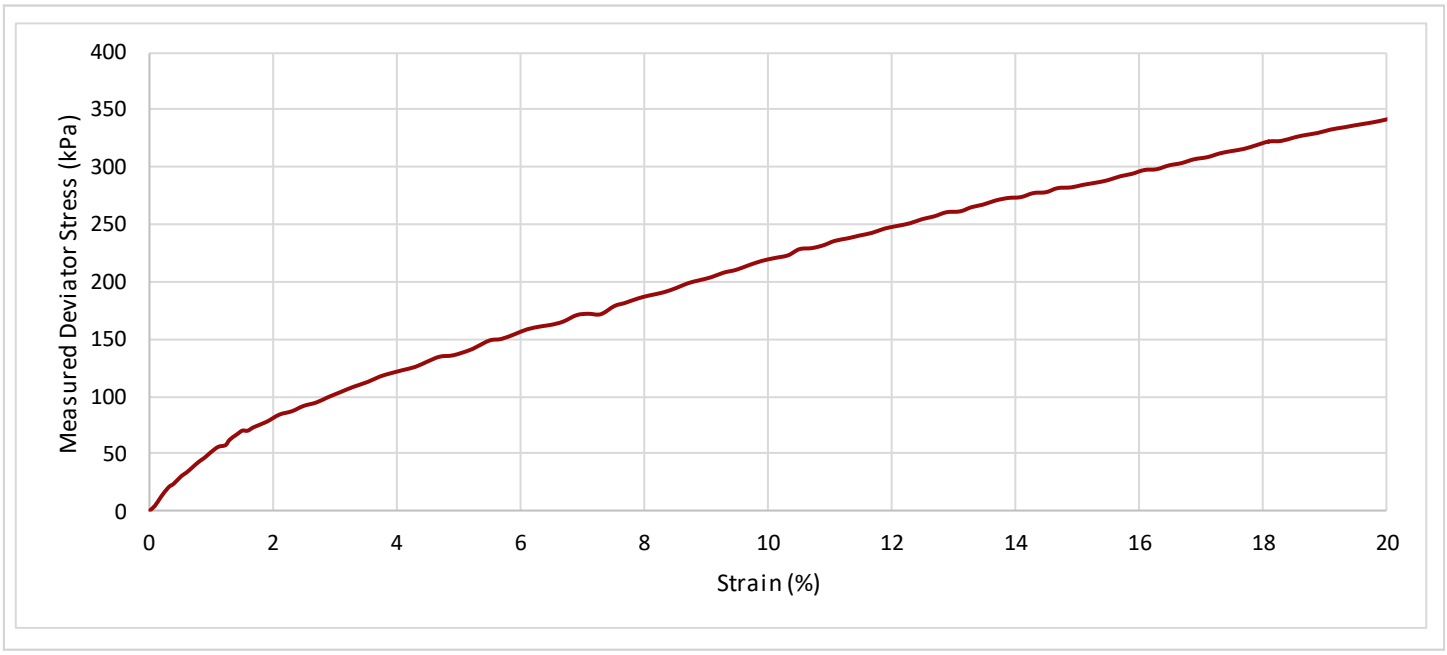
Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

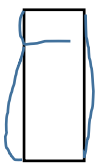
DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
BHC20	23.00	UT	48	Stiff (High strength) dark grey sandy silty CLAY with frequent sand pockets. Sand is fine to medium.	

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 23.02	75.6	37.0	175	17.5	2.16	1.84

TEST INFORMATION — Rate of Strain 1.2 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	598	20.1	3.1	\	340	170		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

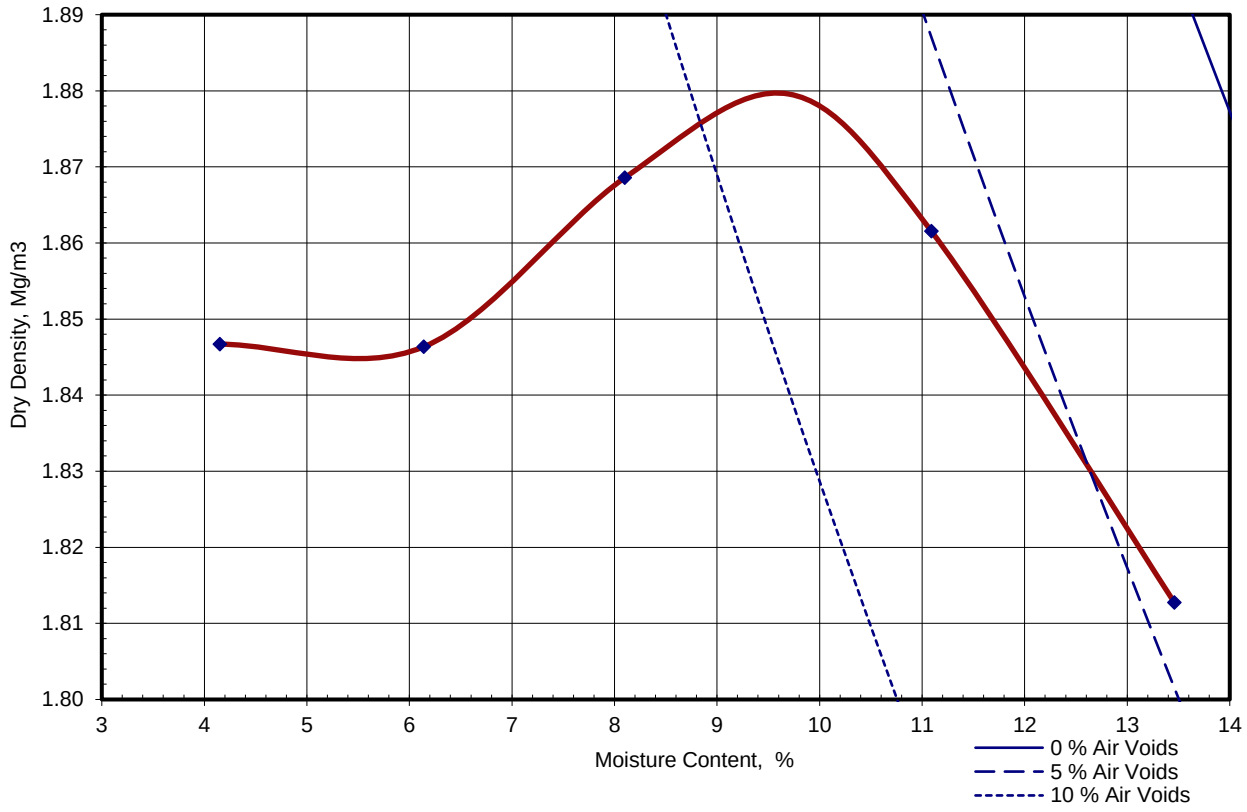
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC01	0.20 - 0.50	B	1	4.2	Yellowish brown very gravelly slightly silty SAND with rare concrete fragments. Gravel is brown, black and white angular to rounded flint.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	1.5 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	4.0 %	Single or Separate Samples	Separate
Grading Zone	4	Particle Density (Assumed)	2.55
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**1.88 Mg/m³**	**Optimum Water Content**	**9.7 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

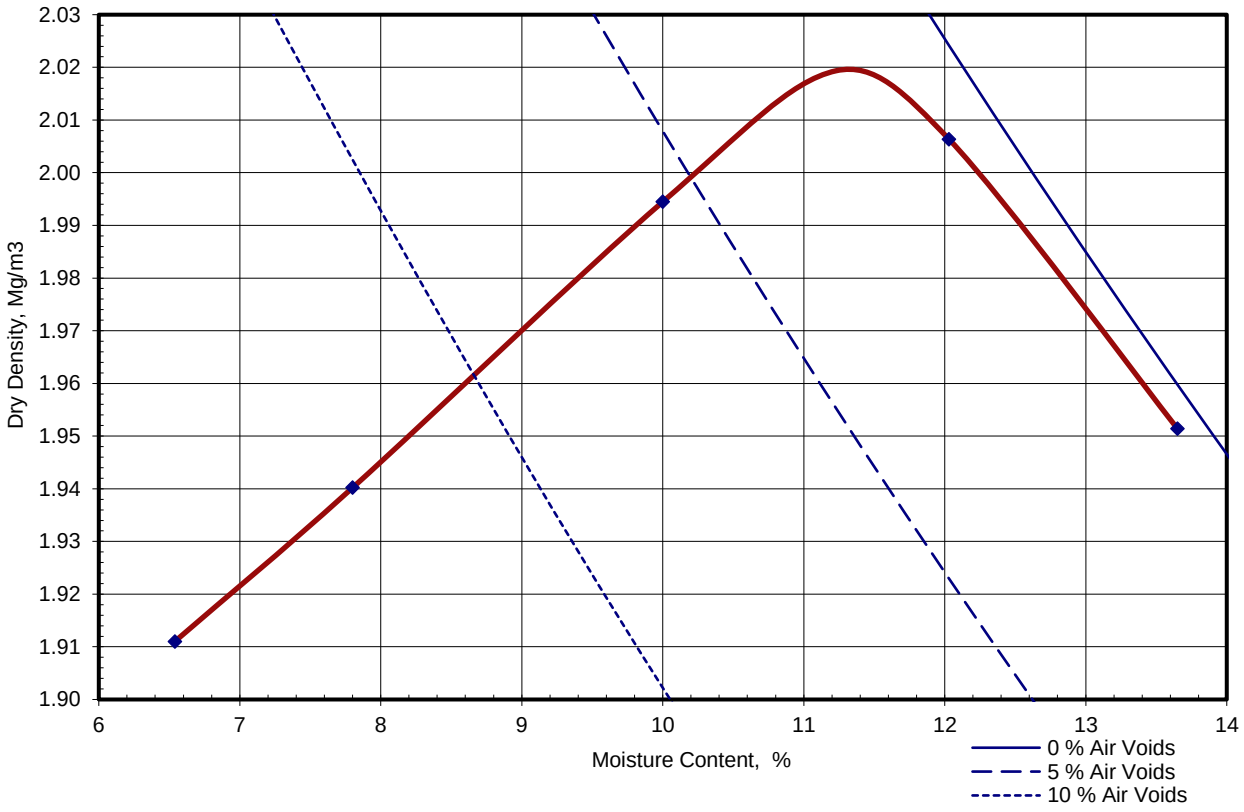
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC09	0.30 - 0.50	B	1	12.0	MADE GROUND comprising crushed CONCRETE fragments with occasional brick, brown, black and white angular to subrounded flint gravel, dark brown silty sand and rare metal fragments.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	4.2 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	7.2 %	Single or Separate Samples	Single
Grading Zone	4	Particle Density (Assumed)	2.68
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**2.02 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

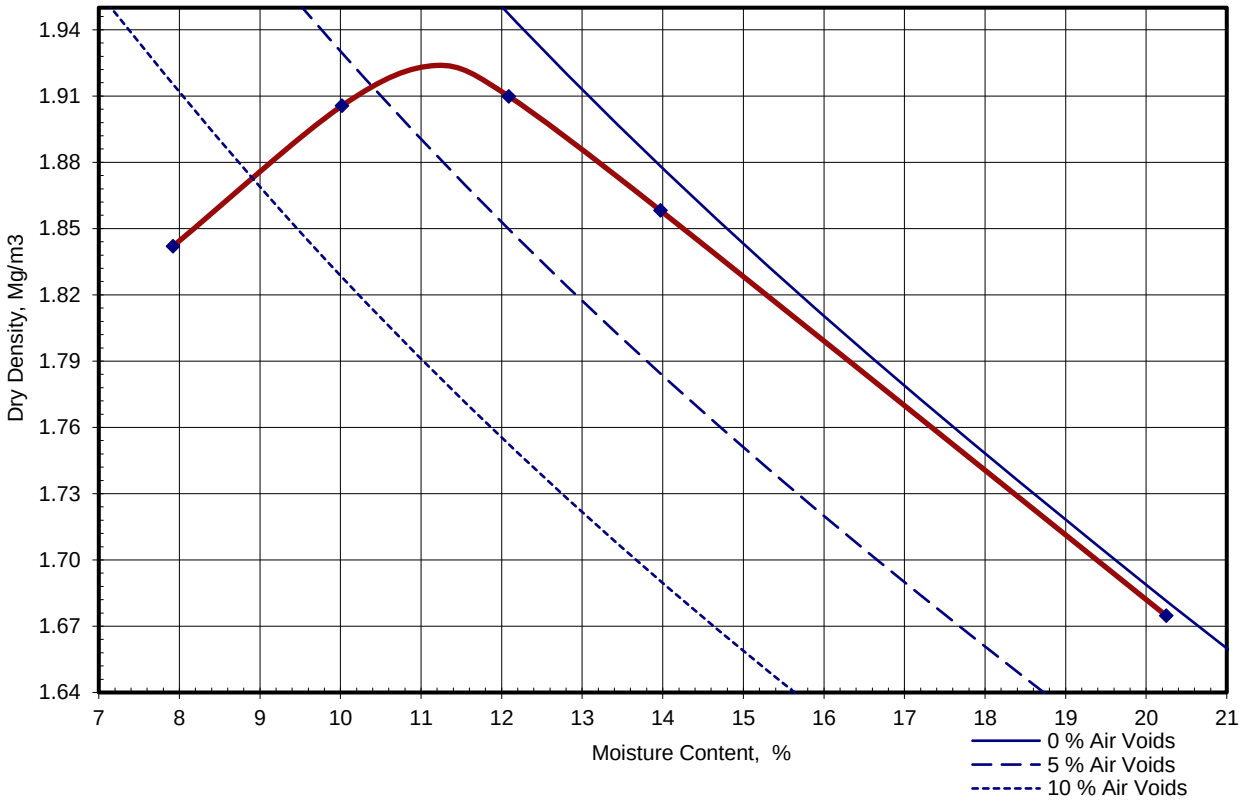
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC10	1.00 - 1.20	B	1	20.3	Firm brown and grey CLAY and dark brownish grey gravelly silty SAND pockets with occasional brick and cinder fragments. Gravel is white and black flint.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	2.5 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	3.9 %	Single or Separate Samples	Single
Grading Zone	4	Particle Density (Assumed)	2.55
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**1.92 Mg/m³**	**Optimum Water Content**	**11 %**



Method of Preparation: BS1377: Part 1: 2016: 8.6

Method of Test: BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3

Type of Sample Key: U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

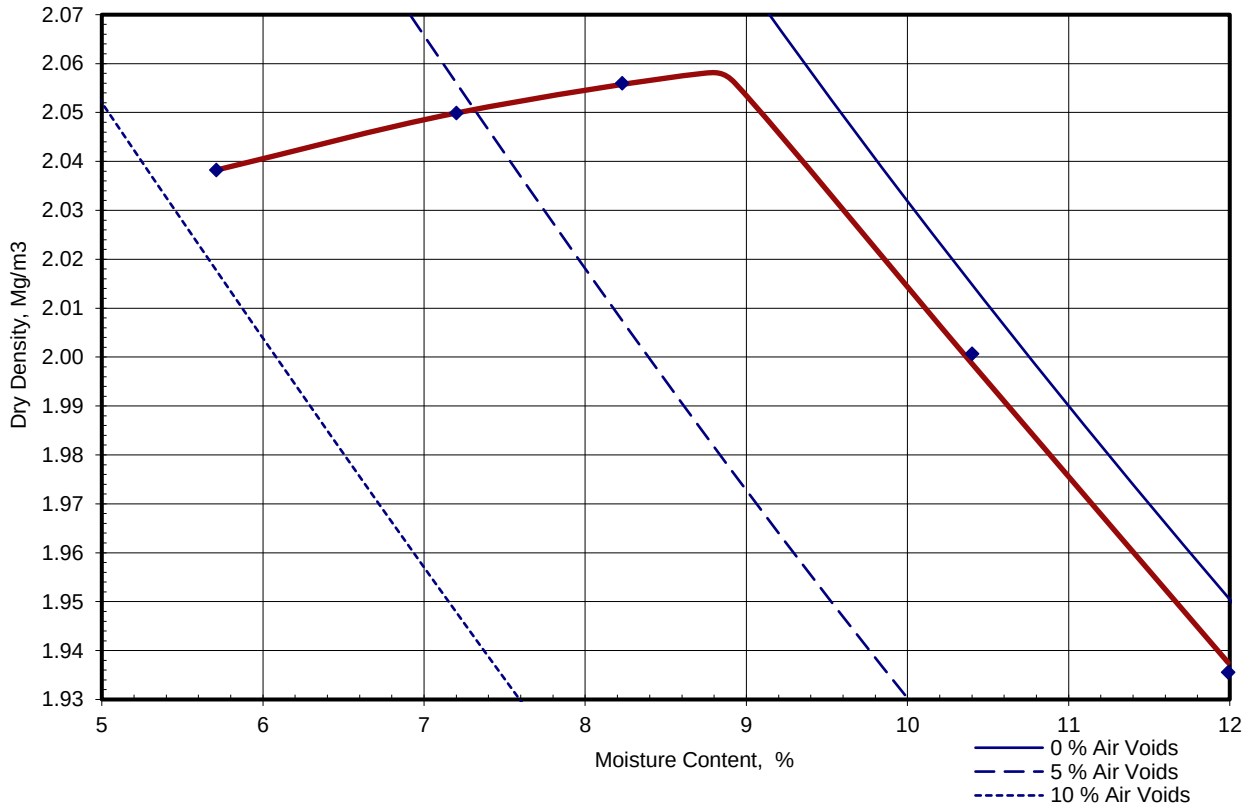
0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF DRY DENSITY / WATER CONTENT RELATIONSHIP

Borehole/ Pit No.	Depth (m)	Sample Type	Sample Reference	Water Content (%)	Description	Remarks
BHC20	0.50 - 0.70	B	1	5.7	Orangish brown very gravelly silty SAND. Gravel is brown, black and white angular to rounded flint.	Water content is on material passing 37.5mm sieve.

Percentage Retained 37.5mm	5.4 %	Maximum Size of Cohesive Lumps	20 mm
Percentage Retained 20.0mm	11 %	Single or Separate Samples	Single
Grading Zone	5	Particle Density (Assumed)	2.55
Mould Type	CBR	Method of Compaction	BS 2.5kg rammer Method (BS1377 Part 4: 1990: 3.4)
Maximum Dry Density	**2.06 Mg/m³**	**Optimum Water Content**	**8.7 %**



Method of Preparation:	BS1377: Part 1: 2016: 8.6
Method of Test:	BS1377: Part 2: 1990: 3.2 & Part 4: 1990: 3
Type of Sample Key:	U= Undisturbed, B = Bulk, D - Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Material retained on 37.5mm sieve excluded from test and replaced with material passing 37.5mm and retained 20mm sieve.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within the original sample, Oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC01	0.20 - 0.50	B	1	Yellowish brown very gravelly slightly silty SAND with rare concrete fragments. Gravel is brown, black and white angular to rounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		4.0	%
Intitial Specimen Details:	Bulk Density	1.85	Mg/m³
	Dry Density	1.69	Mg/m³

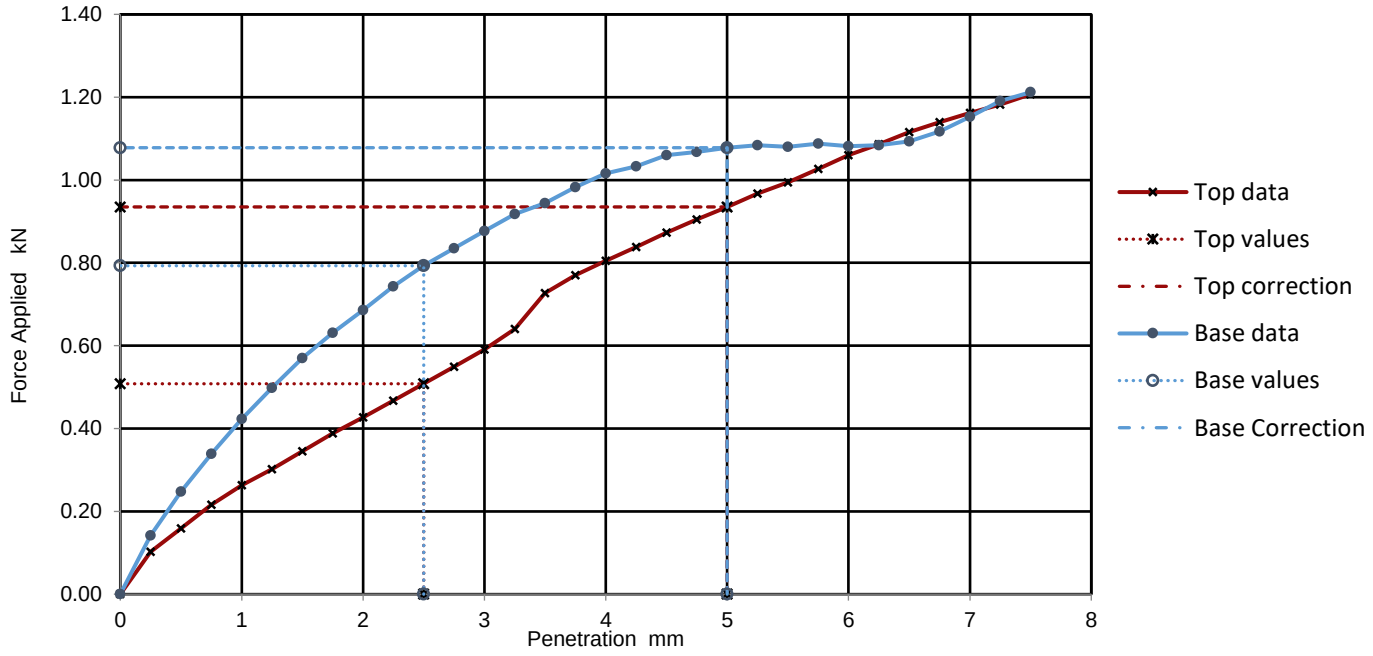
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	1	mins
Amount of Swell Recorded	-0.146	mm
Initial Water Content	9.5	%

Surcharge Applied	18	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	3.8	4.7	4.7		15.9
BASE	No	6.0	5.4	6.0		15.4

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

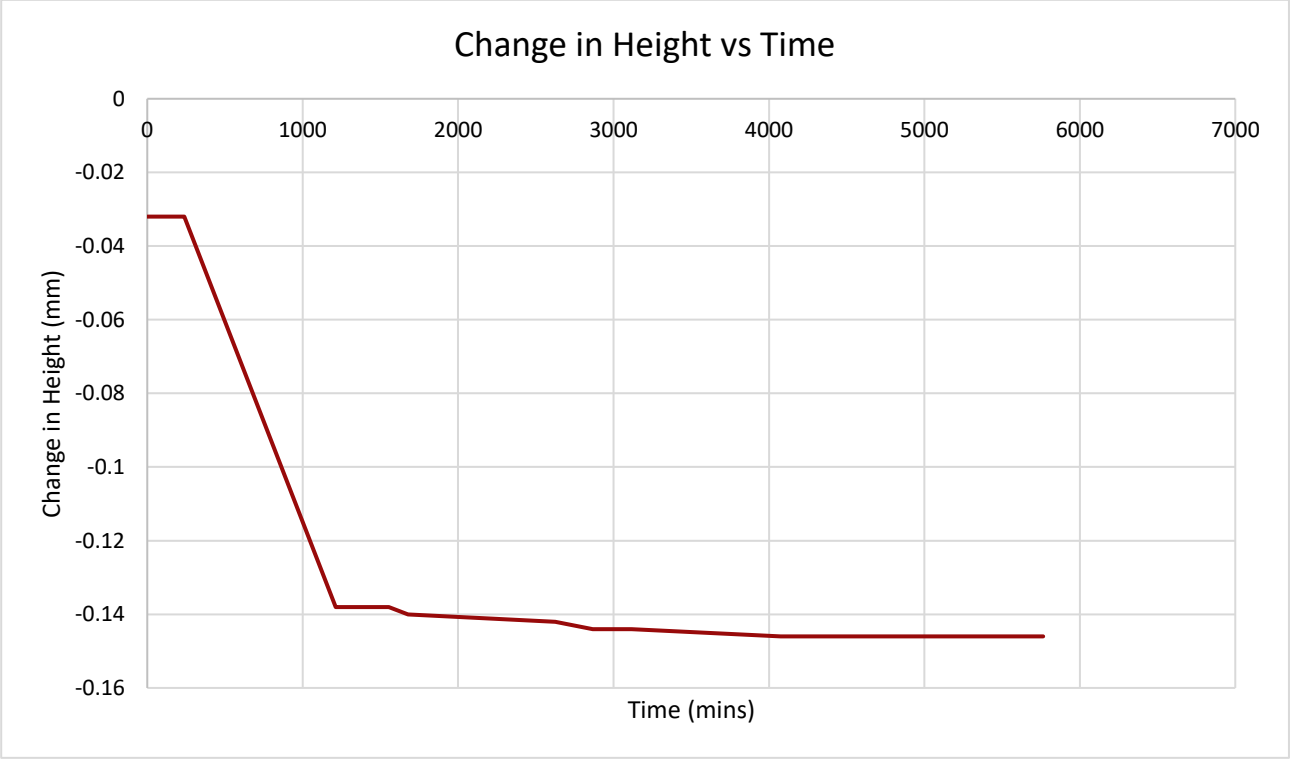
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC01	0.20 - 0.50	B	1	Yellowish brown very gravelly slightly silty SAND with rare concrete fragments. Gravel is brown, black and white angular to rounded flint.	

After Soaking

Water Contents	Top (%)	15.9	Bulk Density	1.95	Dry Density	1.69
	Bottom (%)	15.4				

Surcharge Weights	(kg)	18	**Total Change in Height**	**(mm)**	**-0.146**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC09	0.30 - 0.50	B	1	Very sandy silty CONCRETE fragments with occasional brick, brown, black and white angular to subrounded flint gravel, and rare metal fragments. Sand is dark brown.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		7.2	%
Intitial Specimen Details:	Bulk Density	2.02	Mg/m³
	Dry Density	1.82	Mg/m³

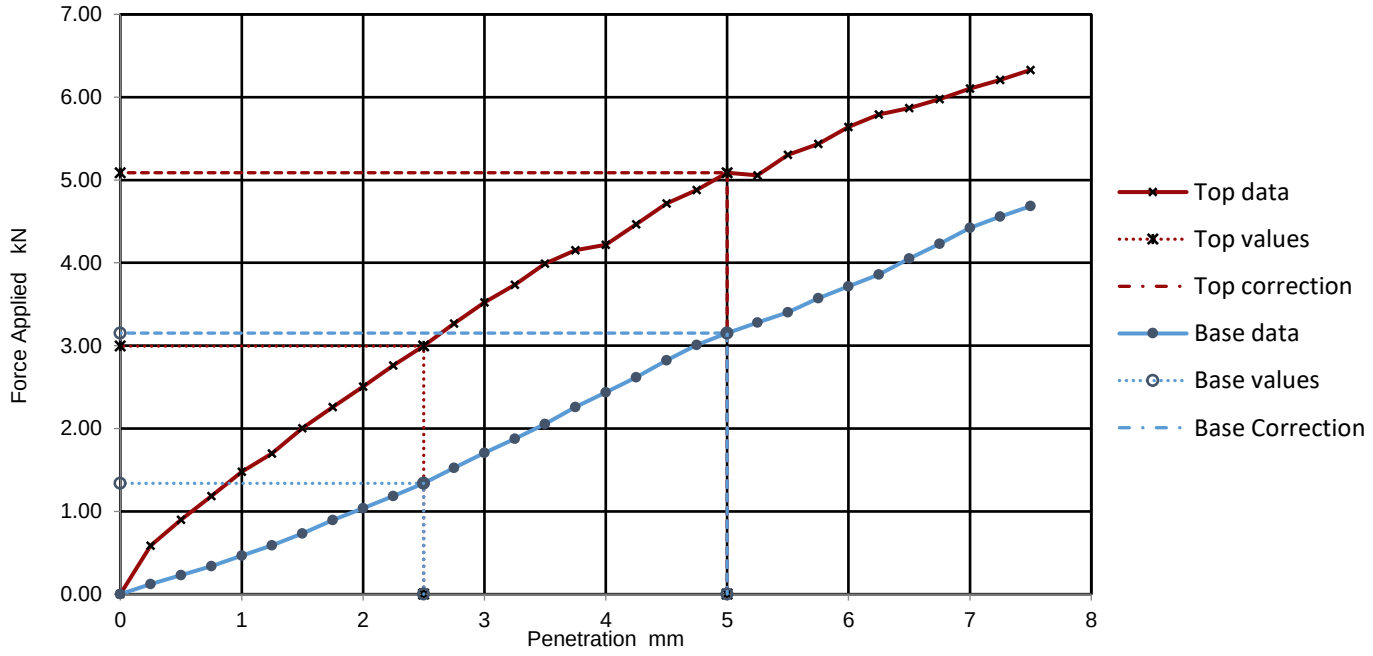
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	1	mins
Amount of Swell Recorded	-0.104	mm
Initial Water Content	11.1	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	23	25	25		12.3
BASE	No	10	16	16		12.5

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

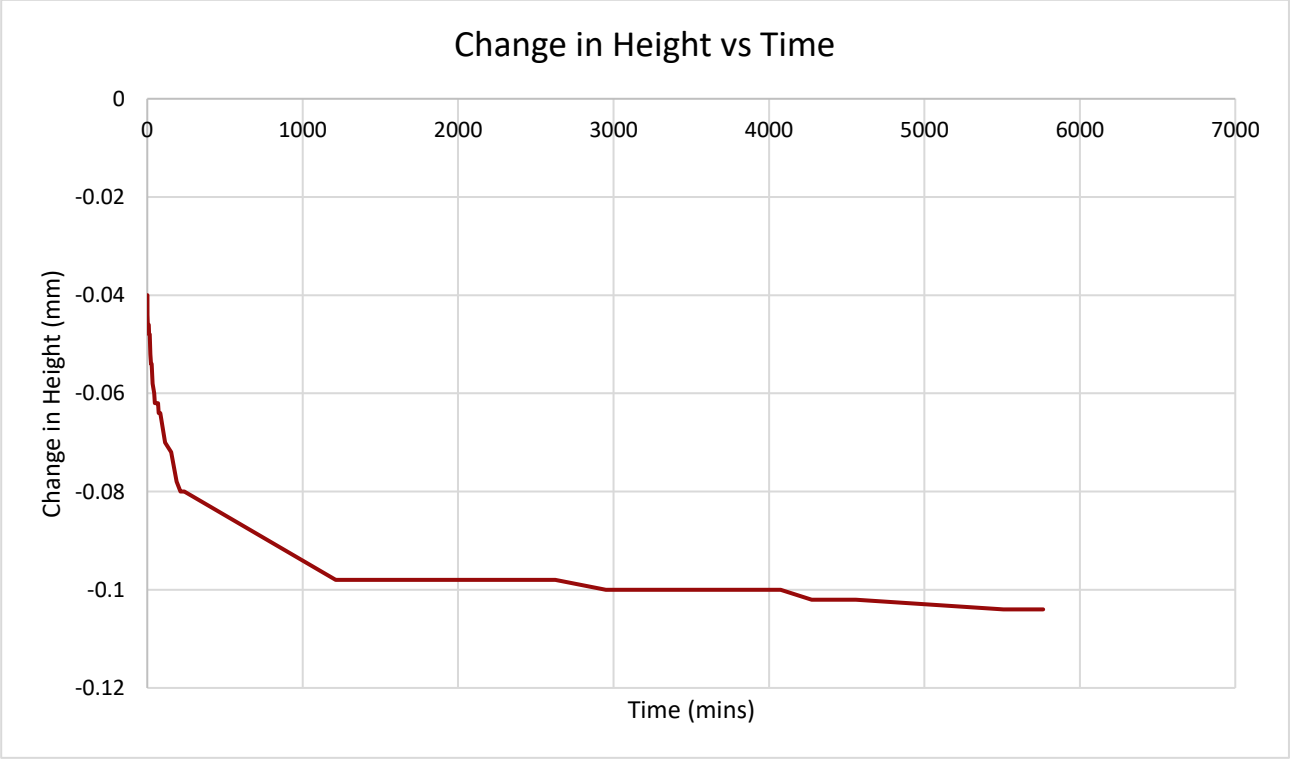
Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC09	0.30 - 0.50	B	1	MADE GROUND comprising crushed CONCRETE fragments with occasional brick, brown, black and white angular to subrounded flint gravel, dark brown silty sand and rare metal fragments.	

After Soaking

Water Contents	Top	(%)	12.3	Bulk Density	2.05	Dry Density	1.82
	Bottom	(%)	12.5				

Surcharge Weights	(kg)	4.5

Total Change in Height	**(mm)**	**-0.104**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC10	1.00 - 1.20	B	1	Firm brown and grey CLAY and dark brownish grey gravelly silty SAND pockets with occasional brick and cinder fragments. Gravel is white and black flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		3.9	%
Initial Specimen Details:	Bulk Density	1.93	Mg/m³
	Dry Density	1.73	Mg/m³

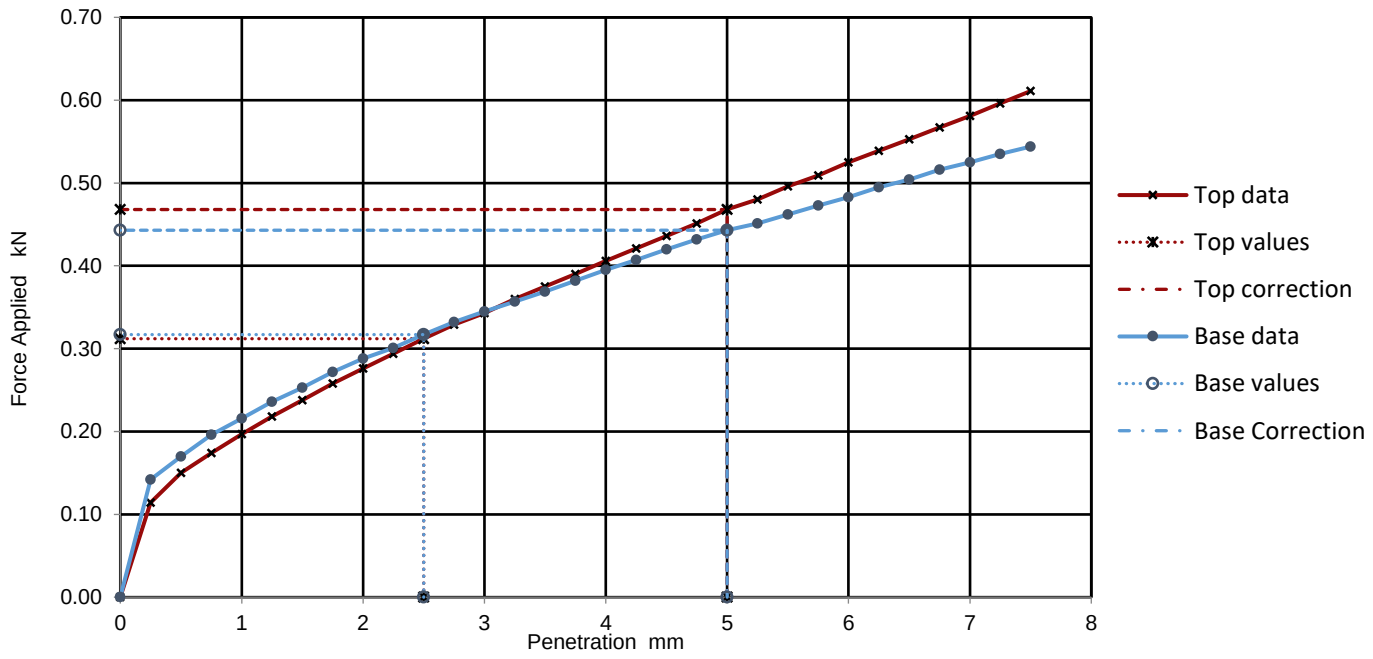
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	43	mins
Amount of Swell Recorded	1.186	mm
Initial Water Content	11.4	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	2.4	2.3	2.4	2.4	16.5
BASE	No	2.4	2.2	2.4		15.8

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

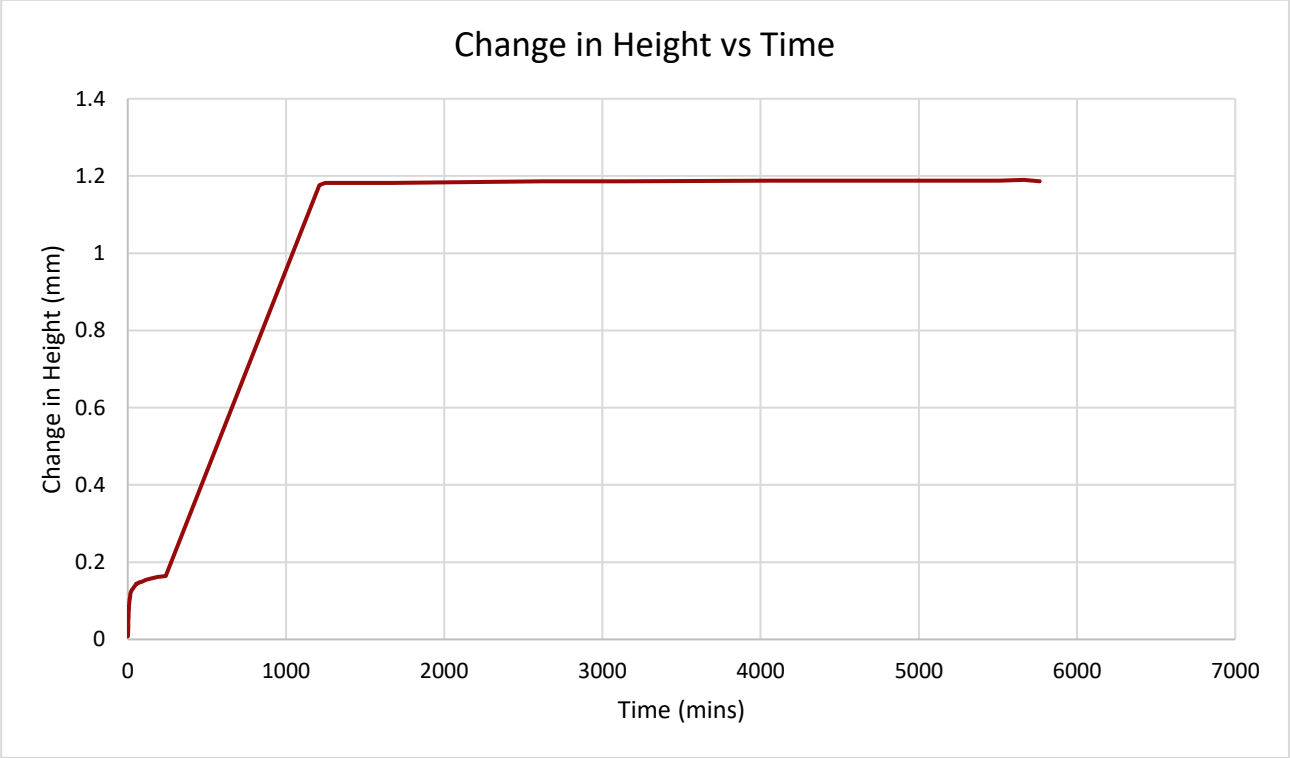
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC10	1.00 - 1.20	B	1	Firm brown and grey CLAY and dark brownish grey gravelly silty SAND pockets with occasional brick and cinder fragments. Gravel is white and black flint.	

After Soaking

Water Contents	Top (%)	16.5	Bulk Density	1.99	Dry Density	1.71
	Bottom (%)	15.8				

Surcharge Weights	(kg)	4.5	**Total Change in Height**	**(mm)**	**1.186**



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
BHC20	0.50 - 0.70	B	1	Orangish brown very gravelly silty SAND. Gravel is brown, black and white angular to rounded flint.	

Specimen Preparation

Condition	Remoulded
Details	Static compression in 3 layers to 90% of Maximum Dry Density

Material Retained on 20mm Sieve Removed		11	%
Initial Specimen Details:	Bulk Density	2.01	Mg/m³
	Dry Density	1.85	Mg/m³

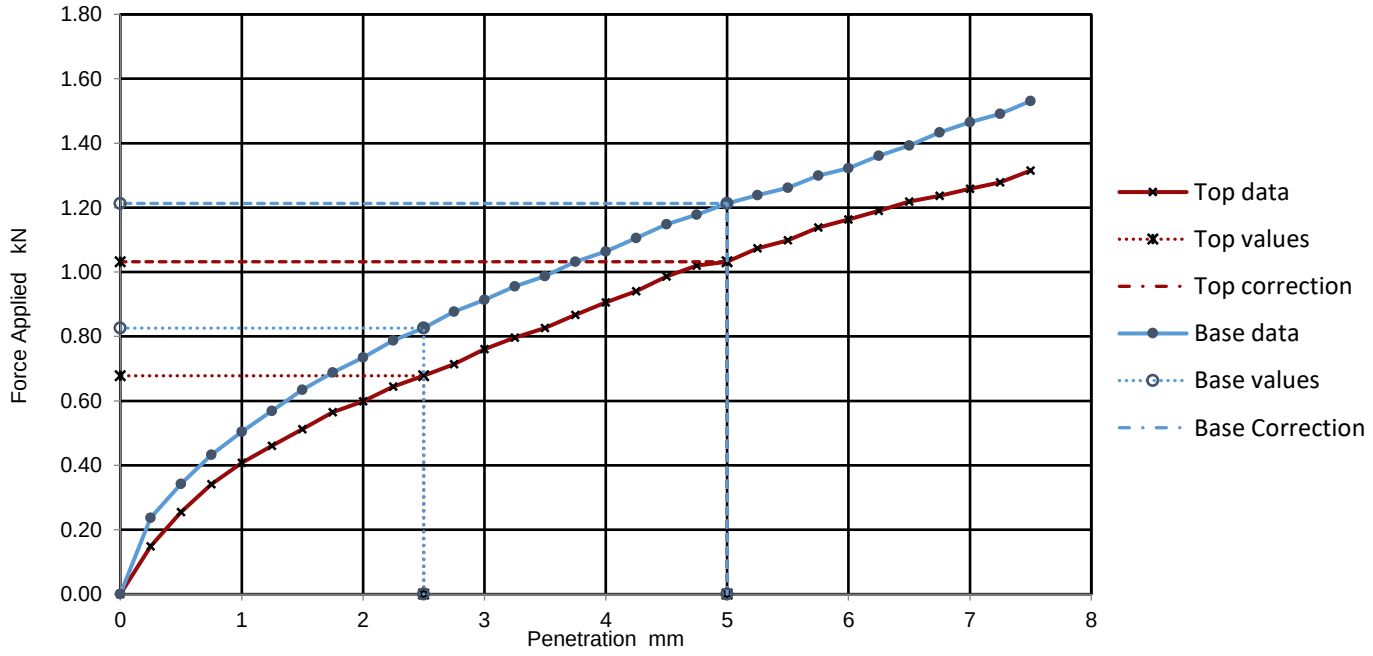
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	15	mins
Amount of Swell Recorded	0.022	mm
Initial Water Content	8.6	%

Surcharge Applied	4.5	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	5.1	5.2	5.2	5.8	11.6
BASE	No	6.3	6.1	6.3		12.1

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 31/08/2018

0998

Contract	**Lake Lothing, Lowestoft**
Serial No.	**S31644-11**

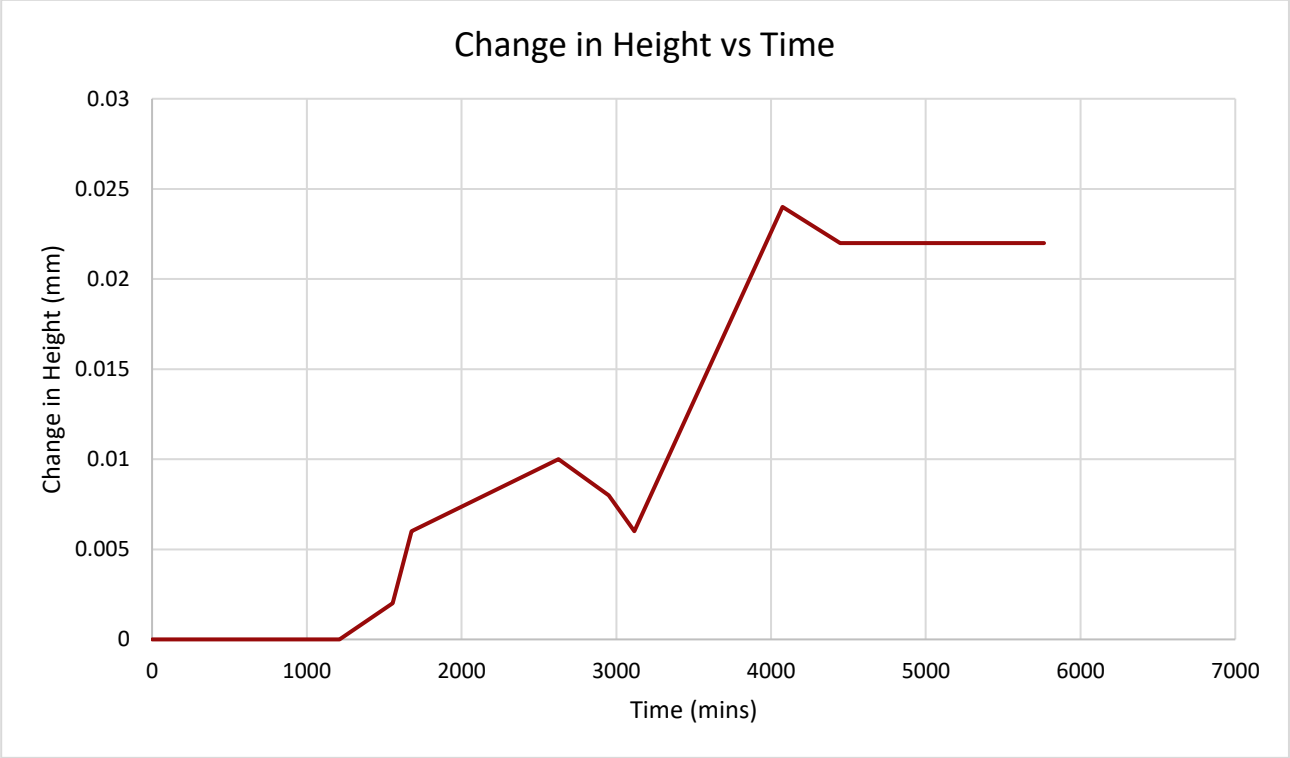
DETERMINATION OF CHANGE IN HEIGHT DURING SOAKING

Borehole /Tp No.	Depth (m)	Type	Reference	Description	Remarks
BHC20	0.50 - 0.70	B	1	Orangish brown very gravelly silty SAND. Gravel is brown, black and white angular to rounded flint.	

After Soaking

Water Contents	Top	(%)	11.6	Bulk Density	2.07	Dry Density	1.85
	Bottom	(%)	12.1				

Surcharge Weights	(kg)	4.5	
Total Change in Height	**(mm)**	**0.022**	



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.3.3, 7.3
Method of Test:	BS 1377: Part 4: 1990: 7
Type of Sample Key:	U = Undisturbed, B= Bulk, D = Disturbed, J= Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of specimen within original sample, oven drying temperature if not 105-110°C

APPENDIX 15 – GROUND GAS MONITORING DATA

GROUND GAS AND GROUNDWATER MONITORING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

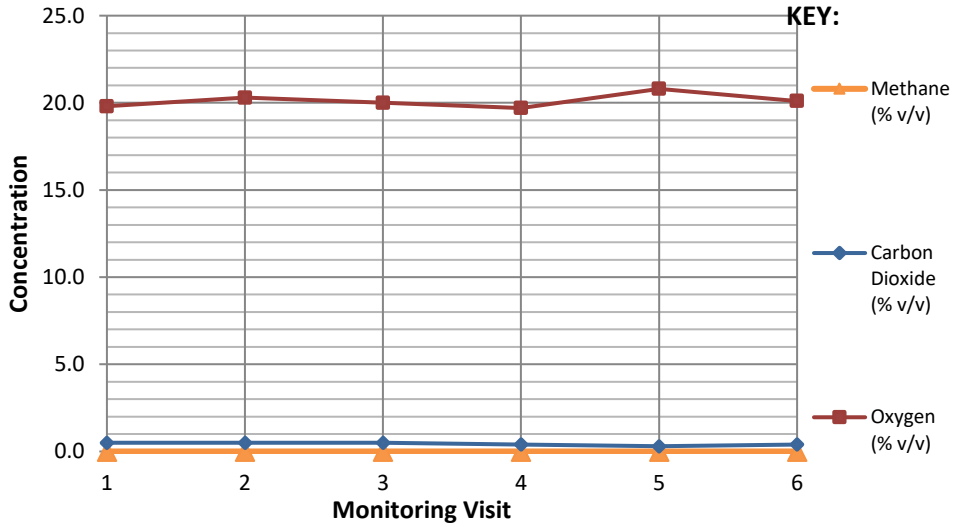
Exploratory Hole Location **BHC01** **Date of Installation** 20/04/2018

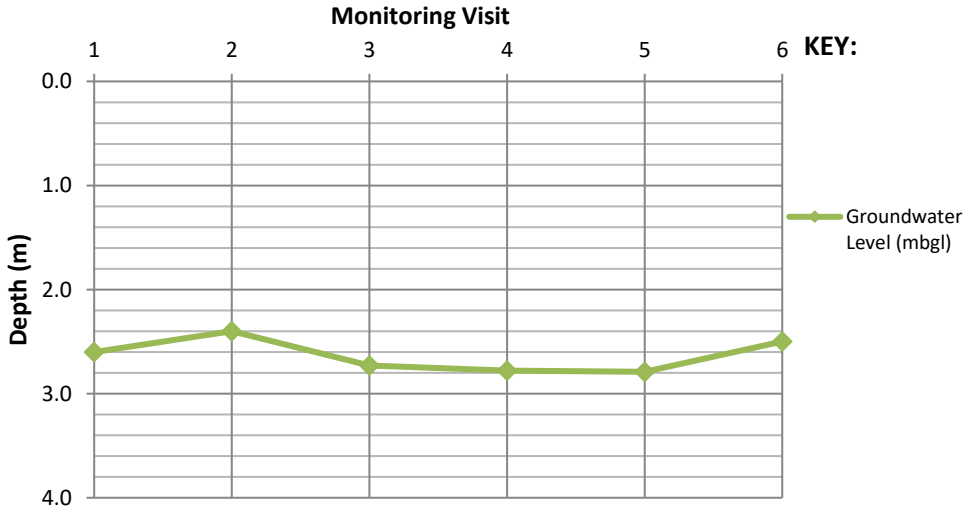
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1006	<0.1	<2	0.5	19.8	<0.1	nm	nm	4	2.60	Hot, sunny, dry, breezy	
2nd visit	23/05/2018	1002	<0.1	<2	0.5	20.3	+0.9	nm	nm	1	2.40	Hot, sunny, dry, windy	
3rd visit	12/06/2018	1017	<0.1	<2	0.5	20.0	-0.2	nm	nm	2	2.73	Warm, overcast, damp, breezy	
4th visit	25/06/2018	1027	<0.1	<2	0.4	19.7	0.2	nm	nm	21	2.78	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1021	<0.1	<2	0.3	20.8	0.8	nm	nm	1	2.79	Cool, cloudy, dry, breezy	
6th visit	23/07/2018	1021	<0.1	<2	0.4	20.1	0.0	nm	nm	23	2.50	Hot, sunny, dry, calm	

Instruments Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

C:\Egnyte\Shared\GeoCloud\Reports\2543,GI, Lake Lothing, Lowestoft, SCC,23-6-17\GEL Report\Gas and Groundwater Monitoring\Ground Gas\2543,GI_Gas Monitoring

GROUND GAS AND GROUNDWATER MONITORING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

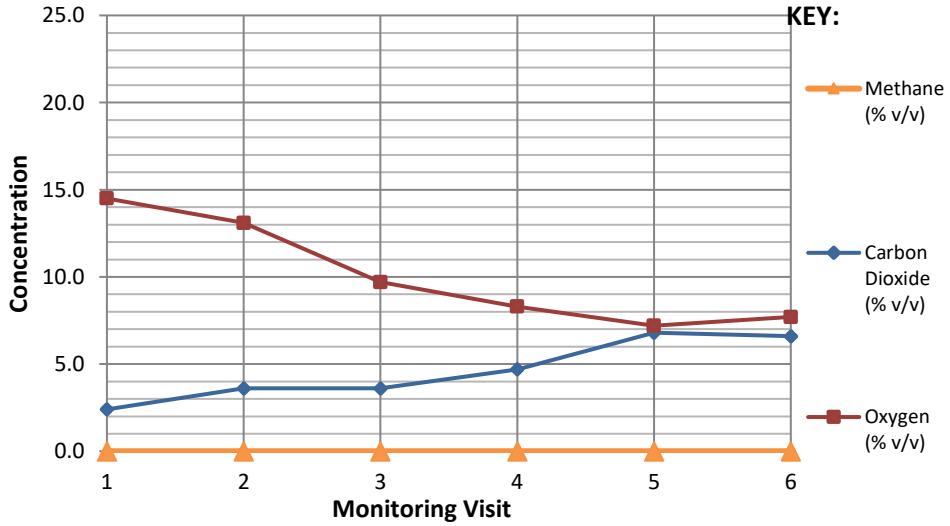
Exploratory Hole Location **BHC02** **Date of Installation** 17/08/2017

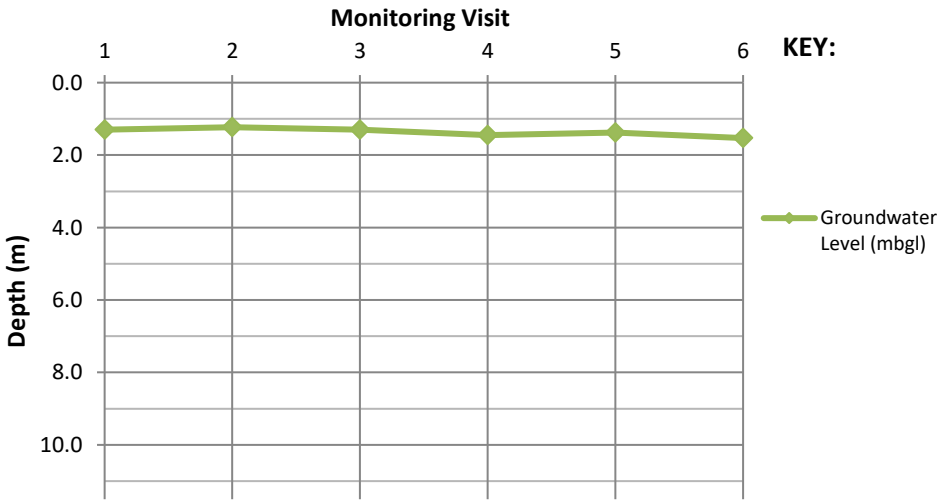
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1006	<0.1	<2	2.4	14.5	<0.1	nm	nm	<0.1	1.30	Hot, sunny, dry, breezy	
2nd visit	23/05/2018	1023	<0.1	<2	3.6	13.1	<0.1	nm	nm	<0.1	1.23	Hot, sunny, dry, windy	
3rd visit	11/06/2018	1014	<0.1	<2	3.6	9.7	-0.2	nm	nm	<0.1	1.30	Warm, overcast, damp, breezy	
4th visit	25/06/2018	1027	<0.1	<2	4.7	8.3	-0.3	nm	nm	<0.1	1.45	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1021	<0.1	<2	6.8	7.2	0.6	nm	nm	2	1.38	Cool, cloudy, dry, breezy	
6th visit	23/07/2018	1021	<0.1	<2	6.6	7.7	+0.1	nm	nm	<0.1	1.53	Hot, sunny, dry, calm	

Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

C:\Egnyte\Shared\GeoCloud\Reports\2543,GI, Lake Lothing, Lowestoft, SCC,23-6-17\GEL Report\Gas and Groundwater Monitoring\Ground Gas\2543,GI_Gas Monitoring

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

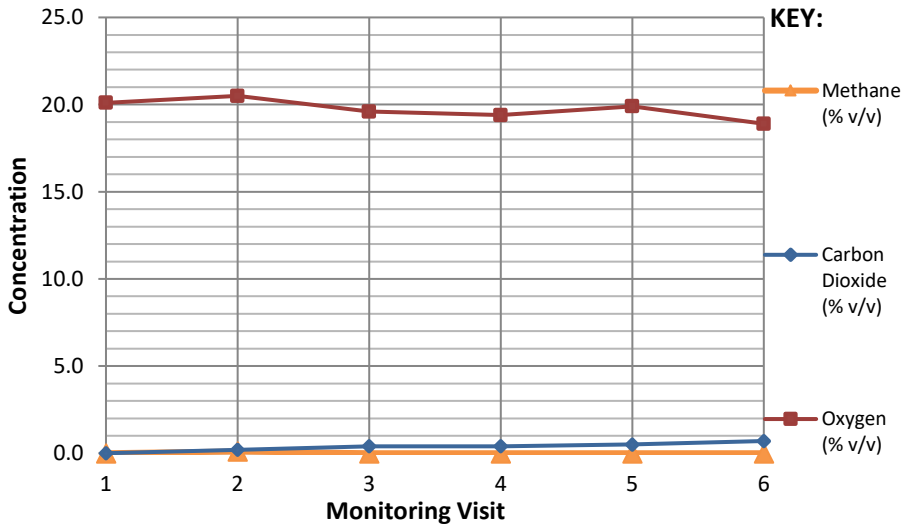
Exploratory Hole Location **BHC07** **Date of Installation** 27/03/2018

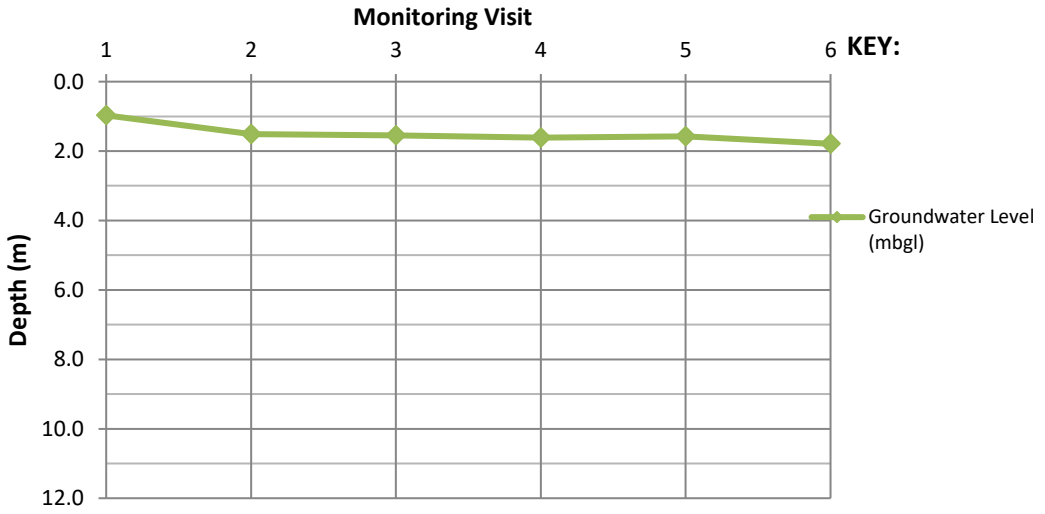
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1006	<0.1	<2	<0.1	20.1	<0.1	nm	nm	<0.1	0.97	Hot, sunny, dry, breezy	Peak flow +7.4 l/hr (at start)
2nd visit	23/05/2018	1023	0.1	1	0.2	20.5	+0.1	nm	nm	<0.1	1.51	Hot, sunny, dry, windy	Peak flow +1.5 l/hr (at start)
3rd visit	11/06/2018	1014	<0.1	<2	0.4	19.6	-2.3	nm	nm	<0.1	1.55	Warm, overcast, damp, breezy	Peak flow -8.0 l/hr (at start)
4th visit	25/06/2018	1027	<0.1	<2	0.4	19.4	-2.1	nm	nm	<0.1	1.61	Hot, sunny, dry, breezy	Peak flow -8.0 l/hr (at start)
5th visit	10/07/2018	1021	<0.1	<2	0.5	19.9	1.1	nm	nm	<0.1	1.58	Cool, cloudy, dry, breezy	Peak flow -3.0 l/hr (at start)
6th visit	23/07/2018	1021	<0.1	<2	0.7	18.9	<0.1	nm	nm	<0.1	1.79	Hot, sunny, dry, calm	Peak flow -5.7 l/hr (at start)

Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

GROUND GAS AND GROUNDWATER MONITORING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC08** **Date of Installation** 16/03/2018

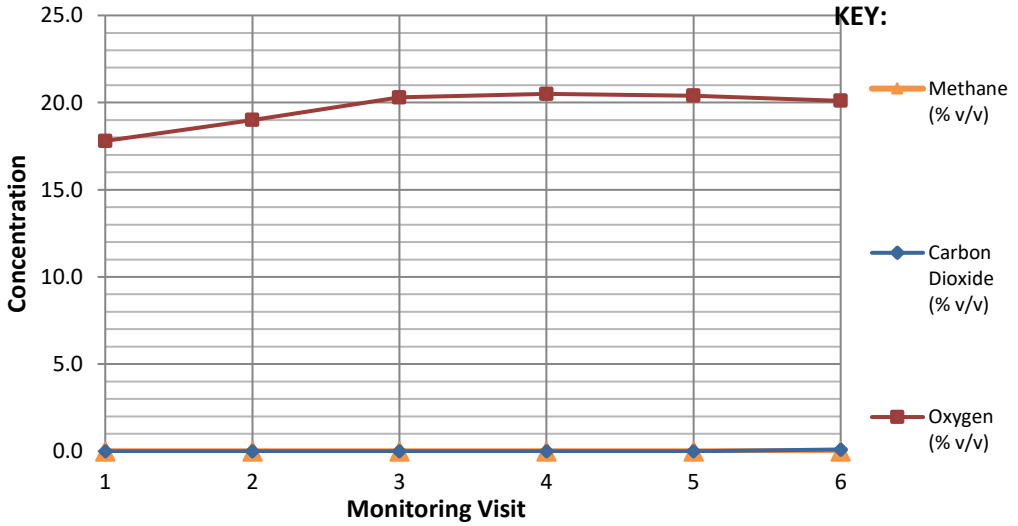
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1010	<0.1	<2	<0.1	17.8	<0.1	nm	nm	<0.1	1.69	Hot, sunny, dry, breezy	Peak flow -0.7 l/hr (at start)
2nd visit	24/05/2018	1021	<0.1	<2	<0.1	19.0	<0.1	nm	nm	<0.1	1.96	Hot, sunny, dry, windy	Peak flow +0.9 l/hr (at start)
3rd visit	12/06/2018	1017	<0.1	<2	<0.1	20.3	+0.7	nm	nm	7	1.86	Warm, overcast, damp, breezy	
4th visit	26/06/2018	1030	<0.1	<2	<0.1	20.5	+2.0	nm	nm	<0.1	1.95	Hot, sunny, dry, breezy	
5th visit	11/07/2018	1023	<0.1	<2	<0.1	20.4	+1.3	nm	nm	2	1.80	Warm, clear, dry, breezy	
6th visit	24/07/2018	1022	<0.1	<2	0.1	20.1	+0.3	nm	nm	1	1.84	Hot, sunny, dry, calm	Peak flow +5.9 l/hr (at start)

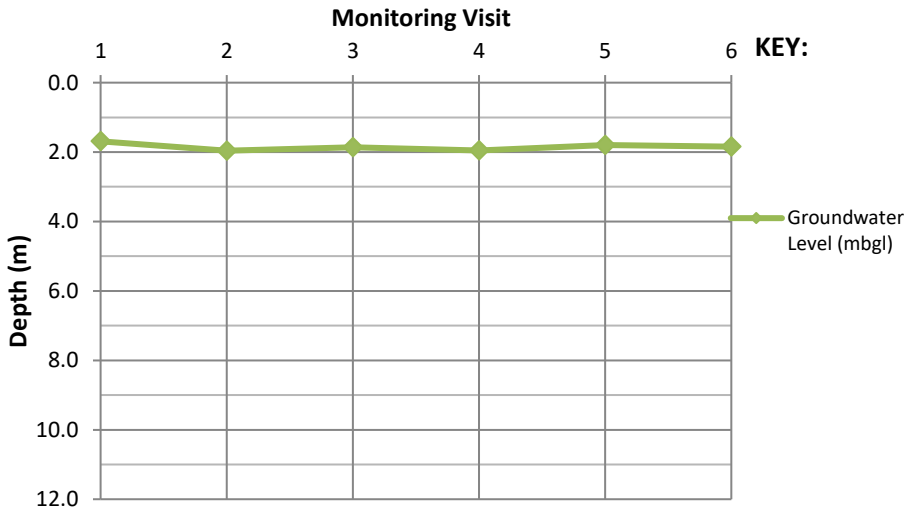
Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

C:\Egnyte\Shared\GeoCloud\Reports\2543,GI, Lake Lothing, Lowestoft, SCC,23-6-17\GEL Report\Gas and Groundwater Monitoring\Ground Gas\2543,GI_Gas Monitoring

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

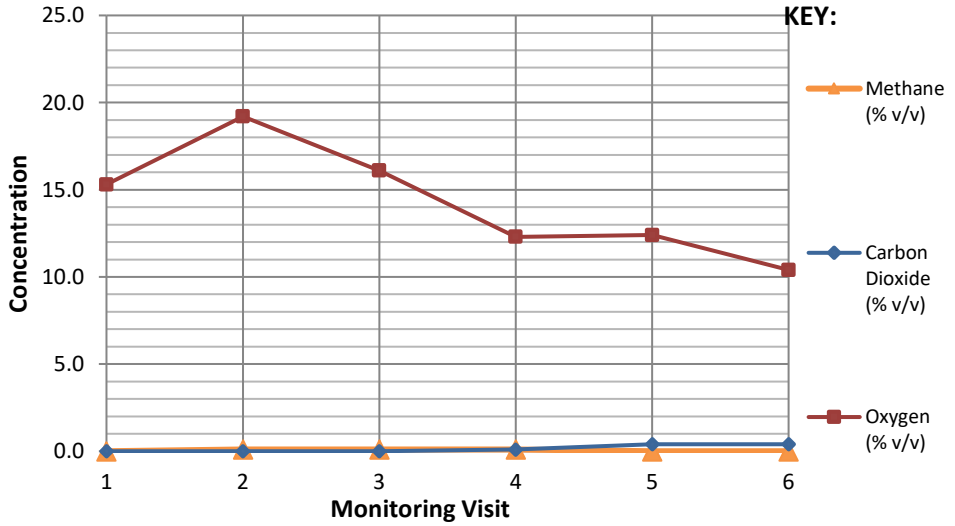
Exploratory Hole Location **BHC09** **Date of Installation** 23/04/2018

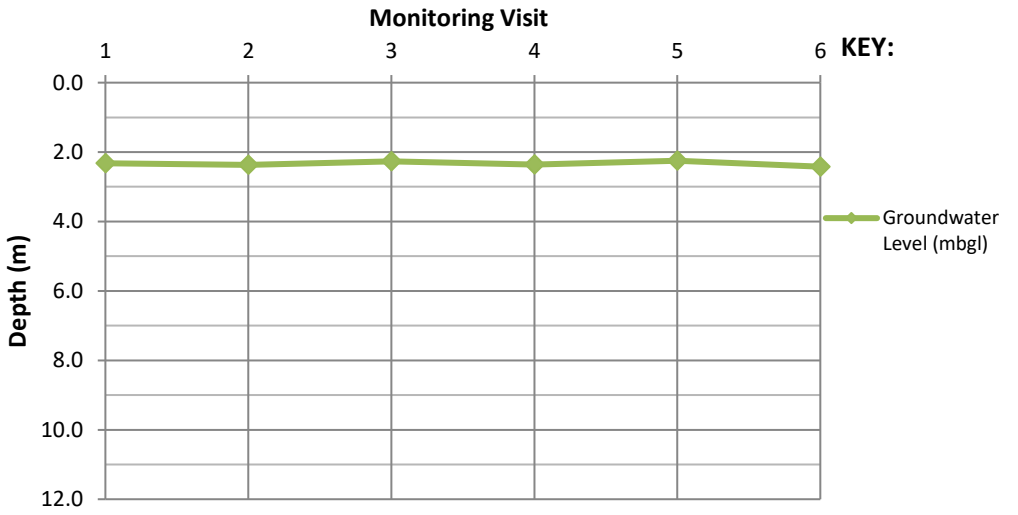
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1012	<0.1	<2	<0.1	15.3	-0.3	nm	nm	1	2.32	Hot, sunny, dry, breezy	
2nd visit	24/05/2018	1021	0.1	1	<0.1	19.2	<0.1	nm	nm	<0.1	2.37	Hot, sunny, dry, windy	
3rd visit	12/06/2018	1017	0.1	1	<0.1	16.1	+0.3	nm	nm	4	2.27	Warm, overcast, damp, breezy	
4th visit	26/06/2018	1030	0.1	<2	0.1	12.3	+0.4	nm	nm	1	2.36	Hot, sunny, dry, breezy	
5th visit	11/07/2018	1023	<0.1	<2	0.4	12.4	+1.1	nm	nm	2	2.25	Cool, cloudy, dry, breezy	
6th visit	24/07/2018	1022	<0.1	<2	0.4	10.4	-1.1	nm	nm	0	2.42	Hot, sunny, dry, calm	Peak flow +1.5 l /hr (at start)

Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

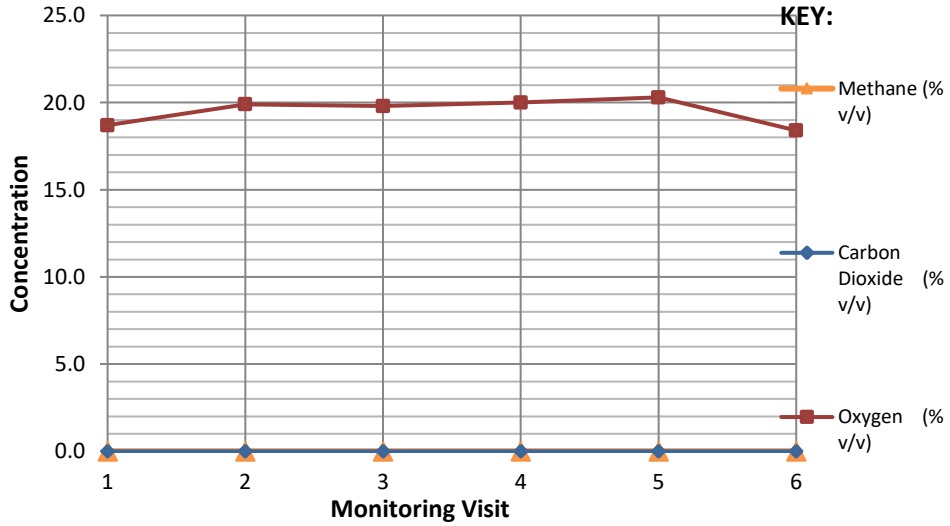
Exploratory Hole Location **BHC14** **Date of Installation** 12/01/2018

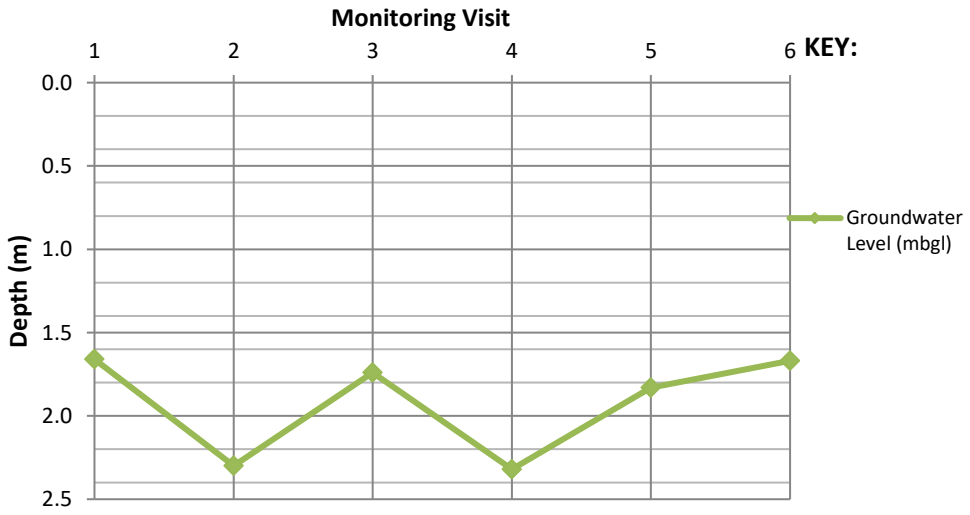
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1007	<0.1	<2	<0.1	18.7	-0.3	nm	nm	3	1.66	Hot, sunny, dry, breezy	
2nd visit	23/05/2018	1023	<0.1	<2	<0.1	19.9	<0.1	nm	nm	<0.1	2.30	Hot, sunny, dry, windy	
3rd visit	12/06/2018	1017	<0.1	<2	<0.1	19.8	<0.1	nm	nm	4	1.74	Warm, overcast, damp, breezy	
4th visit	26/06/2018	1030	<0.1	<2	<0.1	20.0	<0.1	nm	nm	<0.1	2.32	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1023	<0.1	<2	<0.1	20.3	+0.5	nm	nm	2	1.83	Cool, cloudy, dry, breezy	
6th visit	23/07/2018	1022	<0.1	<2	<0.1	18.4	+0.1	nm	nm	0	1.67	Hot, sunny, dry, calm	

Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

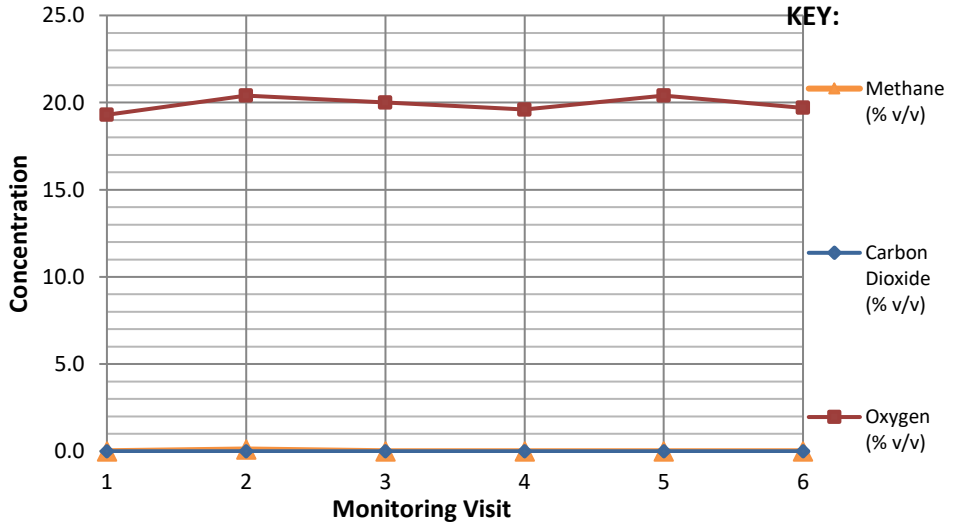
Exploratory Hole Location **BHC24 (P)** **Date of Installation** 23/02/2018

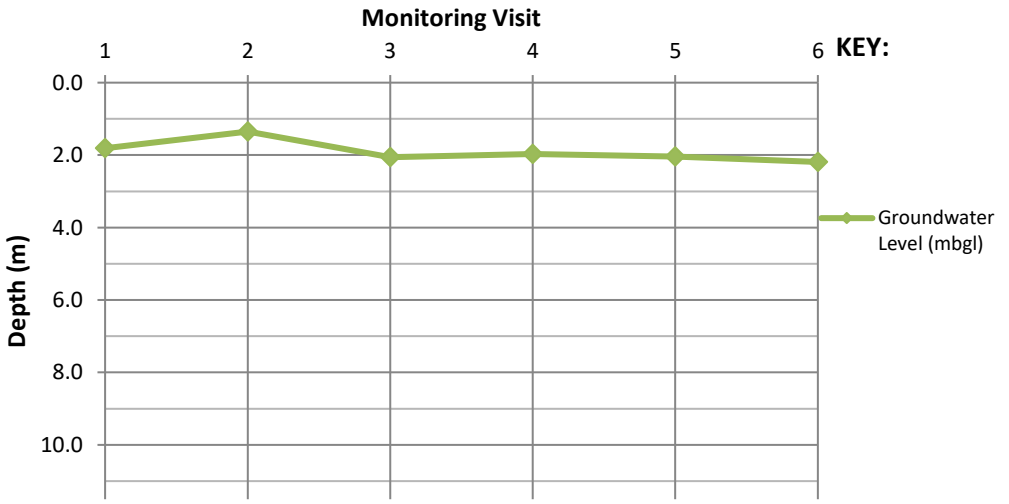
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1007	<0.1	<2	<0.1	19.3	<0.1	nm	nm	<0.1	1.81	Hot, sunny, dry, breezy	Peak flow +50.4 l/hr (at start)
2nd visit	24/05/2018	1025	0.1	1	<0.1	20.4	+0.3	nm	nm	<0.1	1.35	Hot, sunny, dry, windy	Peak flow +22.8 l/hr (at start)
3rd visit	12/06/2018	1017	<0.1	<2	<0.1	20.0	-0.2	nm	nm	5	2.06	Warm, overcast, damp, breezy	
4th visit	25/06/2018	1027	<0.1	<2	<0.1	19.6	+0.1	nm	nm	<0.1	1.97	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1022	<0.1	<2	<0.1	20.4	+0.8	nm	nm	2	2.04	Cool, cloudy, dry, breezy	
6th visit	23/07/2018	1022	<0.1	<2	<0.1	19.7	+0.5	nm	nm	0	2.19	Hot, sunny, dry, calm	

Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

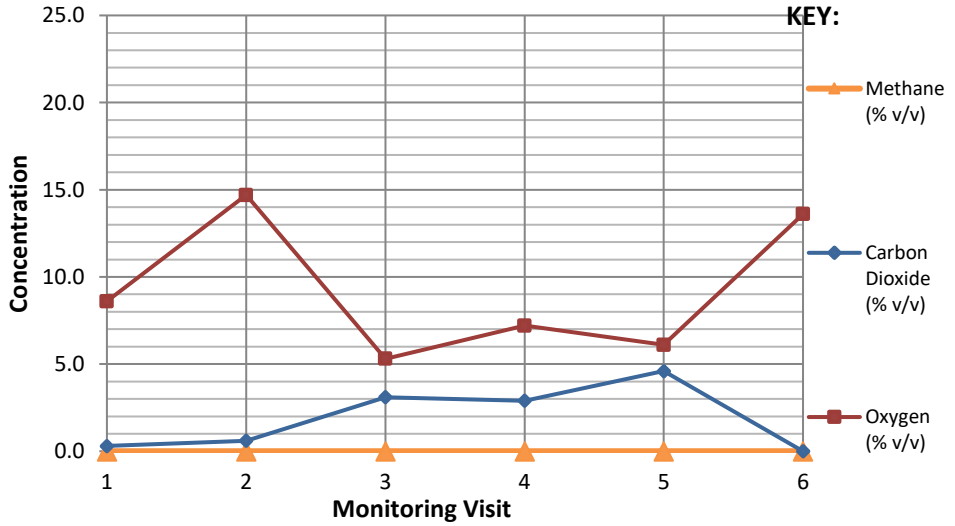
Exploratory Hole Location **BHC24 (GG)** **Date of Installation** 23/02/2018

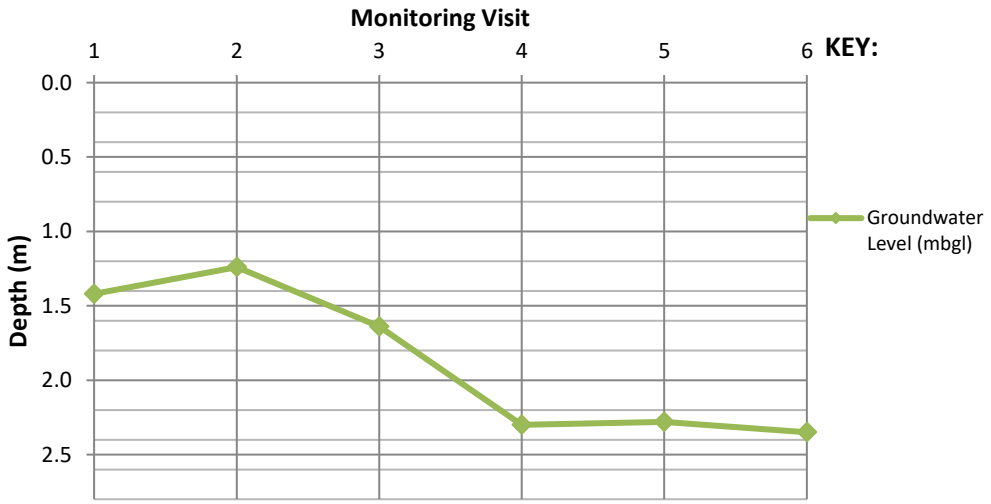
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1007	<0.1	<2	0.3	8.6	<0.1	nm	nm	<0.1	1.42	Hot, sunny, dry, breezy	Peak flow -0.3 l/hr
2nd visit	24/05/2018	1025	<0.1	<2	0.6	14.7	<0.1	nm	nm	<0.1	1.24	Hot, sunny, dry, windy	
3rd visit	12/06/2018	1017	<0.1	<2	3.1	5.3	-0.4	nm	nm	3	1.64	Warm, overcast, damp, breezy	
4th visit	25/06/2018	1027	<0.1	<2	2.9	7.2	0.0	nm	nm	<0.1	2.30	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1022	<0.1	<2	4.6	6.1	+0.8	nm	nm	4	2.28	Cool, cloudy, dry, breezy	
6th visit	23/07/2018	1022	<0.1	<2	<0.1	13.6	0.0	nm	nm	0	2.35	Hot, sunny, dry, calm	

Instrument Used: GA2000 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable
nm Not measured





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC27** **Date of Installation** 15/01/2018

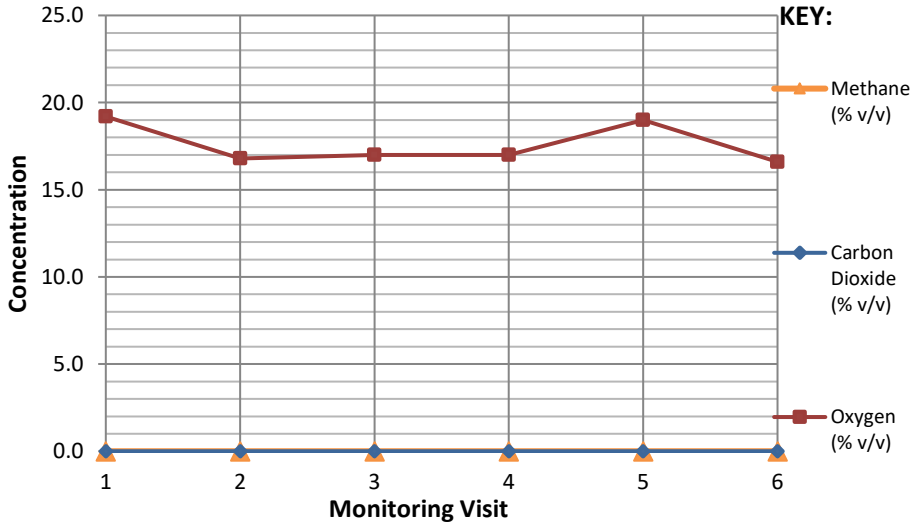
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1016	<0.1	<2	<0.1	19.2	-0.1	nm	nm	<0.1	1.92	Hot, sunny, dry, breezy	
2nd visit	23/05/2018	1023	<0.1	<2	<0.1	16.8	-0.9	nm	nm	<0.1	2.10	Hot, sunny, dry, windy	Peak flow -1.6l/hr (at start)
3rd visit	12/06/2018	1017	<0.1	<2	<0.1	17.0	+0.3	nm	nm	2	2.08	Warm, overcast, damp, breezy	
4th visit	25/06/2018	1027	<0.1	<2	<0.1	17.0	1.2	nm	nm	3	2.13	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1021	<0.1	<2	<0.1	19.0	+0.6	nm	nm	1	2.20	Cool, cloudy, dry, breezy	Peak flow +3.8l/hr (at start)
6th visit	23/07/2018	1022	<0.1	<2	<0.1	16.6	-1.0	nm	nm	0	2.24	Hot, sunny, dry, calm	Peak flow +2.5l/hr (at start)

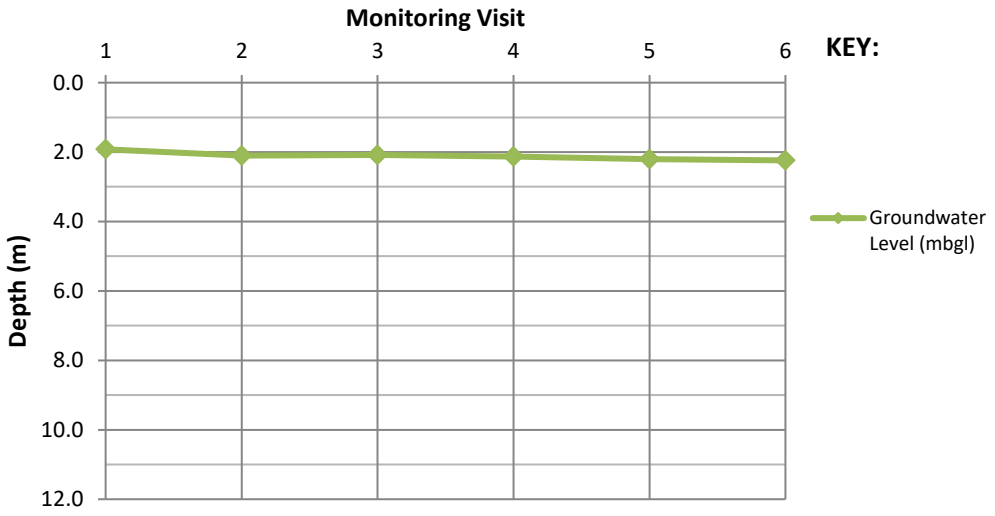
Instrument Used: GA2000 gas analyser / PID MultiRAE lite

NOTE: **n/a** Not applicable

nm Not measured

REMARKS:





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

GROUND GAS AND GROUNDWATER MONITORING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC102** **Date of Installation** 11/12/2018

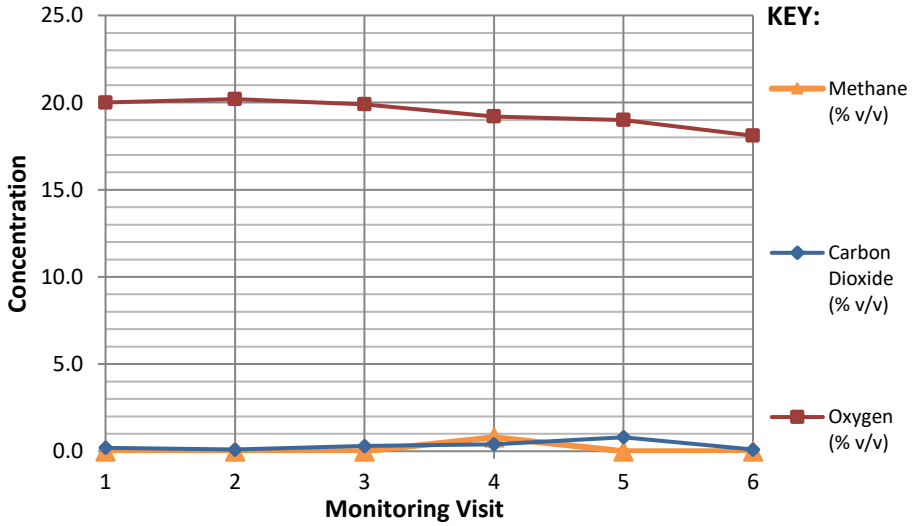
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	09/05/2018	1007	<0.1	<2	0.2	20.0	<0.1	nm	nm	<0.1	4.02	Hot, sunny, dry, breezy	
2nd visit	23/05/2018	1023	<0.1	<2	0.1	20.2	<0.1	nm	nm	<0.1	4.14	Hot, sunny, dry, windy	
3rd visit	11/06/2018	1017	<0.1	<2	0.3	19.9	-2.4	nm	nm	<0.1	2.09	Warm, overcast, damp, breezy	Peak flow -5.6 l/hr (at start)
4th visit	25/06/2018	1027	0.8		0.4	19.2	-0.6	nm	nm	3	2.12	Hot, sunny, dry, breezy	
5th visit	10/07/2018	1021	<0.1	<2	0.8	19.0	+0.3	nm	nm	4	2.19	Cool, cloudy, dry, breezy	
6th visit	23/07/2018	1022	<0.1	<2	0.1	18.1	<0.1	nm	nm	1	2.24	Hot, sunny, dry, calm	

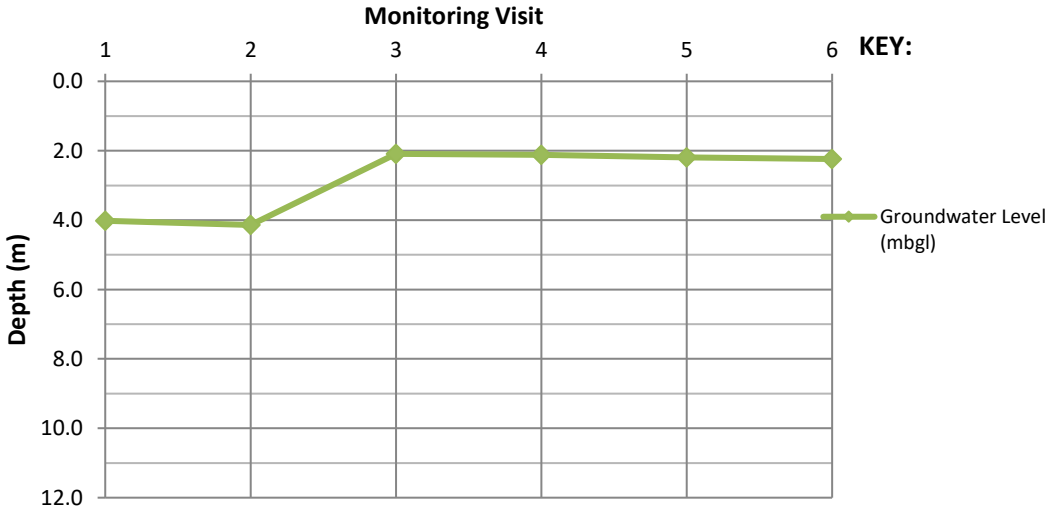
Instrument Used: GA2000 gas analyser / PID MultiRAE lite

NOTE: **n/a** Not applicable

nm Not measured

REMARKS:





SITE
Lake Lothing, Lowestoft, Suffolk

REPORT
2543,GI

DATE
May - July 2018

C:\Egnyte\Shared\GeoCloud\Reports\2543,GI, Lake Lothing, Lowestoft, SCC,23-6-17\GEL Report\Gas and Groundwater Monitoring\Ground Gas\2543,GI_Gas Monitoring

APPENDIX 16 – GROUNDWATER MONITORING DATA

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

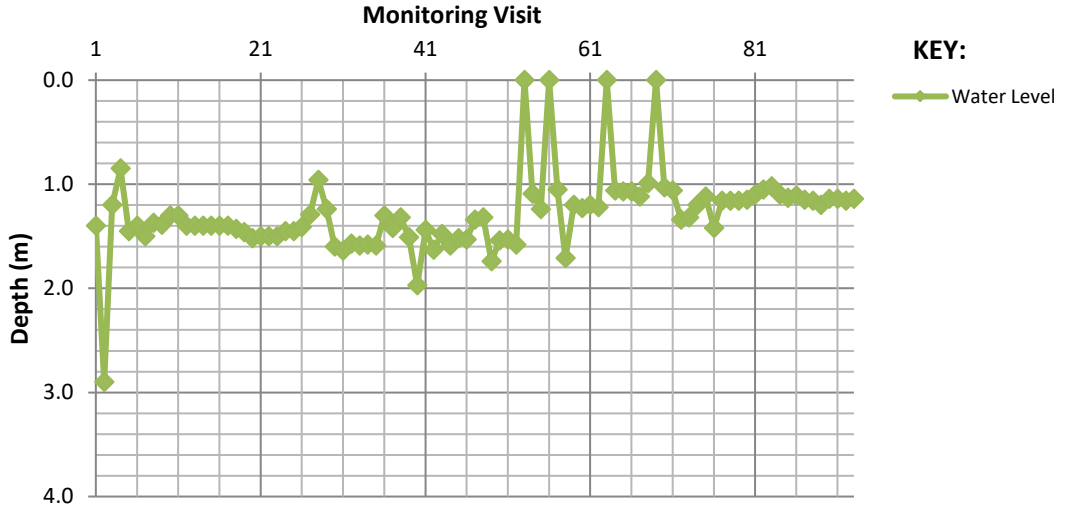
Exploratory Hole Location	BHC02	Date of Install	10/08/2017

Monitoring Visit	Monitoring Date	Water Level (m)
1	31/08/2017	1.40
2	01/09/2017	2.90
3	04/09/2017	1.20
4	05/09/2017	0.85
5	06/09/2017	1.45
6	07/09/2017	1.40
7	08/09/2017	1.50
8	11/09/2017	1.37
9	12/09/2017	1.39
10	13/09/2017	1.30
11	14/09/2017	1.30
12	15/09/2017	1.40
13	18/09/2017	1.40
14	19/09/2017	1.40
15	20/09/2017	1.40
16	21/09/2017	1.40
17	22/09/2017	1.40
18	25/09/2017	1.43
19	26/09/2017	1.46
20	27/10/2017	1.52
21	28/10/2017	1.50
22	29/10/2017	1.50
23	02/10/2017	1.50
24	03/10/2017	1.45
25	04/10/2017	1.45
26	05/10/2017	1.41
27	06/10/2017	1.29
28	03/01/2018	0.96
29	05/01/2018	1.24
30	08/01/2018	1.60
31	09/01/2018	1.64
32	10/01/2018	1.57
33	11/01/2018	1.59
34	12/01/2018	1.58
35	15/01/2018	1.59
36	16/01/2018	1.30
37	17/01/2018	1.42
38	18/01/2018	1.32
39	19/01/2018	1.51
40	22/01/2018	1.97
41	23/01/2018	1.44
42	24/01/2018	1.63
43	25/01/2018	1.48
44	26/01/2018	1.59

45	29/01/2018	1.52
46	30/01/2018	1.53
47	01/02/2018	1.34
48	02/02/2018	1.32
49	05/02/2018	1.74
50	06/02/2018	1.54
51	07/02/2018	1.53
52	08/02/2018	1.58
53	09/02/2018	0.00
54	12/02/2018	1.09
55	13/02/2018	1.24
56	15/02/2018	0.00
57	16/02/2018	1.05
58	21/02/2018	1.71
59	22/02/2018	1.20
60	23/02/2018	1.23
61	26/02/2018	1.20
62	27/02/2018	1.22
63	05/03/2018	0.00
64	06/03/2018	1.06
65	07/03/2018	1.07
66	08/03/2018	1.07
67	09/03/2018	1.12
68	12/03/2018	0.99
69	13/03/2018	0.00
70	15/03/2018	1.03
71	16/03/2018	1.06
72	19/03/2018	1.34
73	20/03/2018	1.32
74	21/03/2018	1.20
75	22/03/2018	1.12
76	23/03/2018	1.42
77	26/03/2018	1.16
78	27/03/2018	1.16
79	28/03/2018	1.16
80	29/03/2018	1.15
81	03/04/2018	1.10
82	04/04/2018	1.05
83	05/04/2018	1.02
84	06/04/2018	1.10
85	09/04/2018	1.13
86	11/04/2018	1.11
87	12/04/2018	1.15
88	13/04/2018	1.16
89	16/04/2018	1.20
90	17/04/2018	1.14
91	18/04/2018	1.14
92	19/04/2018	1.16

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

93	20/04/2018	1.14
Instrument Used:	Dip metre	
NOTE: **n/a**	Not applicable	
0	Borehole flooded	



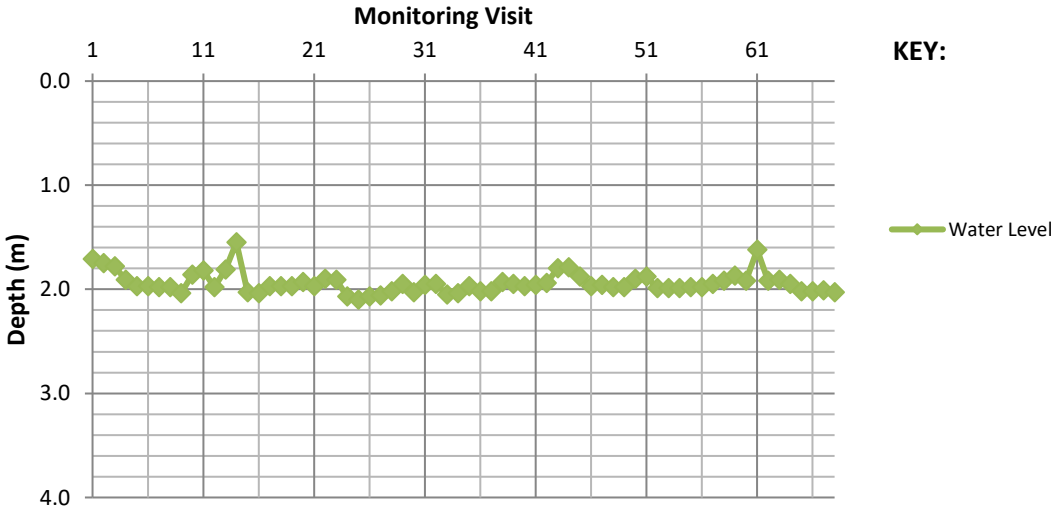
SITE	PROJECT
LAKE LOTHING, L20, LOWESTOFT	2543,GI

Exploratory Hole Location	BHC102	Date of Install	11/12/2017

Monitoring Visit	Monitoring Date	Water Level (m)
1	13/12/2017	2.00
2	14/12/2017	1.88
3	15/12/2017	1.91
1	03/01/2018	1.71
2	04/01/2018	1.75
3	05/01/2018	1.78
4	08/01/2018	1.91
5	09/01/2018	1.97
6	10/01/2018	1.97
7	11/01/2018	1.98
8	12/01/2018	1.98
9	15/01/2018	2.04
10	16/01/2018	1.86
11	17/01/2018	1.82
12	18/01/2018	1.98
13	19/01/2018	1.81
14	22/01/2018	1.55
15	23/01/2018	2.03
16	24/01/2018	2.04
17	25/01/2018	1.97
18	26/01/2018	1.97
19	29/01/2018	1.97
20	30/01/2018	1.93
21	31/01/2018	1.97
22	01/02/2018	1.90
23	02/02/2018	1.91
24	05/02/2018	2.07
25	06/02/2018	2.10
26	07/02/2018	2.07
27	08/02/2018	2.06
28	09/02/2018	2.02
29	12/02/2018	1.95
30	13/02/2018	2.03
31	15/02/2018	1.96
32	16/02/2018	1.95
33	21/02/2018	2.05
34	22/02/2018	2.04
35	23/02/2018	1.97
36	26/02/2018	2.02
37	27/02/2018	2.02
38	05/03/2018	1.93
39	06/03/2018	1.95
40	07/03/2018	1.97

41	08/03/2018	1.96
42	09/03/2018	1.94
43	12/03/2018	1.80
44	13/03/2018	1.79
45	15/03/2018	1.88
46	16/03/2018	1.97
47	19/03/2018	1.96
48	20/03/2018	1.98
49	21/03/2018	1.98
50	22/03/2018	1.90
51	23/03/2018	1.88
52	26/03/2018	1.99
53	27/03/2018	1.99
54	28/03/2018	1.99
55	29/03/2018	1.98
56	03/04/2018	1.98
57	04/04/2018	1.95
58	05/04/2018	1.92
59	06/04/2018	1.87
60	09/04/2018	1.92
61	11/04/2018	1.62
62	12/04/2018	1.92
63	13/04/2018	1.91
64	16/04/2018	1.95
65	17/04/2018	2.02
66	18/04/2018	2.02
67	19/04/2018	2.01
68	20/04/2018	2.03

Instrument Used:		Dip metre
NOTE:	**n/a**	Not applicable
	nm	Not measured



SITE	**PROJECT**
LAKE LOTHING, L20, LOWESTOFT	2543,GI

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC27	Date of Install	15/01/2018

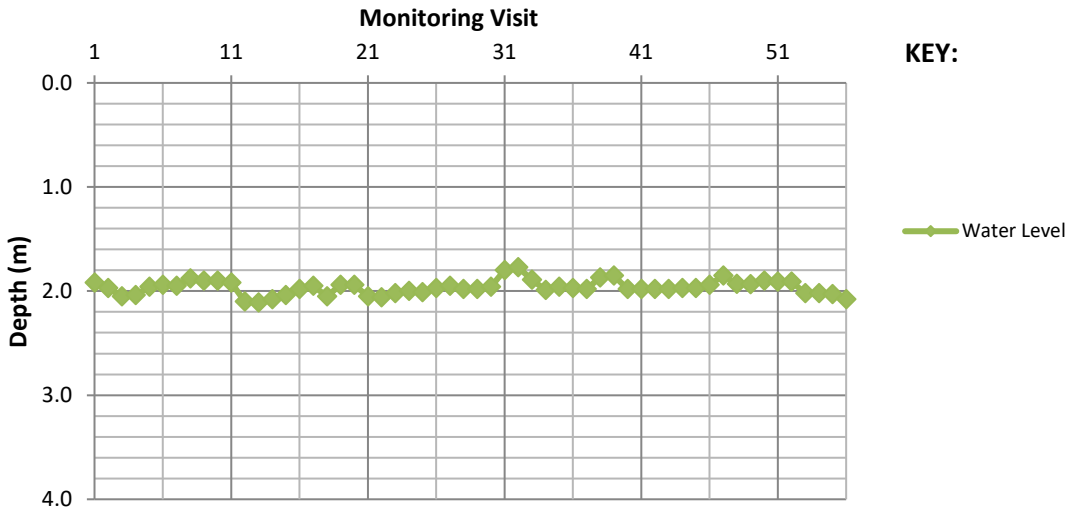
Monitoring Visit	Monitoring Date	Water Level (m)
1	19/01/2018	1.92
2	22/01/2018	1.97
3	23/01/2018	2.05
4	24/01/2018	2.04
5	25/01/2018	1.96
6	26/01/2018	1.94
7	29/01/2018	1.95
8	30/01/2018	1.88
9	31/01/2018	1.90
10	01/02/2018	1.90
11	02/02/2018	1.92
12	05/02/2018	2.10
13	06/02/2018	2.11
14	07/02/2018	2.08
15	08/02/2018	2.04
16	09/02/2018	1.98
17	12/02/2018	1.95
18	13/02/2018	2.05
19	15/02/2018	1.94
20	16/02/2018	1.94
21	21/02/2018	2.05
22	22/02/2018	2.06
23	23/02/2018	2.02
24	26/02/2018	2.00
25	27/02/2018	2.01
26	05/03/2018	1.97
27	06/03/2018	1.95
28	07/03/2018	1.98
29	08/03/2018	1.98
30	09/03/2018	1.96
31	12/03/2018	1.80
32	13/03/2018	1.77
33	15/03/2018	1.89
34	16/03/2018	1.99
35	19/03/2018	1.96
36	20/03/2018	1.97
37	21/03/2018	1.98
38	22/03/2018	1.87
39	23/03/2018	1.85
40	26/03/2018	1.98
41	27/03/2018	1.98
42	28/03/2018	1.98
43	29/03/2018	1.98

44	03/04/2018	1.97
45	04/04/2018	1.97
46	05/04/2018	1.94
47	06/04/2018	1.85
48	09/04/2018	1.93
49	11/04/2018	1.94
50	12/04/2018	1.90
51	13/04/2018	1.91
52	16/04/2018	1.91
53	17/04/2018	2.02
54	18/04/2018	2.02
55	19/04/2018	2.03
56	20/04/2018	2.08

Instrument Used: Dip metre

NOTE: **n/a** Not applicable

nm Not measured



SITE
LAKE LOTHING, L20, LOWESTOFT

PROJECT
2543,GI

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

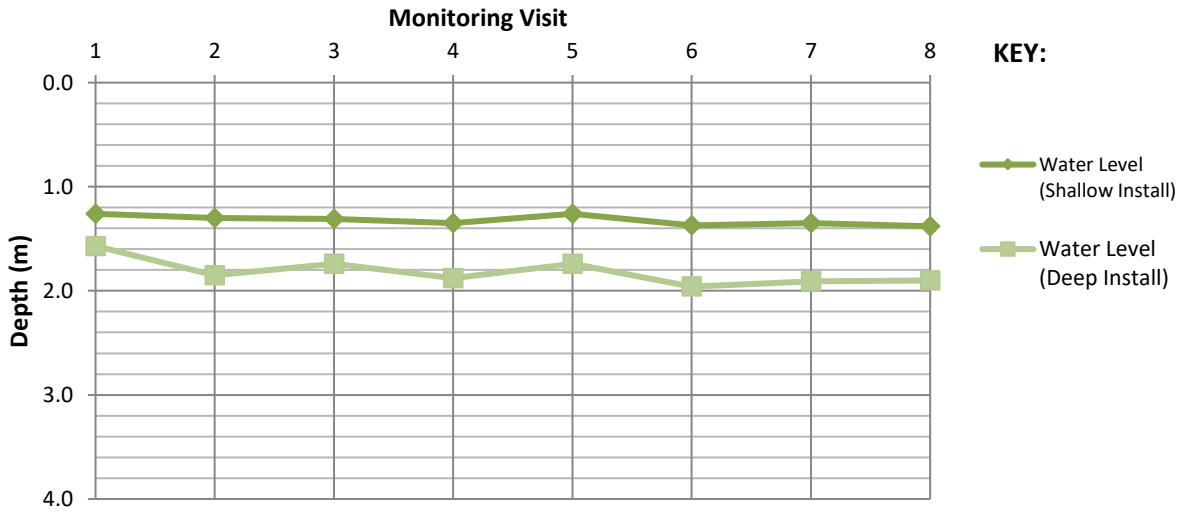
Exploratory Hole Location	BHC24	Date of Install	23/02/2018

Monitoring Visit	Monitoring Date	Water Level (m)	
		Shallow Install	Deep Install
1	11/04/2018	1.26	1.57
2	12/04/2018	1.30	1.85
3	13/04/2018	1.31	1.74
4	16/04/2018	1.35	1.88
5	17/04/2018	1.26	1.74
6	18/04/2018	1.37	1.96
7	19/04/2018	1.35	1.91
8	20/04/2018	1.38	1.90

Instrument Used: Dip metre

NOTE: **n/a** Not applicable

nm Not measured



SITE	PROJECT
LAKE LOTHING, L20, LOWESTOFT	2543,GI

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

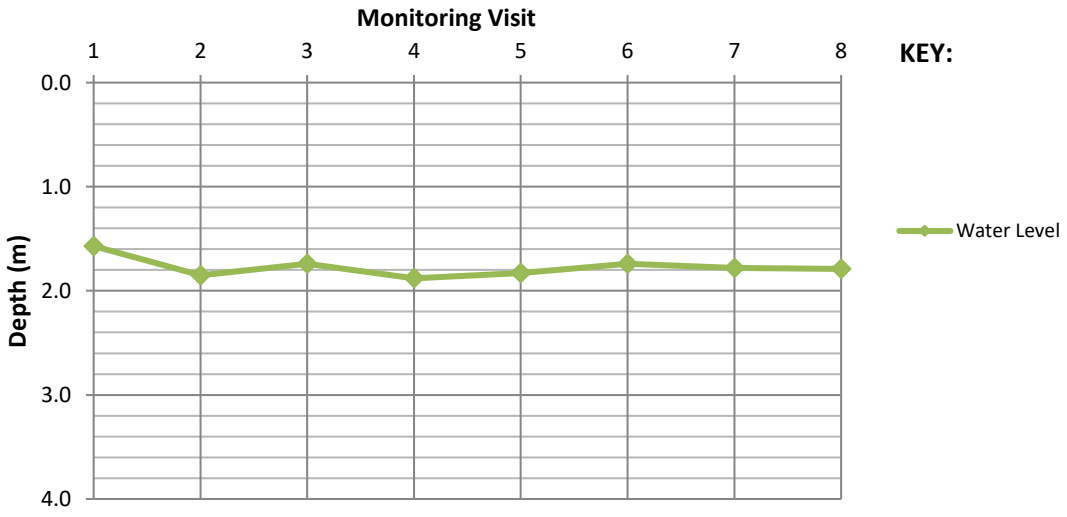
Exploratory Hole Location	BHC08	Date of Install	16/03/2018

Monitoring Visit	Monitoring Date	Water Level (m)
1	11/04/2018	1.57
2	12/04/2018	1.85
3	13/04/2018	1.74
4	16/04/2018	1.88
5	17/04/2018	1.83
6	18/04/2018	1.74
7	19/04/2018	1.78
8	20/04/2018	1.79

Instrument Used: Dip metre

NOTE: **n/a** Not applicable

nm Not measured



SITE	PROJECT
LAKE LOTHING, L20, LOWESTOFT	2543,GI

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

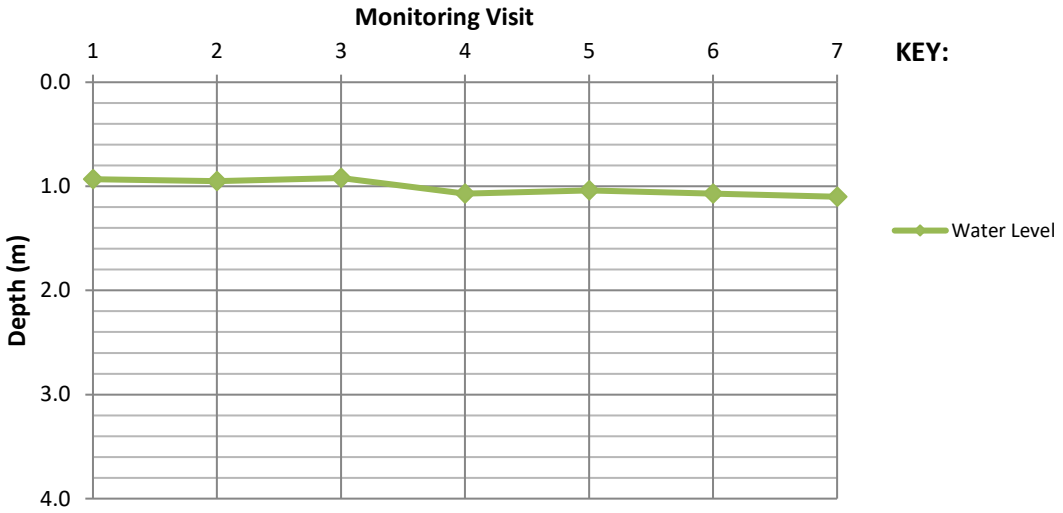
Exploratory Hole Location	BHC07	**Date of Install**	27/03/2018

Monitoring Visit	Monitoring Date	Water Level (m)
1	12/04/2018	0.93
2	13/04/2018	0.95
3	16/04/2018	0.92
4	17/04/2018	1.07
5	18/04/2018	1.04
6	19/04/2018	1.07
7	20/04/2018	1.10

Instrument Used: Dip metre

NOTE: **n/a** Not applicable

nm Not measured



SITE
LAKE LOTHING, L20, LOWESTOFT

PROJECT
2543,GI

APPENDIX 17 – GROUNDWATER PURGING DATA

Site: Lake Lothing, Lowestoft		**Air Temperature:**	15°C
Project Number: 2543,GI		**Weather Conditions:**	Warm, cloudy, dry and calm
Fieldwork By: JG			
Date of Monitoring: 14 May 2018			
Visit Number: 1			

LOCATION BHC01 **DTW** 2.55 **DTP** 0.10 **DTB** 4.55 **OBSERVATIONS** Light brown, clear

Parameter												
	0											
°C	12.4											
DO%	12.0											
SPC	21502											
pH	12.86											
pH mV	-346.4											
ORP mV	-19.8											

OBSERVATIONS Borehole dry after purging for 2 minutes

DEPTH OF WATER AT END OF PURGING 2.58m

SAMPLE DETAILS BHC01 W1 2.58m depth

Site: Lake Lothing, Lowestoft		**Air Temperature:**	
Project Number: 2543,GI		**Weather Conditions:**	
Fieldwork By: AH			
Date of Monitoring: 4-1-18 – 5-1-18			
Visit Number: 1			

LOCATION BHC102 **DTW** 1.75m **DTP** **DTB** **OBSERVATIONS**

Parameter												
	5	10	15	20	25	30	35	40	45	50	55	60
°C	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.4	13.4	13.4	13.4
DO%	4.3	4.6	5.9	16.8	33.1	30.2	23.4	14.8	25.1	21.5	20.8	12.8
SPC	855	948	927	931	952	948	953	970	968	980	975	980
pH	8.78	8.45	8.34	8.24	8.12	8.06	7.99	7.90	7.83	7.79	7.76	7.67
pH mV	-137.2	-118.2	-111.7	-105.9	-99.1	-95.3	-91.1	-86.1	-82.2	-80.0	-78.1	-73.1
ORP mV	-328.4	-314.0	-307.7	-299.0	-288.8	-281.1	-272.9	-258.3	236.5	-230.0	-227.8	-215.0

LOCATION BHC02 **DTW** 1.24m **DTP** 10.0 **DTB** 10.23 **OBSERVATIONS**

Parameter	**Time**										
	5	10	15	20	25	30	35	40	50	55	60
°C	11.5	11.5	11.6	11.6	11.6	11.7	11.7	11.7	11.9	11.9	11.9
DO%	3.5	0.8	37.4	41.1	31.2	21.5	21.7	6.3	34.6	2.8	50.2
SPC	880	886	896	900	904	904	912	92	928	933	938
pH	6.72	6.57	6.52	6.5	6.48	6.47	6.44	6.42	6.45	6.42	6.41
pH mV	-17.5	-9.4	-6.2	-4.8	-4.0	-3.2	-2.1	-1.3	-0.4	-0.5	-0.1
ORP mV	20.2	19.5	15.4	13.3	10.8	10.3	9.9	9.5	10.8	12.7	13.5

Continued from above…

Parameter	**Time**										
	65	70	75	80							
°C	11.9	11.9	11.9	11.9							
DO%	52.7	51.6	48.8	50.9							
SPC	941	945	947	948							
pH	6.4	6.39	6.39	6.38							
pH mV	0.6	1.1	1.3	1.8							
ORP mV	13.5	14.1	14.3	15.9							

Site: Lake Lothing, Lowestoft		**Air Temperature:**	16°C
Project Number: 2543,GI		**Weather Conditions:**	Hot, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 9 May 2018			
Visit Number: 1			

LOCATION BHC07 **DTW** 0.97 **DTP** 0.0 **DTB** 9.1 **OBSERVATIONS** High silt content at start of purging

Parameter												
	0	5	10	15	20	28	30	35	40	46	50	55
°C	13.1	12.9	14.2	14.2	13.9	13.5	13.7	14.1	13.6	13.5	13.5	13.7
DO%	71.3	39.2	2.9	1.6	5.6	1.1	1.0	0.8	0.7	0.8	0.6	0.6
SPC	1428	13.87	13.28	1084	1065	954	989	955	921	945	887	871
pH	7.55	8.50	9.78	9.10	9.03	9.61	9.01	8.93	8.48	8.23	8.54	8.21
pH mV	-43.5	-97.8	-181.8	-132.5	-122.2	-161.8	-126.6	-121.5	-96.2	-83.0	-98.2	-81.3
ORP mV	-96.5	-113.1	-110.2	-162.2	-181.4	-57.5	-173.0	-305.9	-306.1	-295.8	-338.8	-322.5

Parameter	**Time**										
	60	65	70	75	80	85	90	95	100		
°C	13.6	13.6	13.5	13.6	13.6	13.6	13.6	13.5	13.5		
DO%	0.6	0.5	0.7	0.6	0.6	0.5	0.5	0.5	0.5		
SPC	862	837	854	833	819	819	825	806	817		
pH	7.96	7.88	7.77	7.71	7.68	7.63	7.61	7.75	7.65		
pH mV	-67.4	-63.1	-56.1	-53.0	-51.0	-49.0	-46.7	-55.4	-48.1		
ORP mV	-298.0	-287.6	-261.3	-256.6	-251.1	-245.7	-241.1	-287.7	-272.4		

DEPTH OF WATER AT END OF PURGING 1.70m

SAMPLE DETAILS BHC07 W1 1.70m depth

OBSERVATIONS Clear, yellowish in colour. No significant odour

Site: Lake Lothing, Lowestoft		**Air Temperature:**	13°C
Project Number: 2543,GI		**Weather Conditions:**	Cool, overcast, dry and breezy
Fieldwork By: JG			
Date of Monitoring: 14 May 2018			
Visit Number: 1			

LOCATION BHC08 **DTW** 1.69 **DTP** -0.41 **DTB** 11.84 **OBSERVATIONS** Light brown, clear

Parameter												
	0	30	40	50	60	70	75	80				
°C	11.1	15.8	15.6	15.5	15.7	15.6	14.7	15.0				
DO%	9.9	3.3	2.4	2.5	2.5	2.3	1.9	2.1				
SPC	3039	153.6	153.6	1456	1517	1557	1515	1492				
pH	12.17	11.32	11.32	11.21	11.35	11.30	11.0	10.98				
pH mV	-305.3	-262.2	-261.2	-255.2	-262.6	-260.3	-246.6	-212.9				
ORP mV	12.7	-61.6	-66.2	-88.0	-91.5	-95.4	-89.4	-92.4				

OBSERVATIONS First purge – 3 minutes and borehole dry. Waited for 20 minutes and started purging again

DEPTH OF WATER AT END OF PURGING 3.20m

SAMPLE DETAILS BHC08 W1 3.20m depth

Site: Lake Lothing, Lowestoft		**Air Temperature:**	16°C
Project Number: 2543,GI		**Weather Conditions:**	Hot, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 11 May 2018 – 14 May 2018			
Visit Number: 1			

LOCATION BHC09 **DTW** 2.32 **DTP** 0.15 **DTB** 10.70 **OBSERVATIONS** High silt content, light brown in colour

Parameter												
	0	5		0		0	4					
°C	13.0	15.8		15		13.4	14.3					
DO%	19.1	9.3		8.8		11.1	5.1					
SPC	8672	6711		7869		4086	2713					
pH	12.43	12.30		12.37		12.12	11.5					
pH mV	-322.1	-318.0		-319.0		-304.1	-270.6					
ORP mV	-66.1	-106.8		-95.9		-103.3	-117.6					

Parameter	**Time**										
	0	5	10	15	20	25	30	35			
°C	13.0	11.2	15.6	17.8	17.6	18.3	178	17.9			
DO%	5.6	4.2	4.0	3.7	3.6	4.1	3.8	3.4			
SPC	35.09	25.20	1809	1882	1840	1780	1750	1743			
pH	11.93	11.69	11.18	11.25	11.19	11.15	11.07	11.10			
pH mV	-292.6	-283.7	-283.1	-259.0	-255.2	-244.6	-248.6	250.5			
ORP mV	-518	-102.5	-113.9	-125.9	-125.8	-120.8	-119.4	-121.4			

OBSERVATIONS Purged to 8 minutes – ran dry. Attempted two further purges same day and took sample. Purged a third time next day.

DEPTH OF WATER AT END OF PURGING Dry

SAMPLE DETAILS BHC09 W1 4.84m depth taken on first day

Site: Lake Lothing, Lowestoft		**Air Temperature:**	16°C
Project Number: 2543,GI		**Weather Conditions:**	Hot, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 9 May 2018			
Visit Number: 1			

LOCATION BHC14 **DTW** 1.66 **DTP** 0.0 **DTB** 2.50 **OBSERVATIONS**

Parameter												
	0	5	10	15								
°C	14.9											
DO%	52.4											
SPC	17847											
pH	12.74											
pH mV	-341.4											
ORP mV	-52.5											

OBSERVATIONS Purged for 2 minutes – borehole dry. Advised by WSP to leave to recharge overnight and take sample next day

DEPTH OF WATER AT END OF PURGING Dry. Sample taken next day

SAMPLE DETAILS BHC14 W1 1.91m depth

Site: Lake Lothing, Lowestoft		**Air Temperature:**	15°C
Project Number: 2543,GI		**Weather Conditions:**	Hot, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 10 May 2018			
Visit Number: 1			

LOCATION BHC24 (Deep) **DTW** 1.81 **DTP** 0.1 **DTB** 9.14 **OBSERVATIONS** Light brown, clear water, no significant odour

Parameter												
	0	5	8	15	20							
°C	12.0	13.2	13.3									
DO%	16.0	8.8	9.7									
SPC	6138	6359	6559									
pH	12.29	12.25	12.36									
pH mV	-312.7	-312.3	-318.7									
ORP mV	-75.2	-124.7	-146.3									

OBSERVATIONS Purged until dry. Advised by WSP to leave to recharge overnight and take sample next day

DEPTH OF WATER AT END OF PURGING Dry. Sample taken next day

SAMPLE DETAILS BHC24 (D) W1 1.92m depth

Site: Lake Lothing, Lowestoft		**Air Temperature:**	15°C
Project Number: 2543,GI		**Weather Conditions:**	Hot, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 10 May 2018			
Visit Number: 1			

LOCATION BHC24 (Shallow) **DTW** 1.42 **DTP** 0.1 **DTB** 2.20 **OBSERVATIONS** Clear, no significant odour

Parameter												
	0	5	10	15	20							
°C	11.7											
DO%	21.6											
SPC	3727											
pH	12.07											
pH mV	-299.1											
ORP mV	-7.7											

OBSERVATIONS Purged for 2 minutes – borehole dry. Advised by WSP to leave to recharge overnight and take sample next day

DEPTH OF WATER AT END OF PURGING Dry. Sample taken next day

SAMPLE DETAILS BHC24 W1 1.43m depth

Site: Lake Lothing, Lowestoft		**Air Temperature:**	15°C
Project Number: 2543,GI		**Weather Conditions:**	Warm, cloudy dry and calm
Fieldwork By: JG			
Date of Monitoring: 14 May 2018			
Visit Number: 1			

LOCATION BHC27 **DTW** 1.92 **DTP** 0.15 **DTB** 13.00 **OBSERVATIONS** Light brown, silt content

Parameter												
	0	5	10	15	20	25	30	35	40	45	50	
°C	12.8	12.6	12.4	12.7	12.7	12.7	12.7	12.8	12.8	12.8	12.9	
DO%	15.1	3.6	1.6	0.9	1.1	1.3	0.9	0.8	0.6	0.8	0.6	
SPC	2968	1530	1297	1131	1080	1051	1027	1014	1003	998	988	
pH	11.90	11.00	10.37	9.68	9.40	9.14	8.92	8.71	8.54	8.35	8.16	
pH mV	-292.1	-239.1	-200.5	-165.6	-149.6	-133.2	-121.7	-109.1	-100.0	-89.6	-78.8	
ORP mV	-103.0	-149.6	-149.5	-164.4	-284.1	-221.1	-314.6	-312.4	-301.8	-286.0	-267.4	

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING 2.00m

SAMPLE DETAILS BHC27 W1 2.00m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	17°C
Project Number: 2543,GI		Weather Conditions:	Warm, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 24 May 2018			
Visit Number: 1			

LOCATION BHC24 (Deep) DTW 1.35 DTP 0.15 DTB 10.10 OBSERVATIONS Light brown, clear water, no significant odour

Parameter	Time											
	0	5	10									
°C	12.4	12.4	12.6									
DO%	83.8	6.5	42.5									
SPC	8936	5428	4811									
pH	12.51	12.38	12.36									
pH mV	-328.7	-322.3	-321.6									
ORP mV	-150.7	-197.2	-186.7									

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING Dry. Sample taken next day

SAMPLE DETAILS BHC24 (D) W2 2.74m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	17°C
Project Number: 2543,GI		Weather Conditions:	Warm, sunny, dry, breezy
Fieldwork By: JG/FS			
Date of Monitoring: 24 May 2018			
Visit Number: 2			

LOCATION BHC24 (Shallow) DTW 1.24 DTP 0.15 DTB 2.41 OBSERVATIONS

Parameter	Time											
	0											
°C	12.4											
DO%	25.7											
SPC	3108											
pH	11.51											
pH mV	-305.7											
ORP mV	-18.9											

OBSERVATIONS Purged for 2 minutes – borehole dry

DEPTH OF WATER AT END OF PURGING Dry. Sample taken next day

SAMPLE DETAILS BHC24 (S) 1.52m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	15°C
Project Number: 2543,GI		Weather Conditions:	Cool, overcast, dry and breezy
Fieldwork By: JG/FS			
Date of Monitoring: 23 May 2018			
Visit Number: 2			

LOCATION BHC27 DTW 2.10 DTP 0.20 DTB 13.00 OBSERVATIONS Light brown, clear

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.3	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
DO%	84.9	78.4	44.8	33.1	23.0	14.0	9.3	5.2	1.2	1.0	1.0	0.8
SPC	1357	1234	1119	1023	1043	1011	1021	1020	1020	1007	1001	1001
pH	11.26	10.56	10.12	9.86	9.55	9.29	9.15	8.98	8.78	8.66	8.51	8.34
pH mV	-257.0	-219.6	-195.5	-180.3	-164.4	-149.2	-140.3	-131.2	-119.9	-113.4	-104.2	-95.9
ORP mV	-182.5	-219.0	-277.4	-347.2	-384.2	-377.6	-367.9	-354.2	-338.3	-326.6	-309.1	-292.2

Parameter	Time											
	60	65	70	75	80	85	90	95				
°C	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7				
DO%	1.0	1.9	2.0	1.8	1.6	1.6	1.5	1.4				
SPC	998	998	996	995	999	996	993	989				
pH	8.19	7.99	7.84	7.61	7.47	7.30	7.22	7.18				
pH mV	-86.9	-75.9	-67.3	-54.2	-4602	-36.9	-32.4	-30.4				
ORP mV	-275.1	-252.1	-232.1	-203.1	-184.7	-162.1	-153.0	-148.9				

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING 2.09m

SAMPLE DETAILS BHC27 W2 2.10m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	17°C
Project Number: 2543,GI		Weather Conditions:	Warm, sunny, dry and breezy
Fieldwork By: JG/FS			
Date of Monitoring: 24 May 2018			
Visit Number: 2			

LOCATION BHC102 DTW 2.04 DTP 0.23 DTB 11.20 OBSERVATIONS Greyish brown, clear. Weak hydrocarbon odour

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	11.9	11.8	11.8	11.8	11.7	11.8	11.8	11.7	11.7	11.8	11.8	11.8
DO%	64.8	10.8	3.6	2.4	2.2	2.2	2.0	1.5	1.4	1.2	1.1	1.0
SPC	1216	1367	1366	1285	1267	1189	1168	1127	1101	1109	1080	1064
pH	8.87	7.47	7.33	7.23	7.19	7.14	7.1	7.04	7.03	7.01	6.99	6.98
pH mV	-136.7	-16.6	38.7	-33.3	-31.0	-28.0	-25.7	-22.7	-22.0	-20.5	-19.5	-19.0
ORP mV	-128.4	-182.4	-174.8	-163.5	-160.0	-156.0	-152.2	-148.3	-146.6	-145.6	-143.9	-141.9
Parameter	Time											
	60	65	70									
°C	11.8	11.8	11.7									
DO%	0.9	0.9	0.8									
SPC	10.52	1049	1037									
pH	6.97	6.96	6.95									
pH mV	-18.3	-17.9	-17.7									
ORP mV	-139.9	-138.7	-136.6									

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING 2.09m

SAMPLE DETAILS BHC102 W2 2.09m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	13°C
Project Number: 2543,GI		Weather Conditions:	Cool, overcast, dry and breezy
Fieldwork By: JG/FS			
Date of Monitoring: 23 May 2018			
Visit Number: 2			

LOCATION BHC01 DTW 2.40 DTP 0.10 DTB 4.64 OBSERVATIONS Silt content

Parameter	Time											
	0											
°C	11.7											
DO%	106.1											
SPC	25783											
pH	13.09											
pH mV	-361.4											
ORP mV	-26.0											

OBSERVATIONS Borehole dry after purging for 2 minutes

DEPTH OF WATER AT END OF PURGING Next day – 2.04m

SAMPLE DETAILS BHC01 W2 2.04m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	15°C
Project Number: 2543,GI		Weather Conditions:	Cool, overcast, damp and breezy
Fieldwork By: AH/FS			
Date of Monitoring: 30 May 2018			
Visit Number: 2			

LOCATION BHC02 DTW 1.10 DTP 0.0 DTB 7.35 OBSERVATIONS Light brown, clear

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	14.4	14.6	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
DO%	35.2	18.5	15.8	14.7	14.7	14.7	14.7	14.2	14.2	14.4	14.2	16.1
SPC	853	994	1040	999	998	991	987	958	958	948	950	946
pH	7.08	6.76	6.84	6.89	6.89	6.89	6.89	6.89	6.89	6.89	6.88	6.88
pH mV	-22.1	-6.6	-11.3	-13.9	-14.1	-14.1	-13.9	-13.9	-13.9	-13.8	-13.6	-13.4
ORP mV	70.6	74.3	57.4	33.8	29.3	26.6	16.9	24.6	24.6	27.5	26.6	28.7

Parameter	Time										
	60	65									
°C	14.5	14.5									
DO%	15.2	14.8									
SPC	953	950									
pH	6.88	6.88									
pH mV	13.3	13.5									
ORP mV	27.3	26.9									

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING 1.10m

SAMPLE DETAILS BHC02 W2 1.10m – 1.40m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	16°C
Project Number: 2543,GI		Weather Conditions:	Warm, cloudy, damp and breezy
Fieldwork By: AH/CS			
Date of Monitoring: 30 May 2018			
Visit Number: 2			

LOCATION BHC07 DTW 1.49 DTP 0.0 DTB 10.74 OBSERVATIONS Light brown, clear

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.4	12.6	12.9	13.0	13.1	13.1	13.1	13.2	13.2	13.2	13.2	13.2
DO%	80.4	20.9	11.2	8.0	6.5	5.2	4.8	4.5	4.5	4.3	4.1	4.3
SPC	1290	575.5	1342	1366	1372	1381	1343	1368	1351	1363	1371	1366
pH	7.36	7.27	7.29	7.30	7.30	7.31	7.32	7.32	7.32	7.32	7.33	7.33
pH mV	-39.3	-35.4	-36.6	-37.0	-37.3	-37.8	-38.0	-38.2	-38.3	-38.2	-38.7	-38.7
ORP mV	-159.2	-154.0	-171.5	-178.7	-184.1	-189.8	-194.0	-197.8	-200.6	-203.5	-206.3	-208.2

Parameter	Time										
	60	65	70								
°C	13.2	13.2	13.2								
DO%	4.2	3.9	3.6								
SPC	1357	1339	1345								
pH	7.34	7.34	7.34								
pH mV	-39.1	-39.4	-39.3								
ORP mV	-210.3	-211.9	-213.2								

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING 1.15m

SAMPLE DETAILS BHC07 W2 1.15m – 1.40m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	17°C
Project Number: 2543,GI		Weather Conditions:	Warm, sunny, dry and calm
Fieldwork By: JG/FS			
Date of Monitoring: 24 May 2018			
Visit Number: 2			

LOCATION BHC08 DTW 2.34 DTP +0.41 DTB 12.16 OBSERVATIONS Light brown in colour, silt content

Parameter	Time											
	0	5	15	20	25	30	35	40	45	50		
°C	11.6	12.3	11.6	12.0	12.4	12.7	12.7	12.7	13.3	13.3		
DO%	67.1	3.1	24.0	4.8	3.6	2.2	2.2	2.3	7.3	14.1		
SPC	1650	1245	12.62	1410	1566	1633	1692	1801	1433	1614		
pH	11.92	9.45	9.04	9.66	8.98	8.80	6.67	8.76	9.28	9.07		
pH mV	-295.3	-156.6	-134.1	-167.9	-131.8	-121.8	-114.4	-119.1	-148.8	-139.7		
ORP mV	-153.4	-120.9	-38.1	-117.4	-111.5	-180.5	-209.5	-213.2	-153.3	-120.8		

OBSERVATIONS Purged to dry – no more water recovery after 50 mins

DEPTH OF WATER AT END OF PURGING 2.54m

SAMPLE DETAILS BHC08 W2 2.54m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	24°C
Project Number: 2543,GI		Weather Conditions:	Hot, sunny, dry, breezy
Fieldwork By: JG			
Date of Monitoring: 24 May 2018			
Visit Number: 2			

LOCATION BHC09 DTW 2.37 DTP 0.25 DTB 12.37 OBSERVATIONS Silt content, light brown in colour, weak hydrocarbon odour

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	13.1	13.1	13.7	13.6	13.8	14.2	14.2	13.8	14.5	15.3	14.6	14.8
DO%	59.6	3.4	1.6	1.1	0.9	0.8	0.7	0.5	25.6	21.7	20.2	23.2
SPC	3132	2077	1623	1630	1589	1672	1650	2016	1676	1648	1671	1677
pH	12.08	11.61	9.99	9.24	9.73	9.14	9.23	11.44	8.77	9.02	8.48	8.56
pH mV	-306.2	-279.6	-186.8	-146.2	-173.7	-141.0	-146.0	-287.0	-120.0	-134.8	-104.2	-109.1
ORP mV	-241.5	-279.8	-235.2	-265.9	-296.2	-252.3	-378.8	-502.2	-105.00	-118.9	-166.9	-122.4

Parameter	Time										
	60	65									
°C	14.9	15.3									
DO%	23.0	21.4									
SPC	1675	1693									
pH	8.45	8.46									
pH mV	-102.1	-103.1									
ORP mV	-113.7	-113.4									

OBSERVATIONS

DEPTH OF WATER AT END OF PURGING 6.03m

SAMPLE DETAILS BHC09 W2 6.03m depth

Site: Lake Lothing, Lowestoft		Air Temperature:	13°C
Project Number: 2543,GI		Weather Conditions:	Cool, overcast, dry and breezy
Fieldwork By: JG/FS			
Date of Monitoring: 23 May 2018			
Visit Number: 2			

LOCATION BHC14 DTW 2.30 DTP 0.0 DTB 2.50 OBSERVATIONS

Parameter	Time											
	0	5	10	15								
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

OBSERVATIONS Purged for 2 minutes – borehole dry

DEPTH OF WATER AT END OF PURGING Dry

SAMPLE DETAILS No sample recovery possible next day

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC08							Date of Installation	16/03/2018
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	12/06/2018	15	1.86	11.85	4.28	BHC08 W3	4.28		Warm, overcast, damp, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.00	12.40	13.00	13.00	13.00	13.00	13.00					
DO%	45.40	3.90	3.30	3.20	2.70	2.70	2.70					
SPC	1341.00	1644.00	1714.00	1779.00	1794.00	1783.00	1850.00					
pH	11.77	9.11	8.19	8.01	7.78	7.69	7.68					
pH mV	-288.90	-138.50	-86.30	-76.50	-64.10	-59.10	-58.10					
ORP mV	-43.60	-13.40	-104.10	-104.10	-96.10	-105.10	-108.50					

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	**2543,GI**	**Jun-18**

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC09							Date of Installation	23/04/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	12/06/2018	15	2.27	12.35	3.80	BHC09 W3	3.80	No water recovery after 10 minutes. Borehole left for 10 minutes than began purging again	Warm, overcast, damp, breezy

Parameter	Time											
	0	5	0	5	10	15	20	25				
°C	12.90	12.60	13.40	13.70	14.40	14.90	15.10	15.20				
DO%	60.30	3.30	4.10	2.60	1.30	1.20	1.10	1.20				
SPC	2998.00	2514.00	1506.00	1606.00	1565.00	1635.00	1582.00	1595.00				
pH	11.88	11.77	10.87	9.68	9.15	8.88	8.62	8.62				
pH mV	-295.20	-289.70	-211.80	-163.80	-141.00	-123.30	-111.90	-112.20				
ORP mV	-129.30	-200.80	-61.10	-43.40	-305.20	-301.20	-299.90	-301.50				

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	**2543,GI**	**Jun-18**

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC14							Date of Installation	12/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	11/06/2018	25	1.74	2.54	Dry	n/a	2.02	Borehole dry after 30 seconds of purging. Unable to take sample	Hot, sunny, dry and breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	14.10											
DO%	78.90											
SPC	408.60											
pH	12.62											
pH mV	-337.50											
ORP mV	-186.90											

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC24 (D)							Date of Installation	23/02/2018
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	12/06/2018	17	2.06	10.28	Dry	BHC24(D) W3	2.02	Borehole dry after 5 minutes of purging. Sample taken later in the day	Warm, overcast, damp, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.40	13.20										
DO%	10.20	4.50										
SPC	5125.00	3123.00										
pH	12.22	12.06										
pH mV	-312.50	-30.46										
ORP mV	-64.20	-84.70										

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC24 (S)							Date of Installation	23/02/2018
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	12/06/2018	17	1.64	2.50	Dry	BHC24(S) W3	1.84	Borehole dry after 2 minutes of purging. Sample taken later in the day	Warm, overcast, damp, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	15.20											
DO%	130.70											
SPC	4653.00											
pH	11.87											
pH mV	-297.20											
ORP mV	4.20											

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	**2543,GI**	**Jun-18**

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC27							Date of Installation	15/01/2018
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	12/06/2018	15	2.08	12.88	2.13	BHC27 W3	2.13		Warm, overcast, damp, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.50	13.00	13.00	12.90	13.00	12.90	12.90	12.90	12.90	12.90	12.90	12.90
DO%	6.70	2.30	1.20	1.10	1.20	1.20	1.40	1.40	1.40	1.30	1.30	1.40
SPC	625.00	978.00	956.00	958.00	956.00	955.00	954.00	959.00	953.00	954.00	952.00	948.00
pH	10.36	9.60	9.09	8.76	8.55	8.16	8.00	7.65	7.51	7.38	7.30	7.35
pH mV	-207.00	-166.90	-136.60	-118.30	-106.70	-84.50	-76.10	-56.10	-49.00	-41.70	-36.90	-33.40
ORP mV	-30.20	-156.00	-321.00	-315.30	-299.00	-257.30	-237.70	-181.00	-157.30	-137.80	-124.50	-116.90

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC01	Date of Installation	15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	11/06/2018	15	2.73	4.63	Dry	BHC01 W3	2.9	Borehole dry after purging for 2 minutes. Sample taken next day	Warm, overcast, damp, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	17.30											
DO%	113.40											
SPC	15.90											
pH	7.73											
pH mV	-63.30											
ORP mV	154.10											

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC102							Date of Installation	11/12/2018
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	11/06/2018	25	2.09	11.75	2.12	BHC102 W3	2.12		Hot, sunny, dry and breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.00	12.10	12.10	12.10	12.10	12.10	12.00	12.00	12.10	12.00	12.10	
DO%	65.50	4.40	2.70	2.10	1.90	1.60	1.40	1.40	1.20	1.10	1.10	
SPC	904.00	1337.00	1271.00	1234.00	1201.00	1175.00	1143.00	1130.00	1104.00	1085.00	1075.00	
pH	6.91	7.02	7.02	7.00	6.98	9.96	6.95	6.94	6.92	6.91	6.90	
pH mV	-15.40	-21.40	-21.30	-20.30	-19.00	-18.20	-17.30	-16.70	-16.00	-15.40	-15.00	
ORP mV	-86.70	-117.40	-118.50	-117.00	-114.50	-113.20	-111.60	-110.70	-108.00	-107.50	-106.50	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC01	Date of Installation	15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	22	2.73	4.63	Dry	BHC01 W4	3.12	Borehole dry after purging for 2 minutes. Sample taken next day	Hot, sunny dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	17.30											
DO%	113.40											
SPC	15.90											
pH	7.73											
pH mV	-63.30											
ORP mV	154.10											

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC02							Date of Installation	17/08/2017
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	11/06/2018	22	1.30	10.8	1.71	BHC02 W3	1.71		Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	16.50	15.90	15.90	15.80	15.90	15.90	15.80	15.80	15.80	15.80	15.80	15.80
DO%	64.40	14.80	13.70	13.30	13.40	13.70	13.90	13.80	13.40	13.70	13.50	13.10
SPC	382.40	1509.00	1489.00	1493.00	1487.00	1487.00	1485.00	1488.00	1481.00	1480.00	1484.00	1477.00
pH	7.53	6.69	6.60	658.00	6.56	6.60	6.62	6.63	6.64	6.65	6.68	6.66
pH mV	-81.70	-2.40	-2.50	-3.80	-3.30	-2.40	-1.50	-0.80	-0.30	-0.30	-0.80	-1.20
ORP mV	127.60	138.40	136.40	131.80	127.40	122.90	117.90	113.00	108.00	101.80	96.60	91.70

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C	15.70	15.70	15.70									
DO%	13.00	13.10	13.10									
SPC	1480.00	1478.00	1478.00									
pH	6.67	6.67	6.68									
pH mV	-1.50	-1.70	-1.90									
ORP mV	88.30	85.40	82.50									

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC07							Date of Installation	27/03/2018
Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
3	11/06/2018	24	1.53	10.89	1.41	BHC07 W3	1.41		Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.70	13.00	13.10	13.20	13.20	13.10	13.20	13.20	13.20			
DO%	3.80	2.90	2.20	1.80	1.50	1.40	1.30	1.20	1.10			
SPC	979.00	1477.00	1535.00	1533.00	1503.00	1500.00	1499.00	1496.00	1498.00			
pH	6.98	7.14	7.15	7.19	7.21	7.22	7.22	7.23	7.23			
pH mV	-18.90	-28.20	-29.00	-30.80	-32.00	-32.50	-32.60	-32.90	-33.00			
ORP mV	-98.80	-152.20	-158.40	-163.70	-168.20	-170.10	-171.70	-173.40	-174.50			

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location BHC07 **Date of Installation** 27/03/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	24	1.61	10.89	1.65	BHC07 W4	1.65	water clear from the beginning, and became stable at 50mins	Hot, sunny, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	14.10	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	13.20	
DO%	53.50	2.80	8.60	2.80	2.10	1.70	1.30	1.20	0.90	1.00	0.90	
SPC	1254.00	1385.00	1458.00	1488.00	1496.00	1510.00	1512.00	1479.00	149.00	1445.00	1435.00	
pH	6.82	6.84	6.84	6.83	6.83	6.84	6.84	6.84	6.85	6.85	6.86	
pH mV	-10.50	-11.30	-11.00	-10.80	-10.80	-11.00	-11.10	-11.40	-11.60	-11.50	-12.20	
ORP mV	6.05	-58.30	-92.90	-106.80	-114.20	-120.80	-124.20	-127.70	-130.20	-130.80	-134.50	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC08	Date of Installation	16/03/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	26/06/2018	24	1.95	11.85	2.98	BHC08 W4	2.98	mostly clear throughout, slow purging to avoid going dry.	Hot, sunny, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.80	13.10	13.10	13.10	13.10	13.20	13.10	13.20	13.10	13.10	13.10	
DO%	46.40	6.80	5.40	3.60	2.20	2.50	2.40	1.80	2.00	2.10	1.90	
SPC	1642.00	1882.00	1940.00	1948.00	1970.00	1977.00	2020.00	2021.00	2040.00	2099.00	2041.00	
pH	11.40	6.95	6.57	6.55	6.52	6.51	6.48	6.48	6.47	6.46	6.46	
pH mV	-267.60	-17.00	4.10	5.30	6.80	7.50	9.00	9.10	9.40	10.00	10.30	
ORP mV	-95.00	96.70	62.80	54.60	45.80	42.30	38.70	33.20	30.30	29.50	27.90	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC09	Date of Installation	23/04/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	26/06/2018	22	2.36	12.35	3.06	BHC09 W4	3.06	Clear water, dry after 30 minutes, sample taken after being left to recharge.	Hot, sunny, dry breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	13.30	13.90	14.40	15.40	15.70	16.00	14.10					
DO%	13.00	20.80	2.60	1.60	1.30	1.60	1.00					
SPC	1486.00	1458.00	1466.00	1485.00	1499.00	1477.00	1490.00					
pH	10.37	9.73	8.87	7.56	7.41	8.55	7.45					
pH mV	-209.20	-173.40	-125.90	-51.60	-43.70	-50.40	-45.10					
ORP mV	28.70	30.10	27.70	-166.00	-167.30	-177.90	188.60					

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC27	Date of Installation	15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	24	2.13	12.88	2.13	BHC27 W4	2.13	clear water from the start and throughout	Hot, sunny, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	15.20	12.90	12.90	12.90	12.90	12.90	12.90	12.90				
DO%	40.00	0.50	0.40	0.40	0.40	0.30	0.50	0.50				
SPC	933.00	930.00	926.00	917.00	917.00	910.00	894.00	903.00				
pH	9.80	8.65	8.40	8.13	7.93	7.61	7.24	6.98				
pH mV	-177.10	-113.00	-98.30	-83.10	-72.00	-54.40	-33.60	-19.20				
ORP mV	-176.40	-234.30	-250.10	-236.10	-219.50	-187.60	-148.30	-117.50				

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC102	Date of Installation	11/12/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	24	2.12	11.75	2.15	BHC102 W4	2.15	clear water from the start, fast recharge.	Hot, sunny, dry and breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.20	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30
DO%	4.60	1.10	0.90	0.80	1.10	4.20	3.10	2.00	1.20	1.00	0.90	0.80
SPC	1402.00	1307.00	1290.00	1244.00	1206.00	1170.00	1147.00	1130.00	1122.00	1096.00	1083.00	1070.00
pH	7.45	6.68	6.74	6.73	6.71	6.70	6.69	6.67	6.66	6.65	6.64	6.64
pH mV	-43.60	-7.50	-6.50	-4.80	-4.10	-3.30	-2.90	-1.80	-1.10	-0.50	-0.10	-0.10
ORP mV	-177.00	-142.80	-139.40	-136.70	-133.30	-131.30	-129.40	-127.10	-125.40	-123.60	-122.00	-120.70

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC24 (D)** **Date of Installation** 23/02/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	22	1.97	10.28	Dry	BHC24(D) W4	2.10	Clear water from beginning. Slow purge. Stopped after 20 minutes. Sample taken the next day.	Hot, sunny, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	19.50	15.40	15.60	15.10	15.70							
DO%	49.50	3.60	1.60	11.40	25.10							
SPC	2613.00	4428.00	3728.00	2433.00	2546.00							
pH	11.25	11.68	11.77	11.47	11.51							
pH mV	-266.50	-266.10	-288.50	-273.90	-276.60							
ORP mV	-260.00	-45.40	-58.70	-65.40	-71.90							

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC01** **Date of Installation** 15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	22	2.73	4.63	Dry	BHC01 W4	3.12	Borehole dry after purging for 2 minutes. Sample taken next day.	Hot, sunny dry, breezy

Parameter	Time											
	0	2										
°C	18.40	15.50										
DO%	75.70	29.80										
SPC	14892.00	14848.00										
pH	12.25	12.32										
pH mV	-320.90	-322.90										
ORP mV	40.80	284.00										

Parameter	Time											
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC02	Date of Installation	17/08/2017

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	25/06/2018	24	1.40	10.8	1.41	BHC02 W4	1.41	Clear water from the beginning, very quick recharge	Hot, sunny, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	16.60	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	16.90	17.00	
DO%	15.70	8.00	6.40	5.90	5.30	5.30	5.30	5.30	5.30	5.20	5.30	
SPC	1345.00	1406.00	1424.00	14.33	1438.00	1438.00	1443.00	1442.00	1443.00	1446.00	1450.00	
pH	6.35	6.25	6.28	6.28	6.27	6.27	6.27	6.27	6.27	6.27	6.27	
pH mV	-17.00	20.30	20.90	21.10	21.40	21.40	21.50	21.60	21.60	21.70	21.70	
ORP mV	-0.70	4.60	9.40	11.90	14.30	15.10	15.10	15.90	16.50	17.70	18.10	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jun-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC07** **Date of Installation** 27/03/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	10/07/2018	20	1.58	10.86	1.65	BHC07 W5	1.65	water clear from the beginning, and became stable at 50mins	Warm, sunny/cloudy, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	13.80	13.40	13.40	13.40	13.40	13.40	13.40	13.40	13.40	13.40		
DO%	48.50	3.10	2.00	7.30	2.00	1.40	1.10	1.00	0.80	1.00		
SPC	1374.00	1480.00	1534.00	1599.00	1622.00	1611.00	1601.00	1557.00	15.35	1522.00		
pH	7.70	6.71	6.68	6.69	6.71	6.73	6.74	6.76	6.77	6.78		
pH mV	-50.60	1.40	2.70	2.30	1.10	0.20	-0.50	-1.60	-2.20	-2.50		
ORP mV	-64.60	-93.70	-101.70	-109.00	-116.30	-119.90	-122.50	-126.00	-128.00	-129.70		

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC08	Date of Installation	16/03/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
4	11/07/2018	23	1.80	11.85	2.46	BHC08 W5	2.46	mostly clear throughout, slow purging to avoid going dry.	Warm, sunny/cloudy, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	14.80	13.70	13.60	13.90	13.90	13.70	13.80	13.80	13.60			
DO%	19.60	3.40	5.20	2.30	2.10	1.80	1.00	0.80	0.70			
SPC	1528.00	1695.00	1924.00	1994.00	2048.00	2052.00	2100.00	2101.00	2124.00			
pH	10.60	6.73	6.37	6.32	6.29	6.28	6.25	6.26	6.25			
pH mV	-226.80	0.80	20.70	23.30	25.10	25.70	27.30	27.20	27.60			
ORP mV	7.20	61.80	60.00	48.40	46.60	44.40	43.40	42.10	41.90			

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC09	Date of Installation	23/04/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
5	11/07/2018	23	2.25	12.35	3.56	BHC09 W5	3.56	Clear water, slow to moderate to avoid going dry	Hot, sunny, dry breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	16.40	14.70	15.20	15.20	15.20	15.30	16.10	15.60	15.50			
DO%	38.40	0.50	0.50	0.70	2.80	1.80	0.80	0.80	0.70			
SPC	1610.00	1524.00	1507.00	1497.00	1499.00	1504.00	1509.00	1430.00	1532.00			
pH	8.20	7.89	6.94	6.42	6.37	6.34	6.37	6.46	6.40			
pH mV	-71.00	-66.90	-20.90	18.30	20.80	22.60	20.80	16.20	19.00			
ORP mV	-110.40	-244.30	-155.70	-98.40	-87.70	-80.50	-79.70	-84.70	-72.30			

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC24 (D)** **Date of Installation** 23/02/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
5	10/07/2018	21	2.04	10.28	4.35	BHC24(D) W5	4.35	Clear water from beginning. Slow purge to avoid running dry	Warm, sunny/cloudy, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	15.30	13.90	15.70	16.20	16.40	16.60						
DO%	27.70	2.70	1.60	0.80	0.50	0.40						
SPC	3268.00	3400.00	2971.00	2695.00	2585.00	2535.00						
pH	11.48	11.40	11.77	11.35	11.34	11.31						
pH mV	-272.30	-269.30	-266.70	-265.90	-265.40	-264.10						
ORP mV	27.90	-24.40	-72.80	-95.70	-113.60	-124.90						

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC27** **Date of Installation** 15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
5	11/07/2018	24	2.16	12.88	2.22	BHC27 W5	2.22	clear water from the start and throughout stable after 45 minutes	Hot, sunny, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.70	12.90	12.90	12.90	12.90	12.90	12.90	12.90	12.90	12.90		
DO%	34.50	3.10	1.60	0.80	0.70	0.70	0.70	0.70	0.70	0.70		
SPC	921.00	913.00	926.00	891.00	890.00	876.00	867.00	861.00	853.00	857.00		
pH	880.00	8.01	7.75	7.00	6.79	6.69	6.64	6.60	6.58	6.61		
pH mV	-1163.00	-72.50	-57.50	-14.80	-3.30	2.40	8.10	7.50	7.80	7.90		
ORP mV	51.60	-151.20	-151.40	-79.80	-60.30	-48.00	-41.50	-37.50	-36.10	-35.80		

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC102	Date of Installation	11/12/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
5	10/07/2018	23	2.19	11.75	2.23	BHC102 W5	2.23	clear water from the start, fast recharge.	Hot, sunny, dry and breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.60	12.40	12.40	12.40	12.40	12.40	12.40	12.40				
DO%	40.00	2.80	1.40	0.80	2.60	1.90	0.90	0.70				
SPC	1311.00	1216.00	1181.00	1145.00	1110.00	1089.00	1059.00	1043.00				
pH	6.99	6.76	6.73	6.70	6.67	6.65	6.63	6.61				
pH mV	-14.30	-1.70	0.20	1.90	3.60	4.60	5.80	6.90				
ORP mV	-121.60	-116.50	-114.10	-111.00	-107.40	-105.40	-102.50	-100.00				

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC01** **Date of Installation** 15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
5	10/07/2018	20	2.79	4.63	Dry	BHC01 W5	3.24	Borehole dry after purging for 1 minute. Sample taken next day.	Warm, sunny dry, breezy

Parameter	Time											
	0	2										
°C	16.00	14.70										
DO%	81.00	68.50										
SPC	13007.00	13853.00										
pH	11.81	12.12										
pH mV	-292.70	-309.40										
ORP mV	218.20	188.90										

Parameter	Time											
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE
Lake Lothing, Lowestoft

PROJECT NO.
2543,GI

DATE
Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC02	Date of Installation	17/08/2017

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
5	10/07/2018	20	1.38	10.8	1.47	BHC02 W5	1.47	Clear water from the beginning, very quick recharge	Warm, cloudy, dry, breezy

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	18.00	18.60	18.60	18.60	18.50	18.50	18.50	18.50	18.50	18.50	18.50	
DO%	17.20	5.20	4.10	3.90	3.90	3.90	3.90	4.10	4.00	4.20	4.30	
SPC	1510.00	1620.00	1637.00	1641.00	1634.00	16.32	1630.00	1630.00	1629.00	1627.00	1622.00	
pH	6.32	6.28	6.25	6.23	6.22	6.20	6.19	6.19	6.19	6.18	6.18	
pH mV	24.60	28.70	28.10	29.30	30.10	30.00	31.50	31.80	32.00	32.20	32.30	
ORP mV	6.10	15.40	19.50	22.10	23.80	25.70	27.20	28.30	29.00	30.20	31.00	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC09	Date of Installation	23/04/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	24/07/2018	27	2.42	12.35	Dry	BHC09 W6	3.12	Clear water, dry after 25 minutes and left to recharge for 30 mins and sample taken	Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	16.70	14.60	15.50	16.10	16.90	17.40						
DO%	24.80	44.50	33.20	37.70	37.60	34.20						
SPC	10.60	12.30	11.80	10.70	11.10	11.20						
pH	9.01	7.83	6.55	6.60	6.58	6.58						
pH mV	-174.00	-60.80	11.30	7.70	9.00	9.00						
ORP mV	44.90	33.90	41.80	41.70	36.10	28.60						

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC24 (D)	Date of Installation	23/02/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	23/07/2018	28	2.19	10.28	Dry	BHC24(D) W6	2.13	Clear water from beginning. Hole went dry, sample taken the next day	Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	17.50	18.70	17.60	19.00	19.80							
DO%	55.60	46.50	55.30	55.80	55.90							
SPC	20.80	16.50	13.10	11.60	10.90							
pH	11.75	11.69	11.64	11.61	11.58							
pH mV	-288.50	-285.40	-284.10	-283.40	232.80							
ORP mV	46.70	-58.40	52.20	40.70	31.00							

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC27	Date of Installation	15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	24/07/2018	27	2.14	12.88	2.16	BHC27 W6	2.16	clear water from the start and throughout stable after 50 minutes	Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	13.30	13.20	13.10	13.20	13.10	13.10	13.10	13.10	13.10	13.20	13.20	
DO%	67.00	4.10	1.40	3.40	1.40	0.90	0.60	0.60	0.60	0.60	0.50	
SPC	144.00	273.10	306.20	352.50	194.20	328.40	310.70	303.70	307.60	307.20	326.20	
pH	7.56	7.23	7.11	6.99	6.95	6.92	6.90	6.87	6.86	6.85	6.84	
pH mV	-45.60	-28.70	-21.30	-15.00	-12.50	-10.50	-9.40	-8.10	-7.20	-6.70	-6.80	
ORP mV	-114.90	-104.10	95.30	88.10	82.10	77.00	72.20	64.70	60.10	54.80	49.70	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC102	Date of Installation	11/12/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	23/07/2018	27	2.24	11.75	2.24	BHC102 W6	2.24	clear water from the start, fast recharge.	Hot, sunny, dry and calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	12.80	13.00	13.00	12.90	12.90	12.90	12.90					
DO%	61.90	0.60	0.70	0.50	0.80	0.90	0.70					
SPC	215.00	92.80	101.50	99.60	98.80	98.10	95.90					
pH	7.58	7.08	7.05	7.02	7.00	6.98	6.94					
pH mV	-47.80	-19.60	-17.90	-16.50	-15.10	-13.90	-12.10					
ORP mV	-69.80	-107.00	-110.80	-111.50	-111.90	-111.10	-109.70					

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC01** **Date of Installation** 15/01/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	23/07/2018	27	2.96	4.64	Dry	BHC01 W6	3.31	Borehole dry after purging for 1 minute. Sample taken next day.	Hot, sunny, dry, calm

Parameter	Time											
	0											
°C	18.40											
DO%	80.40											
SPC	10.60											
pH	12.17											
pH mV	-314.80											
ORP mV	130.90											

Parameter	Time											
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC02** **Date of Installation** 17/08/2017

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	23/07/2018	27	1.53	10.8	1.57	BHC02 W6	1.57	Clear water from the beginning, very quick recharge. Hose came loose at 5 mins to measurement deferred.	Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	19.20		19.60	19.60	19.60	19.60	19.60	19.50	19.50	19.50		
DO%	55.40		8.30	3.50	3.40	3.20	3.50	3.30	3.30	3.40		
SPC	262.20		301.60	456.30	800.00	156.80	161.20	160.90	161.00	160.40		
pH	6.74		6.67	6.55	6.64	6.53	6.52	6.51	6.42	6.50		
pH mV	1.70		12.00	11.90	11.60	12.20	13.00	13.30	13.50	13.70		
ORP mV	-10.50		13.10	16.40	19.40	22.20	25.20	27.00	28.90	29.80		

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location **BHC07** **Date of Installation** 27/03/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	23/07/2018	30	1.70	10.86	1.72	BHC07 W6	1.72	water clear from the beginning, and became stable at 50mins	Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	14.30	13.90	13.90	13.90	13.90	13.90	13.80	13.80	13.80	13.80	13.80	
DO%	86.90	12.10	1.40	4.30	1.70	0.90	0.70	0.60	0.50	0.50	0.40	
SPC	195.30	246.00	246.60	297.70	48.90	65.00	89.40	92.80	116.30	126.30	125.80	
pH	7.70	7.03	6.96	6.98	6.99	7.01	7.03	7.04	7.05	7.05	7.06	
pH mV	-53.90	-18.30	-13.20	-13.90	-14.70	-15.70	-16.80	-17.40	-18.20	-18.50	-18.60	
ORP mV	-52.00	-84.70	-110.80	-118.50	-124.50	-128.50	131.70	-134.70	-137.00	-138.40	-139.60	

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE Lake Lothing, Lowestoft

PROJECT NO. 2543,GI

DATE Jul-18

GROUNDWATER PURGING DATA

geosphere environmental ltd

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

Exploratory Hole Location	BHC08	Date of Installation	16/03/2018

Return Visit #	Monitoring Date	Air Temperature (°C)	Depth to Water (m)	Depth to Base of Well (m)	Depth to Water After Purging (m)	Sample Ref	Sample Depth (m)	Observations	Weather Conditions
6	24/07/2018	27	1.96	11.85	4.04	BHC08 W6	4.04	mostly clear throughout, slow purging to avoid going dry.	Hot, sunny, dry, calm

Parameter	Time											
	0	5	10	15	20	25	30	35	40	45	50	55
°C	13.60	13.30	13.60	13.50	13.50	13.50	13.50					
DO%	22.60	12.20	28.60	25.00	21.00	19.10	19.80					
SPC	4.50	8.60	9.90	10.70	11.00	10.10	10.10					
pH	10.71	6.76	6.61	6.45	6.43	6.40	6.41					
pH mV	-215.30	-2.20	7.60	14.80	16.70	17.80	19.30					
ORP mV	78.10	72.20	71.20	73.60	74.70	74.90	73.60					

Parameter	Time											
	60	65	70	75	80	95	100	105	110	115	120	125
°C												
DO%												
SPC												
pH												
pH mV												
ORP mV												

SITE	PROJECT NO.	DATE
Lake Lothing, Lowestoft	2543,GI	Jul-18

APPENDIX 18 – REFERENCES

R.1. ICE Publishing, 'UK Specification for Ground Investigation, Second edition', 2012

R.2. Mouchel: 1069948/000/SPEC 'Lake Lothing Third Crossing Specification for Ground Investigation', version 3, February 2017

R.3. British Standards Institute: BS 5930:2015, 'Code of Practice for Ground Investigations', 2015

R.4. British Standards Institute: BS EN ISO 22476-1, 'Geotechnical Investigation and Testing, Field Testing. Electrical Cone and Piezocone Penetration Test', 2012

R.5. Dynasafe report reference 6608TA, Explosve Ordnance Desktop Threat Assessment for Lake Lothing, Lowestoft, dated 16th June 2016.

R.6. BS-EN-14688-1:2002(+A1:2013) Ground Investigation and testing, Identification of Soil Part 1 – Identification and description

R.7. BS-EN-14688-1:2004(+A1:2013) Ground Investigation and testing, Identification of Soil Part 2 – Principles for a classification

APPENDIX 19 – DRAWINGS

Exploratory Hole Location Plan Provided by EDI Surveys Ltd – Drawing ref. 17148/m/01-02

Exploratory Hole Location Plan Provided by EDI Surveys Ltd – Drawing ref. 17148/M/02-02

Exploratory Hole Location Plan – L19 – Drawing ref. 2543,GI, 001 / Rev 0

GRID
NORTH

653650mE 293150mN
653700mE 293150mN
653750mE 293150mN
653800mE 293150mN
653850mE 293150mN
653900mE 293150mN
653950mE 293150mN
654000mE 293150mN
653650mE 293100mN
654000mE 293100mN
653650mE 293050mN
654000mE 293050mN
653650mE 293000mN
654000mE 293000mN
653650mE 292950mN
654000mE 292950mN
653650mE 292900mN
654000mE 292900mN
653650mE 292850mN
654000mE 292850mN
653650mE 292800mN
654000mE 292800mN
653650mE 292750mN
654000mE 292750mN
653650mE 292700mN
654000mE 292700mN
653650mE 292650mN
654000mE 292650mN

TPC01(CBR)
BHC01
CPTC01A
TPC102
TPC02(CBR)
CPTC03
BHC02
CPTC05
TPC03(CBR)
TPC101
BHC03
CPTC02
BHC04
CPTC04
TPC04(CBR)
TPC05
CPTC07
CPTC06
TPC103
CPTC08
TPC06
CPTC09
WSC05
BHC05
BHC06A
BHC06B
CPTC10
BHC06
TPC07
CPTC11
BHC07
TPC08
BHC32
CPTC20
BHC08
TPC09
BHC10
BHC09
WSC28
BHC28
BHC27
CPTC12
BHC12
WSC101
BHC13
BHC101
CPTC13
BHC102
BHC26
TPC21(CBR)
BHC14
WSC103
BHC103

0 1 2

Original Drawing Size: A0

NOTES:–

The accuracy and content of this drawing are dependent on the original specification and EDI should be consulted before use at other scales.

Where underground services are shown, all reasonable care has been taken within the spirit of the original specification and requirement. Before use of this information the user should consult EDI and satisfy themselves of the completeness and accuracy of such detail before undertaking any works. Due to the nature of this work and limitations imposed by ground conditions and the detection equipment no guarantee can be given that all services have been recorded. Trial holes should be dug at critical locations.

All reasonable care has been taken in the survey detail represented on this drawing but any discrepancies must be reported to EDI immediately.

Our aim is to produce the best possible results within the specification and cost constraints of our clients. Any comments are most welcome.

Levels shown at kerbs are channel level unless stated.

Control: All levels and co–ordinates are related to the datums described.

The horizontal control of this survey is based on Ordnance Survey grid as translated from GPS coordinates using Leica's SmartNet service. We have not applied a reverse scale factor and therefore all dimensions will be scaled by the local OS scale factor. The vertical control of this survey is based on OS datum as translated from GPS coordinates using the OSGM15 transformation as supplied by the OS. This may differ from the existing OS benchmarks in the area which should be disregarded; all levels should be taken from EDI survey stations.

LEGEND

Features:
AV Air Valve
AB Air Brick
BD Bollard
BH Borehole
BM Benchmark
BP Boundary Post
BS Bus Stop
BT British Telecom
CL Cover Level
COL Column
CTV Cable TV Cover
DCH Drainage Channel
DF Drinking Fountain
DIS Disused
DK Drop Kerb
DPC Damp proof Course
EC Electricity ID
EJ Expansion Joint
ER Earth Rod
FH Fire Hydrant
FHR Fire Hose Reel
FS Flagstaff
G Gully
GV Gas Valve
IC Inspection Cover
IL Invert Level
JBX Junction Box
KO Kerb Outlet
LB Letter Box
LBN Litter Bin
LLP Low Level LP
LP Lamp Post
MP Marker Post
MS Mile Stone
MT Mercury Telecom
OHL Overhead Line
OP Overflow Pipe
PM Parking Meter
PP Power Pole
RAD Radiator
RE Rodding Eye
RNP Road Name Plate
RS Road Sign
RSD Roller Shutter Door
RWP Rain Water Pipe
SD Service Duct
SV Stop Valve
TCB Telephone Call Box
TP Telegraph Pole
TS Traffic Signal
UB Universal Beam
UNK Unknown
UR Urinal
UTL Unable to lift
V Vent
VP Vent Pipe
WM Water Meter
WO Wash Out
WP Waste Pipe

Building Level Details:
D Door
EL Eave Level
FFL Floor Level
FRL Flat Roof Level
HL Head Level
PPL Parapet Level
RL Ridge Level
SL Sill Level
SP Springer of Arch
TA Top of Arch
W Window
CS Ceiling/Beam Soffit

Boundary Types:
BW Barbed Wire
CB Close Boarded
CH Chainlink
CI Corrugated Iron
CP Chestnut Paling
IR Iron Railing
IW Interwoven
LL Larch Lap
PAL Palisade
PR Post & Rail
PW Post & Wire
TNR Timber Knee Rail
RTW Retaining Wall
VSF Vehicle Safety Fence
WMF Wire Mesh Fence

Surfaces & Finishes:
B Brickwork
BB Breeze Block
C Concrete
CLT Ceiling Tiles
CP Carpet
CPS Concrete Paving Slabs
CPT Carpet Tiles
CR Concrete Render
CT Ceramic Tiles
FT Floor Tiles
HBD Hardboard
L Linoleum
P Plaster
PAV Brick Pavors
S Steel work
T Tarmac
TSP Textured Safety Paving
VT Vinyl Tiles

Services:
C CATV cables
C CCTV cables
D Data cables
E Electric cables
Foul water
G Gas pipes
Heating duct
SD Service ducts
Storm water
T Telecom cab.
Unidentified
W Water pipes
150Ø Pipe Diameter/Flow
Overhead Lines

Survey Station
Fence
Gate
Painted Road Markings
Edge of Vegetation
Kerb/Drop Kerb
Tree
Top
Bottom
Banks
Building
Overhead Building Detail
Wall

Rev.	Job No.	Date	Revision Detail	Surveyor	Chkd
B	17148	09/18	Renaming some locations.	S.Rodford	RJA
A	17148	08/18	Removing CBR18, changing CBR18A to CBR18.	S.Rodford	RJA

CLIENT
Geosphere Environmental Ltd
Brightwell Barns
Ipswich Road
Brightwell , Ipswich
IP10 0BJ

PROJECT
Geotechnical Ground Investigation Locations
Riverside Road
Lowestoft
Lowestoft
NR33 0TQ

Job No.	Surveyor	Checked	Date	Scale
17148	S.Rodford	G.Pugh	June 2018	1:500

DRAWING No. 17148/M/01–02
REV. B

EDI SURVEYS LTD
163–165 Ranelagh Road, Ipswich, Suffolk IP2 0AH
Telephone | 01473 211222 Fax | 01473 221660
Email | enquiries@edisurveys.co.uk
Our Services:– Topographic Surveys, Measured Building Surveys, GPS Surveying and Control, 3D laser Scanning, Utility Surveying and Drainage Investigation.
Click the link below to visit our website and find out more.
www.edisurveys.co.uk

constructionline
THE SURVEY ASSOCIATION
ISO 9001 REGISTERED FIRM

GRID NORTH

653650mE 292900mN
654000mE 292900mN
653650mE 292850mN
654000mE 292850mN
653650mE 292800mN
654000mE 292800mN
653650mE 292750mN
654000mE 292750mN
653650mE 292700mN
654000mE 292700mN
653650mE 292650mN
654000mE 292650mN
653650mE 292600mN
654000mE 292600mN
653650mE 292550mN
654000mE 292550mN
653650mE 292500mN
654000mE 292500mN
653650mE 292450mN
654000mE 292450mN
653650mE 292400mN
653700mE 292400mN
653750mE 292400mN
653800mE 292400mN
653850mE 292400mN
653900mE 292400mN
653950mE 292400mN
654000mE 292400mN

BHC32
BHC08
CPTC20
TPC09
BHC10
BHC09
WSC28
BHC28
BHC27
CPTC12
BHC12
WSC101
BHC13
BHC101
CPTC13
BHC102
BHC26
TPC21(CBR)
BHC14
WSC103
BHC103
BHC15
TPC10(CBR)
TPC22(CBR)
CPTC14
BHC18
CBR17
BHC17(CBR)
WSC17
TPC23(CBR)
WSC19A1
BHC19
WSC19A
WSC19
CPTC15
BHC20(CBR)
WSC16
WSC16A
WSC21
CBR14
WSC14
WSC22
BHC22
CPTC18
CBR18
BHC23
WSC23
BHC24

0 1 2

Original Drawing Size: A0

NOTES:–

The accuracy and content of this drawing are dependent on the original specification and EDI should be consulted before use at other scales.

Where underground services are shown, all reasonable care has been taken within the spirit of the original specification and requirement. Before use of this information the user should consult EDI and satisfy themselves of the completeness and accuracy of such detail before undertaking any works. Due to the nature of this work and limitations imposed by ground conditions and the detection equipment no guarantee can be given that all services have been recorded. Trial holes should be dug at critical locations.

All reasonable care has been taken in the survey detail represented on this drawing but any discrepancies must be reported to EDI immediately.

Our aim is to produce the best possible results within the specification and cost constraints of our clients. Any comments are most welcome.

Levels shown at kerbs are channel level unless stated.

Control: All levels and co-ordinates are related to the datums described.
The horizontal control of this survey is based on Ordnance Survey grid as translated from GPS coordinates using Leica's SmartNet service. We have not applied a reverse scale factor and therefore all dimensions will be scaled by the local OS scale factor. The vertical control of this survey is based on OS datum as translated from GPS coordinates using the OSGM15 transformation as supplied by the OS. This may differ from the existing OS benchmarks in the area which should be disregarded; all levels should be taken from EDI survey stations.

LEGEND

Features:
AV Air Valve
AB Air Brick
BD Bollard
BH Borehole
BM Benchmark
BP Boundary Post
BS Bus Stop
BT British Telecom
CL Cover Level
COL Column
CTV Cable TV Cover
DCH Drainage Channel
DF Drinking Fountain
DIS Disused
DK Drop Kerb
DPC Damp proof Course
EIC Electricity IC
EJ Expansion Joint
ER Earth Rod
FH Fire Hydrant
FHR Fire Hose Reel
FS Flagstaff
G Gully
GV Gas Valve
IC Inspection Cover
IL Invert Level
JBX Junction Box
KO Kerb Outlet
LB Letter Box
LBN Lamp Base
LLP Low Level LP
LP Lamp Post
MP Marker Post
MS Mile Stone
MT Mercury Telecom
OHL Overhead Line
OP Overflow Pipe
PM Parking Meter
PP Power Pole
RAD Radiator
RE Rodding Eye
RNP Road Name Plate
RS Road Sign
RSD Roller Shutter Door
RWP Rain Water Pipe
SD Service Duct
SV Stop Valve
TCB Telephone Call Box
TP Telegraph Pole
TS Traffic Signal
UB Universal Beam
UNK Unknown
UR Urinal
UTL Unable to lift
V Vent
VP Vent Pipe
WM Water Meter
WO Wash Out
WP Waste Pipe

Building Level Details:
D Door
EL Eave Level
FL Floor Level
FRL Floor Roof Level
HL Head Level
PPL Parapet Level
RL Ridge Level
SL Sill Level
SP Springer of Arch
TA Top of Arch
W Window
62.34 Ceiling/Beam Sofit

Boundary Types:
BW Barbed Wire
CB Close Boarded
CH Chainlink
CI Corrugated Iron
CP Chestnut Paling
IR Iron Railing
IW Iron Work
LL Larch Lap
PAL Palisade
PR Post & Rail
PW Post & Wire
TNR Timber Knee Rail
RTW Retaining Wall
VSF Vehicle Safety Fence
WMF Wire Mesh Fence

Surfaces & Finishes:
B Brickwork
BB Breeze Block
C Concrete
CLT Ceiling Tiles
CP Carpet
CPS Concrete Paving Slabs
CPT Carpet Tiles
CR Concrete Render
CT Ceramic Tiles
FT Floor Tiles
HBD Hardboard
M Macadam
P Pitchers
PAV Brick Paviors
S Steel work
T Tarmac
TSP Textured Safety Paving
VT Vinyl Tiles

Services:
CATV cables
CCTV cables
Data cables
Electric cables
Foul water
Gas pipes
Heating duct
Service ducts
Storm water
Telecom cab.
Unidentified
Water pipes
150ø Pipe Diameter/Flow
Overhead Lines

Survey Station
Fence
Gate
Painted Road Markings
Edge of Vegetation
Kerb/Drop Kerb
Tree
Top
Bottom
Banks
Building
Overhead Building Detail
Wall

Rev.	Job No.	Date	Revision Detail	Surveyor	Chkd
B	17148	09/18	Renaming some locations.	S.Rodford	RJA
A	17148	08/18	Removing CBR18, changing CBR18A to CBR18.	S.Rodford	RJA

CLIENT
Geosphere Environmental Ltd
Brightwell Barns
Ipswich Road
Brightwell , Ipswich
IP10 0BJ

PROJECT
Geotechnical Ground Investigation Locations
Riverside Road
Lowestoft
Lowestoft
NR33 0TQ

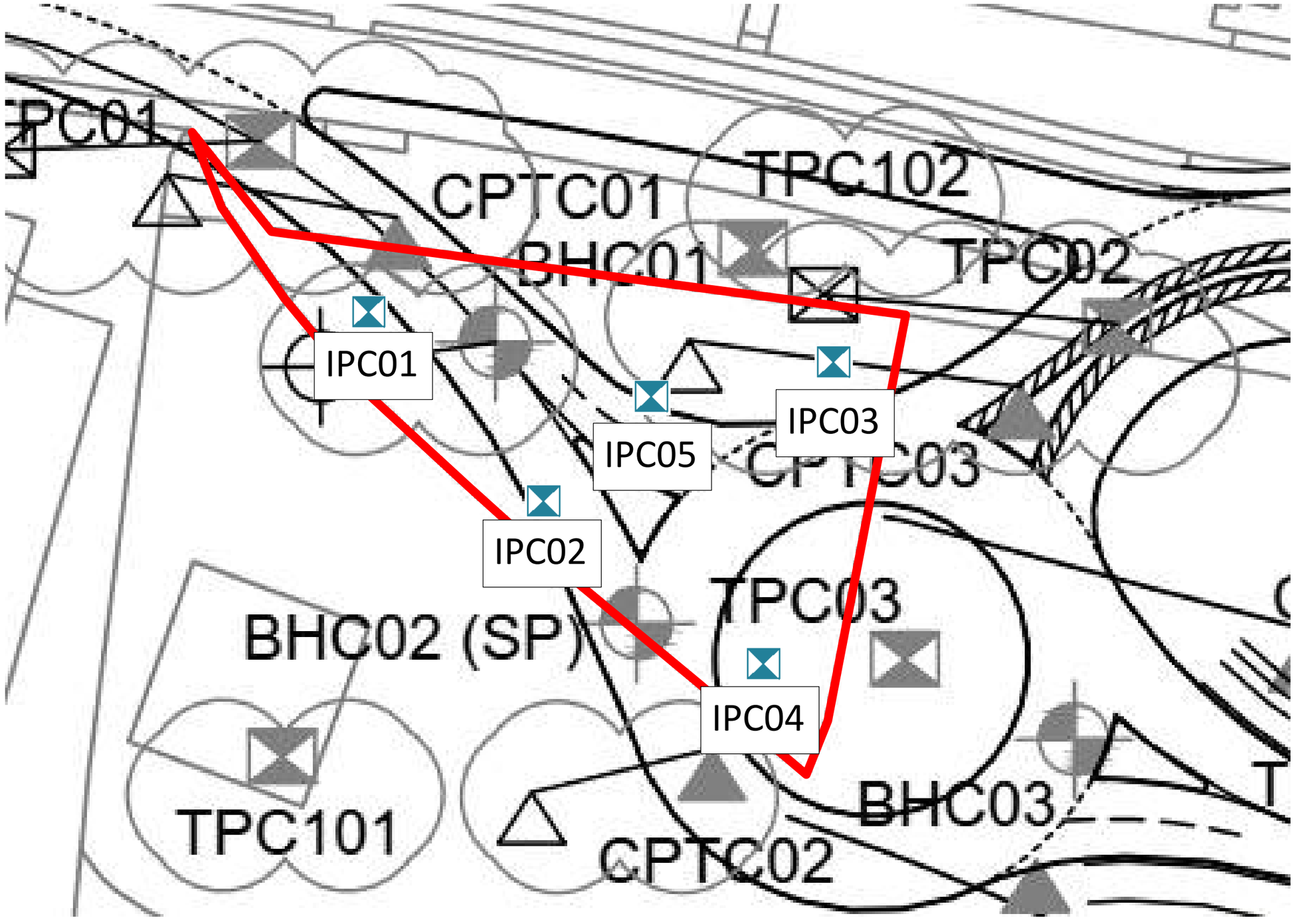
Job No.	Surveyor	Checked	Date	Scale
17148	S.Rodford	G.Pugh	June 2018	1:500

DRAWING No. 17148/M/02–02
REV. B

EDI SURVEYS LTD
163–165 Ranelagh Road, Ipswich, Suffolk IP2 0AH
Telephone | 01473 211222 Fax | 01473 221660
Email | enquiries@edisurveys.co.uk

Our Services:– Topographic Surveys, Measured Building Surveys, GPS Surveying and Control, 3D laser Scanning, Utility Surveying and Drainage Investigation.
Click the link below to visit our website and find out more.
www.edisurveys.co.uk

constructionline
THE SURVEY ASSOCIATION
ISO 9001 REGISTERED FIRM



Notes:

Inspection Pits

Site Boundary

N

geosphere environmental ltd

Brightwell Barns, Ipswich Road, Brightwell, Suffolk. IP10 0BJ

T 01603 298 076 E info@geosphere-environmental.co.uk

SITE	TITLE	PROJECT NO.	DRAWING NO.	DATE
Lake Lothing Third Crossing, Lowestoft	Exploratory Hole Location Plan – L19	2543,GI	001 / Rev 0	September 2017
	CLIENT	DRAWN BY	CHECKED	SCALE
	Suffolk County Council	LF	SG	Not to scale

geosphere environmental ltd

APPENDIX 20 – SCHEDULE OF EXPLORATORY HOLES

Appendix 20: Onshore Exploratory Hole Schedule				
Exploratory Hole Reference	**Type**	**Scheduled depth**	**Completed depth**	**Comments**
Borehole Test Schedule				
BHC01	Cable Percussive	15.0	15.1	Target depth achieved.
BHC02(SP)	Cable Percussive	15.0	12.0	Target depth achieved.
BHC03	Cable Percussive	25.0	25.0	Target depth achieved.
BHC04(SP)	Cable Percussive	40.0	41.5	Target depth achieved.
BHC05	Cable Percussive	40.0	40.0	Target depth achieved.
BHC06	Cable Percussive	40.0	45.0	Target depth achieved.
BHC07(SP)	Cable Percussive	40.0	40.0	Target depth achieved.
BHC08	Cable Percussive	40.0	40.0	Target depth achieved.
BHC09(SP)	Cable Percussive	40.0	50.0	Target depth achieved.
BHC10	Cable Percussive	40.0	50.0	Target depth achieved.
BHC11	Cable Percussive	40.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
BHC12	Cable Percussive	40.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
BHC13(P)	Cable Percussive	40.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
BHC14	Cable Percussive	40.0	40.0	Target depth achieved.
BHC15	Cable Percussive	40.0	40.0	Target depth achieved.
BHC16(SP)	Cable Percussive	40.0	TBA	Cancelled by WSP.
BHC17	Cable Percussive	40.0	40.0	Target depth achieved.
BHC18	Cable Percussive	40.0	40.0	Target depth achieved.
BHC19	Cable Percussive	25.0	40.0	Target depth achieved.
BHC20	Cable Percussive	25.0	40.0	Target depth achieved.
BHC21(SP)	Cable Percussive	25.0	N/A	Services too dense, position cancelled by WSP
BHC22	Cable Percussive	25.0	25.0	Target depth achieved.
BHC23(SP)	Cable Percussive	15.0	15.0	Target depth achieved.
BHC24	Cable Percussive	15.0	15.0	Target depth achieved.

BHC25	Cable Percussive	15.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
BHC26	Cable Percussive	15.0	15.5	Target depth achieved.
BHC27	Cable Percussive	40.0	50	Target depth achieved.
BHC28(P)	Cable Percussive	40.0	50	Piezo installation moved to BHC27
BHC29(P)	Cable Percussive	40.0	N/A	
BHC30	Cable Percussive	40.0	1.3 (Hand pit)	Boreholes cancelled on WSP instruction. Hand pit undertaken.
BHC31	Cable Percussive	40.0	1.2 (Hand pit)	Boreholes cancelled on WSP instruction. Hand pit undertaken.
BHC32(P)	Cable Percussive	40.0	40.0	
BHC101	Cable Percussive	40.0	40.0	
BHC102	Cable Percussive	40.0	37.0	
BHC103	Cable Percussive	40.0	40.0	
Window Sampling Test Schedule				
WSC05	Windowless sampler	To refusal / confirmation from IS	5.0	Borehole terminated at 5.0mbgl due to soils being too dense and possible blowing sands.
WSC14	Windowless sampler	To refusal / confirmation from IS	5.0	Borehole terminated at 5.0mbgl due to continued collapse of the borehole between 4.0mbgl and 5.0mbgl
WSC16	Windowless sampler	To refusal / confirmation from IS	1.1	Concrete obstruction encountered at the base of the hand pit excavation. Hole discontinued.
WSC16A	Windowless sampler	To refusal / confirmation from IS	1.1	Concrete obstruction encountered at the base of the hand pit excavation. Hole discontinued.
WSC17	Windowless sampler	To refusal / confirmation from IS	4.0	Borehole terminated at 4.0mbgl due to possible blowing material between 3.0mbgl and 4.0mbgl.
WSC19	Windowless sampler	To refusal / confirmation from IS	0.8	Hand pit terminated at 0.8mbgl due to obstruction. Hole discontinued.
WSC19A	Windowless sampler	To refusal / confirmation from IS	5.0	Borehole terminated at 5.0mbgl due to blowing sands.
WSC19A-1	Windowless sampler	To refusal / confirmation from IS	4.0	Borehole terminated at 5.0mbgl due to continued collapse.

WSC21	Windowless sampler	To refusal / confirmation from IS	3.2	Borehole terminated at 3.2mbgl due to dense sands.
WSC22	Windowless sampler	To refusal / confirmation from IS	4.5	Borehole terminated at 4.5mbgl due to dense sands.
WSC23	Windowless sampler	To refusal / confirmation from IS	4.0	Borehole terminated at 4.0mbgl
WSC28	Windowless sampler	To refusal / confirmation from IS	4.0	Borehole terminated at 4.0mbgl
WSC101	Windowless sampler	To refusal / confirmation from IS	1.28	Hand pit terminated at 1.28 due to concrete obstruction
WSC103	Windowless sampler	To refusal / confirmation from IS	4.0	Borehole terminated at 4.0mbgl due to blowing sands
Trial Pit Schedule				
TPC01(CBR)	Trial Pit	3.0	3	Target depth achieved
TPC02	Trial Pit	3.0	2.7	Target depth not achieved due to collapse of side walls and groundwater intrusion
TPC03(CBR)	Trial Pit	3.0	2.1	Target depth not achieved due to collapse of side walls and groundwater intrusion
TPC04	Trial Pit	3.0	2.7	Target depth not achieved due to collapse of side walls
TPC05	Trial Pit	3.0	3.1	Target depth achieved
TPC06	Trial Pit	3.0	3.2	Target depth achieved
TPC07	Trial Pit	3.0	1.55	Target depth not achieved due to collapse of sidewalls.
TPC08	Trial Pit	3.0	2.5	Target depth not achieved due to collapse of sidewalls.
TPC09	Trial Pit	3.0	2.0	Target depth not achieved due to collapse of sidewalls and unsafe working conditions
TPC10	Trial Pit	3.0	0.55	Target depth not achieved following CBR test due to high density of services and positive CAT responses.
TPC11(CBR)	Trial Pit	3.0	N/A	Cancelled based on land access issues. Land access denied by owners, proposed road position moved.

TPC12	Trial Pit	3.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
TPC13	Trial Pit	3.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
TPC14	Trial Pit	3.0	N/A	Hole changed to a Window Sample due to disturbance limitations (see WSC14)
TPC15	Trial Pit	3.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G
TPC16	Trial Pit	3.0	N/A	Cancelled based on client supplied drawing 1069948-GI-002 REV G. Unacceptable location: services too dense
TPC17(CBR)	Trial Pit	3.0	N/A	Position cancelled by WSP.
TPC18	Trial Pit	3.0	N/A	Position cancelled by WSP.
TPC19(CBR)	Trial Pit	3.0	N/A	Position cancelled by WSP.
TPC20(CBR)	Trial Pit	3.0	N/A	Position cancelled by WSP.
TPC21	Trial Pit	3.0	3.1	Target depth achieved
TPC22(CBR)	Trial Pit	3.0	3.0	Target depth achieved
TPC23	Trial Pit	3.0	3.1	Target depth achieved
Cone Penetration Test Schedule				
CPTC01A	Cone Penetration	15.0	9.4	Test refused due to tip resistance
CPTC02	Cone Penetration	15.0	7.94	Test refused due to tip resistance
CPTC03	Cone Penetration	15.0	8.22	Test ceased due to buckling rods
CPTC04	Cone Penetration	15.0	15.0	Target depth achieved
CPTC05	Cone Penetration	15.0	11.4	Test refused due to tip resistance
CPTC06	Cone Penetration	15.0	12.58	Test refused due to tip resistance
CPTC07	Cone Penetration	15.0	10.75	Test ceased due to buckling rods
CPTC08	Cone Penetration	15.0	1.65	Test refused due to tip resistance
CPTC08A	Cone Penetration	15.0	10.36	Test refused due to tip resistance
CPTC09	Cone Penetration	15.0	25.0	Target depth achieved
CPTC10	Cone Penetration	15.0	10.61	Test refused due to tip resistance
CPTC11	Cone Penetration	15.0	20.27	Test refused due to tip resistance
CPTC12	Cone Penetration	15.0	12.56	Test ceased due to buckling rods

CPTC13	Cone Penetration	15.0	2.07	Test refused due to tip resistance
CPTC14	Cone Penetration	15.0	13.72	Test refused due to tip resistance
CPTC15	Cone Penetration	15.0	5.80	Test refused due to tip resistance
CPTC16	Cone Penetration	15.0	N/A	Location cancelled by WSP.
CPTC17	Cone Penetration	15.0	N/A	Location cancelled by WSP (services too dense in first instance and access constraints in proposed relocation)
CPTC18	Cone Penetration	15.0	11.56	Test ceased due to buckling rods
CPTC19	Cone Penetration	15.0	N/A	Location cancelled by WSP.
CPTC20	Cone Penetration	15.0	24.56	Test refused due to total pressure
Inspection Pit Test Schedule				
IPC01	Inspection pit	1.5	1.5	Target depth achieved
IPC02	Inspection pit	1.5	1.4	Target depth not achieved due to loose silty soils
IPC03	Inspection pit	1.5	1.2	Target depth not achieved due to loose silty soils
IPC04	Inspection pit	1.5	1.5	Target depth achieved
IPC05	Inspection pit	1.5	1.3	Target depth not achieved due to loose silty soils

APPENDIX 21 – LABORATORY UKAS ACCREDITATIONS

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

2183

Accredited to ISO/IEC 17025:2005

Chemtest Ltd

Issue No: 093 **Issue date:** 10 September 2018

11 Depot Road
Newmarket
Suffolk
CB8 0AL

Contact: Mr Neil Baxter
Tel: +44 (0)1638 606070
Fax: +44 (0)1638 606071
E-Mail: neil.baxter@chemtest.com
Website: www.chemtest.co.uk

Testing performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address 11 Depot Road Newmarket Suffolk CB8 0AL	**Contact:** Mr Neil Baxter Tel: +44 (0)1638 606070 Fax: +44 (0)1638 606071 E-Mail: neil.baxter@chemtest.com	Chemical Testing	A
Address Unit 4B Star Industrial Park Bodmin Road Coventry CV2 5DB	**Contact:** Mr Neil Baxter Tel: +44 (0)1638 606070 Fax: +44 (0)1638 606071 E-Mail: neil.baxter@chemtest.com	Asbestos Analysis	B
Address Unit 1 Kennedy Enterprise Centre Blackstaff Road Belfast BT11 9DT	**Contact:** Mr Neil Baxter Tel: +44 (0)1638 606070 Fax: +44 (0)1638 606071 E-Mail: neil.baxter@chemtest.com	Asbestos Analysis	C
Address Unit 6, Tower Street Century Building Brunswick Business Park Liverpool L3 4BJ	**Contact:** Mr Neil Baxter Tel: +44 (0)1638 606070 Fax: +44 (0)1638 606071 E-Mail: neil.baxter@chemtest.com	Asbestos Analysis	D
Address Unit F7 Prospect Business Park Durham DH8 7PW	**Contact:** Mr Neil Baxter Tel: +44 (0)1638 606070 Fax: +44 (0)1638 606071 E-Mail: neil.baxter@chemtest.com	Asbestos Analysis	E

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Health and Hygiene	Health and Safety Executive Asbestos: The analysts' guide for sampling, analysis and clearance procedures (HSG 248)	
ASBESTOS IN BULK MATERIALS including materials and products suspected of containing asbestos	Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	HSG 248:February 2005 by Documented In-House Method SOP 2185 using stereo-microscopy, polarised light microscopy and dispersion staining	B, C, D & E
ASBESTOS IN SOILS Including sediment, crushed concrete and rail ballast	Asbestos Fibre Screening/ Identification and Quantification of asbestos content Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	Documented In-House Method SOP 2192 using stereo-microscopy, polarised light optical microscopy and dispersion staining	B D & E
SOIL	Chemical Tests	Documented In-House Method based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials', unless otherwise stated, referenced by ISBN number and year	
	Boron (water soluble)	SOP 2120 by ICP spectrometry based on procedure in 'The Analysis of Agricultural Materials', ADAS (ISBN 011 242 762 6:1986)	A
	Sulphate (water soluble)	SOP 2120 by ICP spectrometry (ISBN 011 752 240 6:1988)	A
	Sulphate (acid soluble)	SOP 2430 by Digiprep hotblock digestion followed by ICP (ISBN 011 753 244 4:1996)	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd)		
	Loss on Ignition (550°C)	SOP 2610 using gravimetry	A
	pH value	SOP 2010 by pH meter (ISBN 011 751 252 4:1977)	A
	Sulphur (elemental and organic)	SOP 2180 by HPLC	A
	Sulphur (Total)	SOP 2175 by combustion / IR photometry using Eltra CS 800 Based on TRL Report 447, Test 4B	A
	Polynuclear Aromatic Hydrocarbons (PAHs): Anthracene Acenaphthene Acenaphthylene Benzo[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[g,h,i]perylene Benzo[k]fluoranthene Chrysene Dibenzo[a,h]anthracene Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene Pyrene Total PAHs (sum of 16 above)	SOP 2700 by GC-FID based on 'Standard Methods for the examination of Water & Waste Water', APHA (ISBN 087 553 223 3:1995)	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd)		
	Polynuclear Aromatic Hydrocarbons (PAHs): Acenaphthene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo[b]fluoranthene Benzo(g,h,I)perylene Benzo[k]fluoranthene Chrysene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 14 above)	SOP 2800 by GC-MS	A
	Metals: Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Vanadium Zinc	SOP 2450 by digiprep hotblock digestion followed by ICP-Mass Spectroscopy (ISBN 011 753 244 4:1996)	A
	Total Cyanide Free Cyanide Thiocyanate	SOP 2300 by Skalar SAN++ Continuous flow analyser	A
	Sulphide	SOP 2325 by steam distillation and discrete colorimetric analyser	A
	TOC Soil Organic Matter (by calculation	SOP 2625 by Eltra Elemental Analyser	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd)		
	Water Soluble Chloride	SOP 2220 by discrete colorimetric analyser	A
	Extractable Ammonium	SOP 2425 by discrete colorimetric analyser	A
	Total Petroleum Hydrocarbons including Gasoline Range Organics (GRO, Diesel Range Organics (DRO)	SOP 2670 by GC-FID (ISBN 011 752 222 8:1988)	A
	Volatile Organic Compounds (VOCs): Chloromethane Vinyl chloride Bromomethane Trichlorofluoromethane 1,1-Dichloroethene trans-1,2-Dichloroethene 1,1-Dichloroethane cis-1,2-Dichloroethene Trichloromethane 1,1,1-Trichloroethane Tetrachloromethane Benzene 1,2-Dichloroethane 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,2-Dibromoethane Chlorobenzene 1,1,1,2 –Tetrachloroethane Ethylbenzene m & p - Xylene o- Xylene Styrene	SOP 2760 by Headspace GC-MS based on EPA 524.2:1992	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd) Volatile Organic Compounds (VOCs): (cont'd) Isopropylbenzene Bromobenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Naphthalene MTBE Total Xylenes Dichlorodifluoromenthane Chloroethane Bromochloromethane 1-1,Dichloropropane 1,3, Dichloropropane Dibromochloromethane Tribromomethane N-propylbenzene 4-Chlorotoluene Tert-Butylbenzene Sec-Butylbenzene 4-Isopropyltoluene N-Butylbenzene 1,2-Dibromo-3-chloropropane Hexachlorobutadiene 1,2,3-Trichlorobenzene	SOP 2760 by Headspace GC-MS based on EPA 524.2:1992	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd)		
	Extractable Petroleum Hydrocarbons including fractionation and banding >C8 - C35 EPH	SOP 2680 by solvent extraction and GCxGC- FID	A
	>C8 - C10 aliphatics >C10 - C12 aliphatics >C12 - C16 aliphatics >C16 - C21 aliphatics >C21 - C35 aliphatics >C8 - C35 aliphatics		
	>C8 - C10 aromatics >C10 - C12 aromatics >C12 - C16 aromatics >C16 – C21 aromatics >C21 – C35 aromatics >C8 – C35 aromatics		
	Phenols: Resorcinol Phenol Methylphenols Dimethylphenols Trimethylphenols	SOP 2920 by HPLC	A
	Polychlorinated biphenyls (PCB's): PCB 28 PCB 52 PCB 101 PCB 118 PCB 138 PCB 153 PCB 180	SOP 2815 by Sonication followed by GCMS	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd)		
	SVOCS : 1,2,4-Trichlorobenzene 2,4,5-Trichlorophenol 2,4-Dichlorophenol 2-Chloronaphthalene 4-Chloro-3-Methylphenol 4-Chlorophenylphenylether Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Bis(2-Chloroethoxy)methane Bis(2-Chloroisopropyl)ether Butylbenzyl phthalate Chrysene Dibenz(ah)anthracene Dibenzofuran Diethyl phthalate Dimethylphthalate Di-N-Butyl phthalate	SOP 2790 by solvent extraction and GCMS	A
	Fluoranthene Fluorene Hexachlorobutadiene Indeno(1,2,3-c,d)pyrene Naphthalene Nitrobenzene N-Nitrosodi-n-propylamine Phenanthrene Pyrene N-Nitrosodimethylamine Phenol 2-Chlorophenol Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 4-Methylphenol Isophorone	and GCMS	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests (cont'd)		
	2-Methylnaphthalene 2,4,6-Trichlorophenol 2-Nitroaniline 2,6-Dinitrotoluene 3-Nitroaniline 2,4-Dinitrotoluene 4-Nitroaniline Azobenzene 4-Bromophenylphenyl ether Hexachlorobenzene Carbazole Di-n-octyl phthalate	SOP 2790 by solvent extraction and GCMS	A
SOIL	Chemical Tests and Physical Tests	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils	
	pH value	SOP 2010 by pH meter (ISBN 011 751 252 4:1977)	A
	Sulphur (elemental and organic)	SOP 2180 by HPLC	A
	Sulphur (Total)	SOP 2175 by combustion / IR photometry using Eltra CS 800 Based on TRL Report 447, Test 4B	A
	Boron (water soluble)	SOP 2120 by ICP spectrometry based on procedure in 'The Analysis of Agricultural Materials', ADAS (ISBN 011 242 762 6:1986)	A
	Sulphate (water soluble)	SOP 2120 by ICP spectrometry (ISBN 011 752 240 6:1988)	A
	Sulphate (acid soluble)	SOP 2430 by Digiprep hotblock digestion followed by ICP (ISBN 011 753 244 4:1996)	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests and Physical Tests (cont'd)	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils (cont'd)	
	Metals: Arsenic Barium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Zinc	SOP 2450 by digiprep hotblock digestion followed by ICP-Mass Spectroscopy (ISBN 011 753 244 4:1996)	A
	Loss on Ignition (550°C)	SOP 2610 using gravimetry	A
	Total Cyanide Free Cyanide Thiocyanate	SOP 2300 by Skalar SAN++ Continuous flow analyser	A
	TOC Soil Organic Matter (by calculation)	SOP 2625 by Eltra Elemental Analyser	A
	Water Soluble Chloride	SOP 2220 by discrete colorimetric analyser	A
	Extractable Ammonium	SOP 2425 by discrete colorimetric analyser	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests and Physical Tests (cont'd)	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils (cont'd)	
	Volatile Organic Compounds (VOCs): 1,1-Dichloroethane cis-1,2-Dichloroethene 2-Chlorotoluene Benzene Chlorobenzene Chloromethane Ethylbenzene 1,1,1 2 – Tetrachloroethane Tetrachloroethene Tetrachloromethane Toluene 1,1,1 – Trichloroethane Trichloromethane Vinyl Chloride 1,1,2 – Trichloroethane 1,1 – Dichloroethene 1,2,4 – Trichlorobenzene 1,2,4 – Trimethylbenzene 1,2 - Dibromoethane 1,2-Dichlorobenzene 1,2-Dichloroethane 1,2-Dichloropropane 1,3,5-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Bromobenzene Bromodichloromethane Bromomethane Dibromomethane Isopropylbenzene MTBE Styrene o-Xylene m&p-Xylene Total-Xylenes trans 1,2-Dichloroethene Trichlorofluoromethane	SOP 2760 by Headspace GC-MS based on EPA 524.2:1992	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests and Physical Tests (cont'd)	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils (cont'd)	
	Polynuclear Aromatic Hydrocarbons (PAHs): Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo[b]fluoranthene Benzo(g,h,i)perylene Benzo[k]fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 16 above)	SOP 2700 by GC-FID based on 'Standard Methods for the examination of Water & Waste Water', APHA (ISBN 087 553 223 3:1995)	A
	Polynuclear Aromatic Hydrocarbons (PAHs) Acenaphthene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo[b]fluoranthene Benzo(g,h,I)perylene Benzo[k]fluoranthene Chrysene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 14 above)	SOP 2800 by GC-MS	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests and Physical Tests (cont'd)	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils (cont'd)	
	Total Petroleum Hydrocarbons C_8 - C_{40}	SOP 2670 by GC-FD (ISBN 011 752 2228:1988)	A
	Extractable Petroleum Hydrocarbons including fractionation and banding >C8 - C35 EPH	SOP 2680 by solvent extraction and GCxGC- FID	A
	>C8 - C10 aliphatics >C10 - C12 aliphatics >C12 - C16 aliphatics >C16 - C21 aliphatics >C21 - C35 aliphatics >C8- C35 aliphatics		
	>C8 - C10 aromatics >C10- C12 aromatics >C12 - C16 aromatics >C21- C35 aromatics >C8 -C35 aromatics		
	Phenols: Resorcinol Phenol Methylphenols Dimethylphenols Trimethylphenols	SOP 2920 by HPLC	A
	Polychlorinated biphenyls (PCBs): PCB 28 PCB 52 PCB 101 PCB 118 PCB 138 PCB 153 PCB 180	SOP 2815 by Sonication followed by GCMS	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests and Physical Tests (cont'd)	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils (cont'd)	
	SVOCS : 1,2,4-Trichlorobenzene 2,4,5-Trichlorophenol 2,4-Dichlorophenol 2-Chloronaphthalene 4-Chloro-3-Methylphenol 4-Chlorophenylphenylether Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Bis(2-Chloroethoxy)methane Bis(2-Chloroisopropyl)ether Butylbenzyl phthalate Chrysene Dibenz(ah)anthracene Dibenzofuran Diethyl phthalate Dimethylphthalate Di-N-Butyl phthalate Fluoranthene Fluorene Hexachlorobutadiene Indeno(1,2,3-c,d)pyrene Naphthalene Nitrobenzene N-Nitrosodi-n-propylamine Phenanthrene Pyrene N-Nitrosodimethylamine Phenol 2-Chlorophenol Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 4-Methylphenol	SOP 2790 by solvent extraction and GCMS	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOIL (cont'd)	Chemical Tests and Physical Tests (cont'd)	Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - soils (cont'd)	
	SVOCs (cont'd) :	SOP 2790 by solvent extraction and GCMS	A
	Isophorone 2-Methylnaphthalene 2,4,6-Trichlorophenol 2-Nitroaniline 2,6-Dinitrotoluene 3-Nitroaniline 2,4-Dinitrotoluene 4-Nitroaniline Azobenzene 4-Bromophenylphenyl ether Hexachlorobenzene Carbazole Di-n-octyl phthalate		

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS	Chemical Tests	Documented In-House Methods based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials' referenced by ISBN number and year	
Groundwater and Leachates	Electrical conductivity	SOP 1020 by Conductivity Meter (ISBN 011 751 428 4:1978)	A
Drinking water (non regulatory) Process water (Ultra-pure water), Recreational Water, Groundwater and Laboratory Prepared Leachates	pH value	SOP 1010 by pH meter (ISBN 011 751 252 4:1977)	A
Groundwater and Leachates	Total hardness	SOP 1270 by calculation based on procedure in 'The Analysis of Agricultural Materials', ADAS (ISBN 011 242 762 6:1986)	A
Groundwater and Laboratory Prepared Leachates	Chromium (VI)	SOP 1490 by discrete colorimetric analyser	A
Groundwater and Laboratory Prepared Leachates	Dissolved Mercury	SOP 1460 by Atomic Fluorescence Spectrometry	A
Groundwater and Laboratory Prepared Leachates	Extractable Petroleum Hydrocarbons including fractionation and banding >C8 - C10 aliphatics >C10 - C12 aliphatics >C12 - C16 aliphatics >C16 - C21 aliphatics >C21 - C35 aliphatics >C8 - C35 total aliphatics >C8 - C10 aromatics >C10 - C12 aromatics >C12 - C16 aromatics >C16 - C21 aromatics >C21 – C35 aromatics >C8 – C35 aromatics >C8 - C35 total aromatics Sum Total of >C8 to C35 EPH	SOP 1680 by solvent extraction and GCxGC- FID	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials' referenced by ISBN number and year (cont'd)	
Surface Water	Suspended Solids	SOP 1030 by gravimetry	A
Groundwater and Laboratory Prepared Leachates	Volatile Organic Compounds (VOCs): Dichlorodifluoromethane Chloromethane Bromomethane Chloroethane Trichlorofluoromethane 1,1-Dichloroethene trans-1,2-Dichloroethene 1,1-Dichloroethane cis-1,2-Dichloroethene Bromochloromethane Trichloromethane 1,1,1-Trichloroethane Tetrachloromethane 1,1-Dichloropropene Benzene 1,2-Dichloroethane 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane 1,2-Dibromoethane 1,1,1,2-Tetrachloroethane Ethylbenzene m- & p-Xylene o-Xylene Styrene Tribromomethane Isopropylbenzene Bromobenzene n-Propylbenzene 2-Chlorotoluene	SOP 1760 by Headspace GC-MS based on EPA 524.2:1992	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials' referenced by ISBN number and year (cont'd)	
Groundwater and Laboratory Prepared Leachates (cont'd)	Volatile Organic Compounds (VOCs): (cont'd) 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	SOP 1760 by Headspace GC-MS based on EPA 524.2:1992	A
Groundwater and Laboratory Prepared Leachates	Polycyclic Aromatic Hydrocarbons (PAHs): Acenaphthene Acenaphthylene Anthracene Benzo[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[g,h,l]perylene Benzo[k]fluoranthene Chrysene Dibenzo[a,h]anthracene Fluoranthene Fluorene lndeno[1,2,3]pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 16 above)	SOP 1700 by liquid/liquid extraction and GC-FID - based on Standard Methods for the Examination of Water and Waste Water' APHA. (ISBN 087 553 223 3:1995)	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials' referenced by ISBN number and year (cont'd)	
Groundwater and Laboratory Prepared Leachates	Polycyclic Aromatic Hydrocarbons (PAHs): Acenaphthene Acenaphthylene Anthracene Benzo[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[g,h,l]perylene Benzo[k]fluoranthene Chrysene Dibenzo [a,h] anthracene Fluoranthene Fluorene Indeno[1,2,3]pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 16 above)	SOP 1800 by liquid/liquid extraction and GC-MS - based on Standard Methods for the Examination of Water and Waste Water' APHA. (ISBN 087 553 223 3:1995)	A
Ground Water and Laboratory Prepared Leachates	Resorcinol Phenol Cresols (methyl Phenols) Xylenols (dimethylphenols) Trimethylphenols	SOP 1920 by HPLC with Electrochemical Detection	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods based on/incorporating published procedures in the HMSO series 'Methods for the Examination of Water and Associated Materials' referenced by ISBN number and year (cont'd)	
Groundwater and Laboratory Prepared Leachates	Dissolved Metals only: Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Tin Vanadium Zinc	SOP 1450 by ICP-Mass Spectroscopy (ISBN 011 753 244 4:1996)	A
Groundwater Leachates	Sulphide	by SOP 1325 - discrete colorimetric analyser	A
Drinking water (non regulatory) Process water (Ultra-Pure water), Ground Water and Leachates	Cations- Dissolved Metals Only: Sodium Calcium Potassium Magnesium	SOP 1415 by ICP-Mass Spectroscopy	A
Recreational waters,	Cations- Dissolved Metals Calcium Potassium Magnesium	SOP 1415 by ICP-Mass Spectroscopy	A
Ground Water and Leachates	Chemical Oxygen Demand	SOP 1100 by Colorimetry	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)		
Drinking water (non regulatory) Process water (Ultra-Pure water), Recreational water, Ground Water and Leachates	Chloride Nitrate (by calculation) Phosphate Sulphate	SOP 1220 by discrete colorimetric analyser	A
Ground Water and Leachates	Fluoride Nitrite Total Oxidised Nitrogen Alkalinity Ammonium	SOP 1220 by discrete colorimetric analyser	A
Ground Water	Free Cyanide Total Cyanide Thiocyanate	SOP 1300by continuous flow analyser	A
Ground Water	Hexavalent chromium	SOP1495 by Ion chromatography with post column derivatisation	A
Surface waters, groundwaters, and Laboratory prepared leachates	Total Organic Carbon Dissolved Organic Carbon	SOP 1610 by Catalytic Oxidation and IR detection	A
WASTEWATERS	Chemical Tests and Physical Tests		
Trade Effluent Treated Sewage Effluent	pH	SOP 1010 by pH Meter (ISBN 011 751 252 4:1977)	A
Trade Effluent Treated Sewage Effluent	Ammonium	SOP 1220 by discrete colorimetric analyser	A
Trade Effluent Treated Sewage Effluent	COD	SOP 1100 by Colorimetry	A
Trade Effluent Treated Sewage Effluent	Electrical Conductivity	SOP 1020 by Conductivity Meter (ISBN 011 751 428 4:1978)	A
Trade Effluent to Controlled Water and Trade Effluent to Sewer Treated Sewage Effluent	pH	SOP 1010 by pH Meter (ISBN 011 751 252 4:1977)	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WASTEWATERS (cont'd)	Chemical Tests and Physical Tests (cont'd)		
Trade Effluent to Controlled Water and Trade Effluent to Sewer Treated Sewage Effluent	Ammonium	SOP 1220 by discrete colorimetric analyser	A
Trade Effluent to Controlled Water and Trade Effluent to Sewer Treated Sewage Effluent	COD	SOP 1100 by Colorimetry	A
SOLID FUELS Waste Derived Fuels Biomass fuels	Chemical Tests		
	Gross Calorific Value	SOP 3140 by Bomb Calorimetry based on BS EN 15443 and BS EN 15400	A
	Ash	SOP 3010 by Gravimetry at 550°C based on BS EN 15403:2011	A
RECYCLED WASTE Trommel Fines	Loss on Ignition at 440°C	Documented in house method SOP 2620 by Gravimetry in accordance with HMRC Excise Notice LFT1 27 March 2015	A
END			

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

0998

Accredited to ISO/IEC 17025:2005

Soil Property Testing Ltd

Issue No: 031 **Issue date:** 22 August 2017

18 Halcyon Court
St Margaret's Way
Huntingdon
PE29 6DG

Contact: Mr Jon Garner
Tel: +44 (0)1480 455579
Fax: +44 (0)1480 453619
E-Mail: jgarner@soilpropertytesting.com
Website: www.soilpropertytesting.com

Testing performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address 18 Halcyon Court St Margaret's Way Huntingdon PE29 6DG	**Local contact** Mr **Jon Garner**	Aggregates Concrete Soils	A

Site activities performed away from the locations listed above:

Location details		Activity	Location code
All locations suitable for the activities listed	**Local contact** Mr **Jon Garner**	Soils	B

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
AGGREGATES	Ten per cent fines value - dry - particle size 10mm and greater *(loads from 40 to 2000 kN)*	BS 812-111:1990	A
	Ten per cent fines value - soaked - particle size 10mm and greater *(loads from 40 to 2000 kN)*	BS 812-111:1990	A
	Uniformity coefficient (221 2217)	Specification for Highway Works Series 600 Table 6/1 footnote 5	A
	Particle size distribution	BS EN 933-1:2012	A
	Flakiness Index	BS EN 933-3:2012	A
	Resistance to Fragmentation - Los Angeles method	BS EN 1097-2:2010	A
	Particle density and water absorption - wire basket method for aggregate particles between 31.5mm and 63mm	BS EN 1097-6:2013	A
	Particle density and water absorption- pyknometer method for aggregate particles between 4mm and 31.5mm	BS EN 1097-6:2013	A
	Particle density and water absorption - pyknometer method for aggregate particles passing the 4mm and retained on the 0.063mm test sieve	BS EN 1097-6:2013	A
	Water content - drying in a ventilated oven	BS EN 1097-5:2008	A
	Magnesium sulphate test	BS EN 1367-2:2009	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
CONCRETE - hardened	Compressive strength of cubes - including curing *(loads from 40 to 2000 kN)*	BS EN 12390-3:2009 BS EN 12390-2:2009	A
	Density	BS EN 12390-7:2009	A
SOILS for civil engineering purposes	Moisture content - oven drying method	BS 1377-2:1990	A
	Saturation moisture content of chalk	BS 1377-2:1990	A
	Liquid limit - cone penetrometer	BS 1377-2:1990	A
	Liquid limit - cone penetrometer - one point	BS 1377-2:1990	A
	Plastic limit	BS 1377-2:1990	A
	Plasticity index and liquidity index	BS 1377-2:1990	A
	Density - linear measurement	BS 1377-2:1990	A
	Particle size distribution - wet sieving	BS 1377-2:1990	A
	Particle size distribution - sedimentation - hydrometer method	BS 1377-2:1990	A
	Particle density - gas jar	BS 1377-2:1990	A
	Particle density - small pyknometer	BS 1377-2:1990	A
	Dry density/moisture content relationship (2.5 kg rammer)	BS 1377-4:1990	A
	Dry density/moisture content relationship (4.5 kg rammer)	BS 1377-4:1990	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS for civil engineering purposes (cont'd)	Dry density/moisture content relationship (vibrating hammer)	BS 1377-4:1990	A
	Moisture condition value (MCV) - natural moisture content	BS 1377-4:1990	A & B
	Moisture condition value (MCV)/moisture content relation	BS 1377-4:1990	A
	California Bearing Ratio (CBR) *(loads from 0.2 to 50kN)*	BS 1377-4:1990	A
	One-dimensional consolidational properties	BS 1377-5:1990	A
	Permeability in a triaxial cell	BS 1377-6:1990	A
	Undrained shear strength - triaxial compression without measurement of pore pressure *(loads from 0.2 to 10 kN)*	BS 1377-7:1990	A
	Undrained shear strength - triaxial compression with multistage loading and without measurement of pore pressure *(loads from 0.2 to 10 kN)*	BS 1377-7:1990	A
	In-situ density - sand replacement method (large pouring cylinder method)	BS 1377-9:1990	B
	In-situ density - sand replacement method (small pouring cylinder method)	BS 1377-9:1990	B
	Uniformity coefficient (221 2217)	BS 6100:Subsection 2.2.1:1992	A

0998
Accredited to
ISO/IEC 17025:2005

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Soil Property Testing Ltd
Issue No: 031 **Issue date:** 22 August 2017

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
GEOTECHNICAL INVESTIGATION and TESTING - Laboratory testing of soil	Water content Bulk density - linear measurement method	BS EN ISO 17892-1:2014 BS EN ISO 17892-2:2014	A A
END			

This page is blank

ADDRESS
Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

TELEPHONE
01603 298076

FAX
01603 298075

EMAIL
info@geosphere-environmental.co.uk

Annex D

MARINE SAMPLING FACTUAL INFORMATION

SCALE BAR
0 90 180 270 360 450 m
1:9,000 (A3)

N

A1144
B1375
B1532
Normanston Drive
Peto Way
Minden Road
Love Road
Rotterdam Road
High Street
Gordon Road
Denmark Road
Lowestoft
Normanston
Roman Hill
Oulton Broad North
South Beach
Waveney Drive
Victoria Road
Edgerton Road
Kirkley Run
Kirkley Stream
Pinewood Avenue
Carlton Road

CG-01
CG-02
CG-03
CG-04
CG-05
CG-06
CG-07
CG-08
CG-09
CG-10
CG-11
CG-12
WS1
WS4
VC01a
VC01b
VC04
VC08
VC09
VC09b
VC12

Scale 1:2000

VC01
VC01a
VC01b
VC02
VC03
WS2
VC04
VC05c
VC06
VC07
VC09b
VC10a
VC09a
VC09
VC10
VC11
WS3
VC08
VC12

KEY

The Scheme
Order Limits

Marine Sampling Locations

Sediment Grab Sample Location
Vibrocore Sample Location
Surface Water Sample Location

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO.
© Crown copyright and database rights 2017. All rights reserved.
Ordnance Survey licence number 100023395
Contains OS data © Crown copyright and database rights 2017.

P01.01	IW	NB	HR	12/02/2018
ORIGINAL ISSUE				
REVISION	DRAWN	CHECKED	APPROVED	DATE

DESCRIPTION

Suffolk County Council

PROJECT TITLE

Lake Lothing THIRD CROSSING

DRAWING TITLE

Marine Sampling Locations

DRAWING STATUS

Ready for Final Review

DRAWN	CHECKED	APPROVED	AUTHORISED	SUITABILITY
IW	NB	HR	MD	S4

SCALE @ A3 SIZE	DATE	REVISION
1:9,000	21/05/2018	P01.01

DRAWING NUMBER

Project | Originator | Volume
1069948-WSP-EGN-LL-C19-SK-LE-000X
Location | Type | Role | Number

Document Path: W:\ENVADMIN\Hydradmin\GIS_Projects_External\Lake_Lothing\FRA Figures\V2_Figures\Figure1 Marine Sampling Location.mxd

Drawn by:	DF
Date:	16/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	1.65	Core Number
Easting (m)/Northing (m):	653861.3 E - N 292806.9	Recovery(m):	1.54	**VC01B**
Water Depth(m):	3.1	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 21	
Vibration Time on Seabed:	0 mins	Touchdown (local-time):	10:50:31UTC	
Comments:	Spiking amps			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT						
		0.70				
Light brown fine to coarse SAND			0.80-1.20m			
			1.24-1.54m			
		1.54				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	4.20	Core Number
Easting (m)/Northing (m):	653903.0 E - N 292814.4	Recovery(m):	3.63	**VC02**
Water Depth(m):	3.2	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 25	
Vibration Time on Seabed:	2 mins	Touchdown (local-time):	14:44:47UTC	
Comments:	Spiking amps, clay in base			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Very soft to soft SILT			0.80-1.20m			
		1.50				
Light brown fine to coarse SAND			1.80-2.20m			
		2.70				
Stiff to very stiff silty CLAY			2.80-3.20m			
			3.20-3.63m			
		3.63				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	4.00	Core Number
Easting (m)/Northing (m):	653921.0 E - N 292814.2	Recovery(m):	3.79	**VC03**
Water Depth(m):	4.1	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 24	
Vibration Time on Seabed:	2 mins	Touchdown (local-time):	13:28:25UTC	
Comments:	Penetration flatline			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT			0.80-1.20m			
		1.60				
Light brown slightly silty fine to coarse SAND becoming fine to medium below 2.70 m			1.80-2.20m			
			2.80-3.20m			
			3.39-3.79m			
		3.79				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELDNOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	16/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	4.55	Core Number
Easting (m)/Northing (m):	653954.3 E - N 292793.2	Recovery(m):	4.20	**VC04**
Water Depth(m):	3.0	KP Distance (m):		
Sampling Date:	19/04/18	Fix Number:	fix 15	
Vibration Time on Seabed:	1 mins	Touchdown (local-time):	14:55:15UTC	
Comments:	Flatline penetration			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
SILT - sandy silt						
		0.90	0.80-1.20m			
Light grey slightly silty fine to medium SAND coursing down to medium to coarse SAND						
			1.80-2.20m			
			2.80-3.20m			
		3.00				
Light grey slightly clayey SILT			3.60-4.00m			
		4.00				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	16/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	3.70	Core Number
Easting (m)/Northing (m):	653853.1 E - N 292781.8	Recovery(m):	2.93	**VC05C**
Water Depth(m):	4.4	KP Distance (m):		
Sampling Date:	19/04/18	Fix Number:	fix 14	
Vibration Time on Seabed:	2 mins	Touchdown (local-time):	13:50:52UTC	
Comments:	Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Black soft clayey SILT			0.80-1.20m			
		1.50				
Grey very silty fine SAND. Gravelly at base			1.80-2.20m			
		2.15				
Very dense light grey SILT			2.53-2.93m			
		2.80				
Brownish grey silty fine to medium SAND		2.93				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

Note: Offshore Core Logs may differ from final laboratory standard core logs and to be referred to as a guide only

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	2.76	Core Number
Easting (m)/Northing (m):	653886.7 E - N 292770.1	Recovery(m):	2.46	**VC06**
Water Depth(m):	3.5	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 16	
Vibration Time on Seabed:	2 mins	Touchdown (local-time):	07:31:03UTC	
Comments:	Penetration flatline			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft to very soft grey SILT			0.80-1.20m			
		1.40				
Light brown silty medium to coarse SAND						
		1.80				
Loose very sandy fine to coarse GRAVEL			2.00-2.46m			
		2.20				
Light brown fine to medium SAND						
		2.46				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	2.50	Core Number
Easting (m)/Northing (m):	653905.9 E - N 292765.3	Recovery(m):	2.00	**VC07**
Water Depth(m):	1.4	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 27	
Vibration Time on Seabed:	2 mins	Touchdown (local-time):	16:42:05UTC	
Comments:	Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey sandy SILT						
		0.40				
Light brown slightly silty fine to coarse SAND with occasional gravel			0.80-1.20m			
			1.60-2.00m			
		2.00				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	2.05	Core Number
Easting (m)/Northing (m):	653951.6 E - N 292747.4	Recovery(m):	1.45	**VC08**
Water Depth(m):	3.6	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 26	
Vibration Time on Seabed:	1 mins	Touchdown (local-time):	16:04:34UTC	
Comments:	Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT						
		0.60				
Light brown slightly silty fine to medium SAND			0.60-1.00m			
			1.00-1.45m			
		1.45				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	16/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	2.05	Core Number
Easting (m)/Northing (m):	653835.9 E - N 292755.2	Recovery(m):	1.66	**VC09B**
Water Depth(m):	4.4	KP Distance (m):		
Sampling Date:	19/04/18	Fix Number:	fix 13	
Vibration Time on Seabed:	1 mins	Touchdown (local-time):	12:48:45UTC	
Comments:	Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Greyish brown slightly sandy very clayey SILT			0.80-1.20m			
		1.20				
Light brown clayey silty SAND			1.26-1.66m			
		1.66				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	3.10	Core Number
Easting (m)/Northing (m):	653879.7 E - N 292748.1	Recovery(m):	2.85	**VC10A**
Water Depth(m):	3.8	KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 18	
Vibration Time on Seabed:	1 mins	Touchdown (local-time):	08:24:58UTC	
Comments:	Flatline penetration			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT			0.80-1.20m			
		1.50				
Light brown fine to medium SAND			1.80-2.20m			
			2.45-2.85m			
		2.85				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	3.00	Core Number
Easting (m)/Northing (m):	653901.1 E - N 292750.3	Recovery(m):	2.50	**VC11**
Water Depth(m):		KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 22	
Vibration Time on Seabed:	2 mins	Touchdown (local-time):	11:26:43UTC	
Comments:	Penetration flatline			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey SILT						
			0.80-1.20m			
		1.10				
Very gravelly SAND. Gravel is fine to coarse						
		1.40				
Light brown fine to medium SAND						
			1.80-2.20m			
			2.20-2.50m			
		2.50				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Drawn by:	DF
Date:	19/05/2018
Checked by:	DH

OFFSHORE CORE LOG

CMS-Geotech

PROJECT DETAILS

Contract No:	2016-259
Vessel:	MV FlatHolm
Client:	WSP (UK) Ltd
Area:	Lowestoft Harbour

Project Title:

WSP Lake Lothing Lowestoft VC & Grab Sampling

TEST LOCATION DETAILS

Coordinate Ref System:	British Grid (OSGB36)	Penetration(m):	3.75	Core Number
Easting (m)/Northing (m):	653944.2 E - N 292725.1	Recovery(m):	3.30	**VC12A**
Water Depth(m):		KP Distance (m):		
Sampling Date:	20/04/18	Fix Number:	fix 23	
Vibration Time on Seabed:	1 mins	Touchdown (local-time):	12:28:55UTC	
Comments:	Loss of position			

SOIL DESCRIPTION	SOIL LOG	SOIL DEPTH (m)	SAMPLES, FIELD TESTS AND COMMENTS			
			Samples	test depth	Cu/Cr (kPa)	Comments
Soft dark grey slightly sandy SILT			0.80-1.20m			
		1.30				
Light brown slightly silty fine to medium SAND			1.80-2.20m			
			2.80-3.30m			
		3.30				

Currently to max depth 5.50 m

CAUTION PRELIMINARY FIELD NOTES

© CMS Geotech-Uncontrolled When Copied

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP UK Limited
3rd Floor
Station House
Mercury Court
Titheburn Street
Liverpool
L2 2QP

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	30 April 2018
Customer:	H_MOUCH_LIV
Sample Delivery Group (SDG):	180423-34
Your Reference:	62240712
Location:	Lowestoft
Report No:	454099

We received 4 samples on Saturday April 21, 2018 and 4 of these samples were scheduled for analysis which was completed on Monday April 30, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

[redacted]

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	180423-34	**Client Reference:**	62240712	**Report Number:**	454099
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17424916	WS01		0.00 - 0.20	19/04/2018
17424917	WS02		0.00 - 0.20	19/04/2018
17424918	WS03		0.00 - 0.20	19/04/2018
17424919	WS04		0.00 - 0.20	19/04/2018

Maximum Sample/Coolbox Temperature (°C) : **15.0**

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	180423-34	**Client Reference:**	62240712	**Report Number:**	454099
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)						17424916						17424917						17424918						17424919					
Customer Sample Reference						WS01						WS02						WS03						WS04					
AGS Reference																													
Depth (m)						0.00 - 0.20						0.00 - 0.20						0.00 - 0.20						0.00 - 0.20					
Container	250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)			
Sample Type	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW			
Alkalinity as CaCO3	All	NDPs: 0 Tests: 4		X					X					X					X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4			X					X					X					X			
Anions by Kone (w)	All	NDPs: 0 Tests: 4		X					X					X					X				
Colour Test	All	NDPs: 0 Tests: 4		X					X					X					X				
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 4		X					X					X					X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4		X					X					X					X				
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 4	X					X					X					X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4					X					X					X						
Mercury Dissolved	All	NDPs: 0 Tests: 4		X					X					X					X				
pH Value	All	NDPs: 0 Tests: 4		X					X					X					X				
Phosphate by Kone (w)	All	NDPs: 0 Tests: 4		X					X					X					X				
Suspended Solids	All	NDPs: 0 Tests: 4		X					X					X					X				
Total EPH (aq)	All	NDPs: 0 Tests: 4	X					X					X					X					
Total Metals by ICP-MS	All	NDPs: 0 Tests: 4				X					X					X					X		
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 4			X					X					X					X			

17424919	WS04		0.00 - 0.20	Vial (ALE297)

SW
X

Validated

CERTIFICATE OF ANALYSIS

SDG:	180423-34	**Client Reference:**	62240712	**Report Number:**	454099
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS01	WS02	WS03	WS04		
			Depth (m)	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20		
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	19/04/2018		
			Sample Time	10:15:00	10:30:00	10:50:00	11:00:00		
			Date Received	21/04/2018	21/04/2018	21/04/2018	21/04/2018		
			SDG Ref	180423-34	180423-34	180423-34	180423-34		
			Lab Sample No.(s)	17424916	17424917	17424918	17424919		
			AGS Reference						
Suspended solids, Total	<2 mg/l	TM022		42.3 #	36.8 #	40.8 #	34.2 #		
Alkalinity, Total as CaCO3	<2 mg/l	TM043		135 #	124 #	122 #	122 #		
Organic Carbon, Total	<3 mg/l	TM090		<3 #	<3 #	<3 #	<3 #		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120		45.8 #	46.7 #	46.3 #	45.1 #		
Aluminium (diss.filt)	<10 µg/l	TM152		<60 2 #	<60 2 #	<60 2 #	<60 2 #		
Arsenic (diss.filt)	<0.5 µg/l	TM152		<3 2 #	<3 2 #	<3 2 #	<3 2 #		
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.48 2 #	<0.48 2 #	<0.48 2 #	<0.48 2 #		
Chromium (diss.filt)	<1 µg/l	TM152		<6 2 #	<6 2 #	<6 2 #	<6 2 #		
Copper (diss.filt)	<0.3 µg/l	TM152		3.32 2 #	1.84 2 #	<1.8 2 #	<1.8 2 #		
Lead (diss.filt)	<0.2 µg/l	TM152		<1.2 2 #	<1.2 2 #	<1.2 2 #	<1.2 2 #		
Manganese (diss.filt)	<3 µg/l	TM152		<18 2 #	18.5 2 #	22.3 2 #	18.9 2 #		
Nickel (diss.filt)	<0.4 µg/l	TM152		3.13 2 #	<2.4 2 #	<2.4 2 #	3.32 2 #		
Zinc (diss.filt)	<1 µg/l	TM152		26.8 2 #	19.9 2 #	21.2 2 #	8.88 2 #		
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.114 2 #	<0.114 2 #	<0.114 2 #	<0.114 2 #		
Sodium (Tot. Unfilt.)	<0.047 mg/l	TM152		8440 #	8940 #	9050 #	8890 #		
Magnesium (Tot. Unfilt.)	<0.05 mg/l	TM152		1130 #	1160 #	1150 #	1130 #		
Potassium (Tot. Unfilt.)	<0.2 mg/l	TM152		361 #	356 #	355 #	349 #		
Calcium (Tot. Unfilt.)	<0.057 mg/l	TM152		440 #	450 #	415 #	461 #		
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172		<100	<100	<100	<100		
Total EPH (C6-C40) (aq)	<100 µg/l	TM172		<100	<100	<100	<100		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 2	<0.01 2	<0.01 2	<0.01 2		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184		<0.05 #	<0.05 #	<0.05 #	<0.05 #		
Sulphate	<2 mg/l	TM184		2640 #	2620 #	2610 #	2600 #		
Chloride	<2 mg/l	TM184		18400 #	18500 #	18000 #	18300 #		
Nitrate as NO3	<0.3 mg/l	TM184		<0.3	<0.3	<0.3	<0.3		
pH	<1 pH Units	TM256		7.9 #	7.92 #	7.93 #	7.9 #		
Apparent Colour	<1 mg/l Pt/Co	TM261		27.3	13.7	9.61	11.3		
True Colour	<1 mg/l Pt/Co	TM261		1.38	1.95	1.49	1.51		

Validated

CERTIFICATE OF ANALYSIS

SDG:	180423-34	**Client Reference:**	62240712	**Report Number:**	454099
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

GRO by GC-FID (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS01	WS02	WS03	WS04		
			Depth (m)	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20		
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)		
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	19/04/2018		
			Sample Time	10:15:00	10:30:00	10:50:00	11:00:00		
			Date Received	21/04/2018	21/04/2018	21/04/2018	21/04/2018		
			SDG Ref	180423-34	180423-34	180423-34	180423-34		
			Lab Sample No.(s)	17424916	17424917	17424918	17424919		
			AGS Reference						
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 1 #	<3 1 #	<3 #	<3 #		
Benzene	<7 µg/l	TM245		<7 1 #	<7 1 #	<7 #	<7 #		
Toluene	<4 µg/l	TM245		<4 1 #	<4 1 #	<4 #	<4 #		
Ethylbenzene	<5 µg/l	TM245		<5 1 #	<5 1 #	<5 #	<5 #		
m,p-Xylene	<8 µg/l	TM245		<8 1 #	<8 1 #	<8 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 1 #	<3 1 #	<3 #	<3 #		
Sum of detected BTEX	<28 µg/l	TM245		<28 1	<28 1	<28	<28		
GRO >C5-C10	<10 µg/l	TM245		<10 1	<10 1	<10	<10		
EPH (C6-C10)	<100 µg/l	TM245		<100 1	<100 1	<100	<100		

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM261	Colour and Turbidity of Waters, Methods for the Examination of Waters and Associated Materials, HMSO, 1981, ISBN 0 11 7519553.	Determination of True and Apparent Colour by Spectrophotometry

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Validated

CERTIFICATE OF ANALYSIS

SDG:	180423-34	**Client Reference:**	62240712	**Report Number:**	454099
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	17424916	17424917	17424918	17424919
Customer Sample Ref.	WS01	WS02	WS03	WS04
AGS Ref.				
Depth	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20	0.00 - 0.20
Type	Surface Water	Surface Water	Surface Water	Surface Water
Alkalinity as CaCO3	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
Ammoniacal Nitrogen	26-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Anions by Kone (w)	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Colour Test	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Conductivity (at 20 deg.C)	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
Dissolved Metals by ICP-MS	29-Apr-2018	29-Apr-2018	29-Apr-2018	29-Apr-2018
EPH (DRO) (C10-C40) Aqueous (W)	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
GRO by GC-FID (W)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Mercury Dissolved	28-Apr-2018	28-Apr-2018	28-Apr-2018	28-Apr-2018
Nitrite by Kone (w)	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
pH Value	25-Apr-2018	26-Apr-2018	25-Apr-2018	26-Apr-2018
Phosphate by Kone (w)	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Suspended Solids	24-Apr-2018	24-Apr-2018	24-Apr-2018	24-Apr-2018
Total EPH (aq)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Total Metals by ICP-MS	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Organic and Inorganic Carbon	27-Apr-2018	27-Apr-2018	24-Apr-2018	27-Apr-2018

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP UK Limited
3rd Floor
Station House
Mercury Court
Titheburn Street
Liverpool
L2 2QP

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	02 May 2018
Customer:	H_MOUCH_LIV
Sample Delivery Group (SDG):	180412-80
Your Reference:	62240712
Location:	Lowestoft
Report No:	454516

This report has been revised and directly supersedes 452622 in its entirety.

We received 12 samples on Thursday April 12, 2018 and 12 of these samples were scheduled for analysis which was completed on Wednesday May 02, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

[redacted]

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17353781	CG 01		0.00 - 0.16	09/04/2018
17353782	CG 02		0.00 - 0.16	09/04/2018
17353791	CG 03		0.00 - 0.16	09/04/2018
17353783	CG 04		0.00 - 0.16	09/04/2018
17353790	CG 05		0.00 - 0.16	09/04/2018
17353780	CG 06		0.00 - 0.16	09/04/2018
17353788	CG 08		0.00 - 0.16	09/04/2018
17353792	CG 09		0.00 - 0.16	09/04/2018
17353786	CG 10		0.00 - 0.16	10/04/2018
17353784	CG 11		0.00 - 0.16	10/04/2018
17353785	CG 12		0.00 - 0.16	10/04/2018
17353787	CG 07B		0.00 - 0.16	09/04/2018

Maximum Sample/Coolbox Temperature (°C) : **4.4**

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				17353781			17353782			17353791			17353783			17353790			17353780			17353788	
Customer Sample Reference				CG 01			CG 02			CG 03			CG 04			CG 05			CG 06			CG 08	
AGS Reference																							
Depth (m)				0.00 - 0.16			0.00 - 0.16			0.00 - 0.16			0.00 - 0.16			0.00 - 0.16			0.00 - 0.16			0.00 - 0.16	
Container				1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	
Sample Type				S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 12				X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
Organotins on soils*	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
PAH by GCMS	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
Passing Through >63µm sieve	All	NDPs: 0 Tests: 12	X			X			X			X			X			X			X			X
PCBs by GCMS	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			
Sample description	All	NDPs: 0 Tests: 11			X			X			X			X			X			X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 12			X			X			X			X			X			X			

| 17353787 | | |

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
17353781	CG 01	0.00 - 0.16	Dark Brown	Silt Loam	None	None
17353782	CG 02	0.00 - 0.16	Black	Silt Loam	None	None
17353791	CG 03	0.00 - 0.16	Grey	N/A	None	None
17353783	CG 04	0.00 - 0.16	Dark Brown	Sandy Silt Loam	Stones	Vegetation
17353790	CG 05	0.00 - 0.16	Dark Brown	Sandy Silt Loam	Stones	Vegetation
17353780	CG 06	0.00 - 0.16	Dark Brown	Silt Loam	Stones	None
17353788	CG 08	0.00 - 0.16	Dark Brown	Silt Loam	None	None
17353792	CG 09	0.00 - 0.16	Dark Brown	Sand	None	None
17353786	CG 10	0.00 - 0.16	Dark Brown	N/A	Vegetation	None
17353784	CG 11	0.00 - 0.16	Dark Brown	Sandy Silt Loam	Vegetation	Stones
17353785	CG 12	0.00 - 0.16	Dark Brown	Silty Clay Loam	Stones	Vegetation
17353787	CG 07B	0.00 - 0.16	Dark Brown	Silt Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
			Sample Time	13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353781	17353782	17353791	17353783	17353790	17353780
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		63	47	58	47	57	61
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		3.16 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		3.32 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		19.1 M	18.4 M	19.8	19.8 M	21.2 M	24.2 M
Boron	<0.7 mg/kg	TM181		40.3 #	34.6 #	41.8	38.4 #	41.8 #	44.8 #
Cadmium	<0.02 mg/kg	TM181		0.392 M	<0.02 M	0.297	0.313 M	<0.02 M	0.255 M
Chromium	<0.9 mg/kg	TM181		26.2 M	25.8 M	27.2	24.3 M	23.4 M	27.3 M
Copper	<1.4 mg/kg	TM181		131 M	63.4 M	35	23.6 M	21.3 M	21.3 M
Lead	<0.7 mg/kg	TM181		65.8 M	47.8 M	37.4	33.2 M	32.6 M	36.5 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		24.7 M	23.6 M	25.8	24.1 M	24 M	27.8 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		212 M	161 M	124	100 M	101 M	108 M

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
			Sample Time	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353788	17353792	17353786	17353784	17353785	17353787
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		52	55	53	36	48	47
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		18.6 M	20.6 M	18.7	17.5 M	19.5 M	19.6 M
Boron	<0.7 mg/kg	TM181		27.2 #	45 #	44.5	32 #	41.7 #	38.8 #
Cadmium	<0.02 mg/kg	TM181		0.311 M	0.258 M	0.236	0.294 M	<0.02 M	0.286 M
Chromium	<0.9 mg/kg	TM181		24.7 M	25.4 M	20.3	14.8 M	21.4 M	22.5 M
Copper	<1.4 mg/kg	TM181		21.7 M	18.6 M	13.9	12.7 M	14.8 M	20.7 M
Lead	<0.7 mg/kg	TM181		37.2 M	31.4 M	25.1	21.4 M	29.9 M	32.3 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		25.3 M	25.4 M	20.7	16.5 M	22.3 M	23.7 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		108 M	94 M	72.5	60.4 M	85.1 M	93.9 M

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
			Sample Time	13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353781	17353782	17353791	17353783	17353790	17353780
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Hexachlorobenzene	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Trifluralin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Phorate	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Quintozene (PCNB)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Triallate	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Disulfoton	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Heptachlor	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Aldrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Chlorothalonil	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Telodrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Isodrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Heptachlor epoxide	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Triadimefon	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Pendimethalin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p-DDE	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endosulphan I	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Trans-chlordane	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
cis-Chlordane	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-DDE	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Dieldrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p'-DDD (TDE)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p-DDT	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-TDE (DDD)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endosulphan II	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-DDT	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p-Methoxychlor	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-Methoxychlor	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endosulphan sulphate	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
			Sample Time	13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353781	17353782	17353791	17353783	17353790	17353780
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Permethrin II	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
			Sample Time	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353788	17353792	17353786	17353784	17353785	17353787
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Hexachlorobenzene	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Trifluralin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Phorate	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Quintozene (PCNB)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Triallate	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Disulfoton	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Heptachlor	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Aldrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Chlorothalonil	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Telodrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Isodrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Heptachlor epoxide	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Triadimefon	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Pendimethalin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p-DDE	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endosulphan I	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Trans-chlordane	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
cis-Chlordane	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-DDE	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Dieldrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p'-DDD (TDE)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endrin	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p-DDT	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-TDE (DDD)	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endosulphan II	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-DDT	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
o,p-Methoxychlor	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
p,p-Methoxychlor	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Endosulphan sulphate	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
			Sample Time	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353788	17353792	17353786	17353784	17353785	17353787
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500
Permethrin II	<50 µg/kg	TM073		<500	<500	<500	<500	<500	<500

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
			Sample Time	13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353781	17353782	17353791	17353783	17353790	17353780
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.05	<0.04	<0.05	<0.04	<0.04	<0.05
Tributyl Tin*	mg/kg	SUB		0.07	0.07	<0.05	<0.04	<0.04	<0.05
Triphenyl Tin*	mg/kg	SUB		<0.14	<0.1	<0.12	<0.11	<0.11	<0.12
Tetrabutyl Tin*	mg/kg	SUB		<0.05	<0.04	<0.05	<0.04	<0.04	<0.05
Monobutyl Tin*	mg/kg	SUB		<0.27	<0.21	<0.23	<0.22	<0.22	<0.23
Monophenyl Tin*	mg/kg	SUB		<0.05	<0.04	<0.05	<0.04	<0.04	<0.05
Diphenyl Tin*	mg/kg	SUB		<0.05	<0.04	<0.05	<0.04	<0.04	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
			Sample Time	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353788	17353792	17353786	17353784	17353785	17353787
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Tributyl Tin*	mg/kg	SUB		<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Triphenyl Tin*	mg/kg	SUB		<0.1	<0.11	<0.1	<0.05	<0.11	<0.1
Tetrabutyl Tin*	mg/kg	SUB		<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Monobutyl Tin*	mg/kg	SUB		<0.2	<0.23	<0.21	<0.15	<0.22	<0.2
Monophenyl Tin*	mg/kg	SUB		<0.04	<0.05	<0.04	<0.02	<0.04	<0.04
Diphenyl Tin*	mg/kg	SUB		<0.04	<0.05	<0.04	<0.02	<0.04	<0.04

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
			Sample Time	13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353781	17353782	17353791	17353783	17353790	17353780
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		100	104	73.8	91.7	99	104
Acenaphthene-d10 % recovery**	%	TM218		90.7	96.2	70.5	91.5	98.5	95.3
Phenanthrene-d10 % recovery**	%	TM218		92.4	96	70.3	90.9	98	93.3
Chrysene-d12 % recovery**	%	TM218		108	101	126	78.4	83.4	87.6
Perylene-d12 % recovery**	%	TM218		87.6	86.2	89.6	76.4	84	75.3
Naphthalene	<9 µg/kg	TM218		188 M	398 M	291 #	37.3 M	24.7 M	46.9 M
Acenaphthylene	<12 µg/kg	TM218		<60 M	71.2 M	<60 #	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<40 M	319 M	430 #	45.7 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<50 M	237 M	170 #	23 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		256 M	447 M	355 #	82.4 M	51.7 M	90.5 M
Anthracene	<16 µg/kg	TM218		<80 M	342 M	<80 #	32.7 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		541 M	1230 M	1040 #	203 M	107 M	131 M
Pyrene	<15 µg/kg	TM218		680 M	5590 M	1510 #	208 M	92.4 M	110 M
Benz(a)anthracene	<14 µg/kg	TM218		232 M	348 M	303 #	70.7 M	34.1 M	47 M
Chrysene	<10 µg/kg	TM218		193 M	260 M	261 #	61.9 M	34.7 M	52.9 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		430 M	1120 M	335 #	95.8 M	52.7 M	92.5 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		222 M	408 M	213 #	35.5 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		229 M	643 M	244 #	60.2 M	<15 M	38.8 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<90 M	224 M	<90 #	34.8 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<115 M	<46 M	<115 #	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<120 M	268 M	<120 #	48.8 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		2970	11900	5150	1040	397	609

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
			Sample Time	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353788	17353792	17353786	17353784	17353785	17353787
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		93.5	94.2	100	101	88.6	89.1
Acenaphthene-d10 % recovery**	%	TM218		85.8	94.1	93.8	94.1	87.3	89.5
Phenanthrene-d10 % recovery**	%	TM218		84.2	92.9	92	91.8	85.3	86.8
Chrysene-d12 % recovery**	%	TM218		80.7	74	87.8	88.8	81	80
Perylene-d12 % recovery**	%	TM218		70.6	76.2	77.3	80.7	87.9	86.4
Naphthalene	<9 µg/kg	TM218		55.6 M	31.7 M	27.6 #	17.2 M	24.3 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 #	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		27.1 M	<8 M	<8 #	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		33.1 M	<10 M	<10 #	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		124 M	64.7 M	85.4 #	67.9 M	63.5 M	34.9 M
Anthracene	<16 µg/kg	TM218		34.5 M	<16 M	<16 #	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		205 M	79.9 M	129 #	151 M	99.3 M	51.7 M
Pyrene	<15 µg/kg	TM218		172 M	67.7 M	107 #	120 M	82.6 M	44 M
Benz(a)anthracene	<14 µg/kg	TM218		71.4 M	<14 M	60 #	79.1 M	45.1 M	<14 M
Chrysene	<10 µg/kg	TM218		74.2 M	30.4 M	61.6 #	80.8 M	42.5 M	20.5 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		131 M	47.4 M	93.2 #	93.7 M	95 M	30.6 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		50.2 M	<14 M	30.8 #	51.5 M	29.3 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		65.1 M	<15 M	50.7 #	64.8 M	49.9 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		46 M	<18 M	38.4 #	42.7 M	36.9 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 #	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		69.6 M	<24 M	56.3 #	58.7 M	53.3 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		1160	322	741	827	622	182

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018
			Sample Time	13:00:00	15:18:00	15:30:00	15:43:00	15:55:00	16:08:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353781	17353782	17353791	17353783	17353790	17353780
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		70	75	82	82	80	72
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	569 M	<44	<44 M	<44 M	<44 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		<2 M	<2 M	<2	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M	<3	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	<6 M	<6	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		<3 M	<3 M	<3	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		13.5	15.1	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	28.4	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	54.8	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	259	<10	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	1070	<100	<100	2340	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		5270	3180	<100	3960	4990	1660
Aliphatics >C21-C35	<100 µg/kg	TM173		22200	6180	2850	15300	20700	11100
Aliphatics >C35-C44	<100 µg/kg	TM173		3190	<100	<100	4200	2560	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		30700	10400	2850	23500	30600	12700
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	37.8	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	172	<10	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		764	1130	612	<100	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		4340	7930	2270	4130	4480	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		23000	12400	4860	14100	18500	4600
Aromatics >EC35-EC44	<100 µg/kg	TM173		4040	<100	1850	10900	13600	1000
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	<100	<100	3990	4800	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		32100	21500	9580	29200	36500	5600
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		62800	32500	12400	52700	67100	18300

Validated

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CG 08	CG 09	CG 10	CG 11	CG 12	CG 07B
			Depth (m)	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	09/04/2018	09/04/2018	10/04/2018	10/04/2018	10/04/2018	09/04/2018
			Sample Time	16:21:00	16:50:00	14:10:00	14:20:00	14:33:00	16:39:00
			Date Received	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018	12/04/2018
			SDG Ref	180412-80	180412-80	180412-80	180412-80	180412-80	180412-80
			Lab Sample No.(s)	17353788	17353792	17353786	17353784	17353785	17353787
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		105	71	99	71	72	74
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	<44 M	1510	<44 M	<44 M	<44 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5 #	<5 #	<5	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089		<10 M	<10 M	<10	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089		<2 M	<2 M	<2	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089		<3 M	<3 M	<3	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089		<6 M	<6 M	<6	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089		<3 M	<3 M	<3	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	27.3	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	118	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	139	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	680	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		594	<100	<100	<100	994	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		2640	1260	<100	1280	3640	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		7060	5680	1090	5570	16000	3000
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	<100	<100	<100	3210	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		10300	6940	1090	6860	23800	3000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	92.4	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	454	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		340	301	<100	<100	758	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		1340	1570	<100	1710	3310	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		4070	6240	<100	7970	13900	3090
Aromatics >EC35-EC44	<100 µg/kg	TM173		<100	3850	<100	3880	8900	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	1260	<100	649	3110	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		5750	12000	<100	13600	26900	3090
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		16000	18900	2600	20400	50700	6080

Table of Results - Appendix

Method No	Reference	Description
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM008	BS 1377:Part 1977	Particle size distribution of solid samples
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	180412-80	**Client Reference:**	62240712	**Report Number:**	454516
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	452622

Test Completion Dates

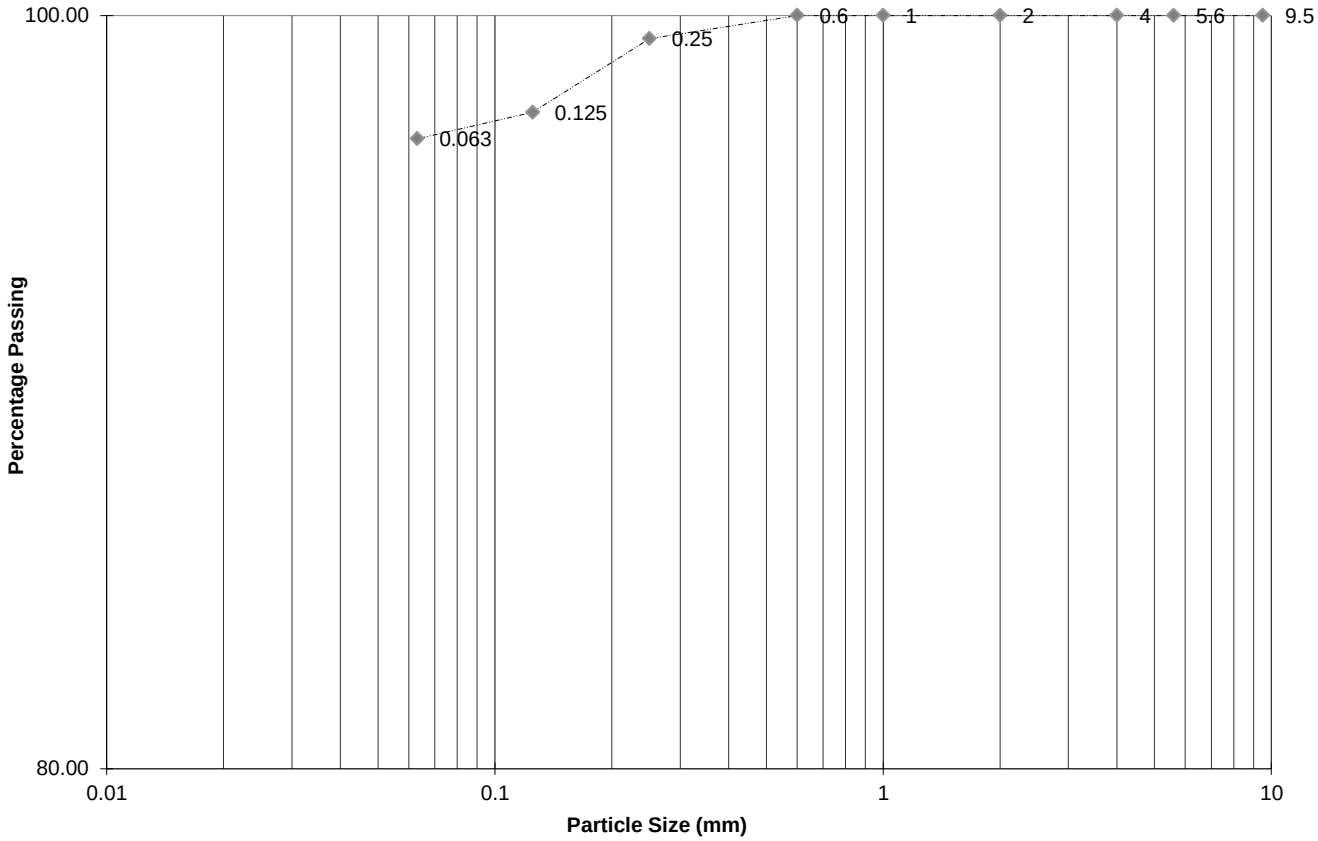
Lab Sample No(s)	17353781	17353782	17353791	17353783	17353790	17353780	17353788	17353792	17353786	17353784
Customer Sample Ref.	CG 01	CG 02	CG 03	CG 04	CG 05	CG 06	CG 08	CG 09	CG 10	CG 11
AGS Ref.										
Depth	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16	0.00 - 0.16
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
EPH CWG (Aliphatic) GC (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	19-Apr-2018	17-Apr-2018
EPH CWG (Aromatic) GC (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	19-Apr-2018	17-Apr-2018
GRO by GC-FID (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018
Metals in solid samples by OES	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018
OC, OP Pesticides and Triazine Herb	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018	20-Apr-2018
Organotins on soils*	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
PAH by GCMS	19-Apr-2018	19-Apr-2018	18-Apr-2018	17-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018	17-Apr-2018	19-Apr-2018	19-Apr-2018
Passing Through >63µm sieve	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018	18-Apr-2018
PCBs by GCMS	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	18-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018
Sample description	13-Apr-2018	13-Apr-2018	13-Apr-2018	16-Apr-2018	16-Apr-2018	13-Apr-2018	13-Apr-2018	13-Apr-2018	13-Apr-2018	16-Apr-2018
TPH CWG GC (S)	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018	19-Apr-2018

Lab Sample No(s)	17353785	17353787
Customer Sample Ref.	CG 12	CG 07B
AGS Ref.		
Depth	0.00 - 0.16	0.00 - 0.16
Type	Soil/Solid (S)	Soil/Solid (S)
EPH CWG (Aliphatic) GC (S)	17-Apr-2018	19-Apr-2018
EPH CWG (Aromatic) GC (S)	17-Apr-2018	19-Apr-2018
GRO by GC-FID (S)	19-Apr-2018	19-Apr-2018
Metals in solid samples by OES	18-Apr-2018	18-Apr-2018
OC, OP Pesticides and Triazine Herb	20-Apr-2018	20-Apr-2018
Organotins on soils*	02-May-2018	02-May-2018
PAH by GCMS	18-Apr-2018	17-Apr-2018
Passing Through >63µm sieve	18-Apr-2018	18-Apr-2018
PCBs by GCMS	19-Apr-2018	18-Apr-2018
Sample description	16-Apr-2018	13-Apr-2018
TPH CWG GC (S)	19-Apr-2018	19-Apr-2018

Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	100.00
600um	100.00
250um	99.38
125um	97.43
63um	96.73

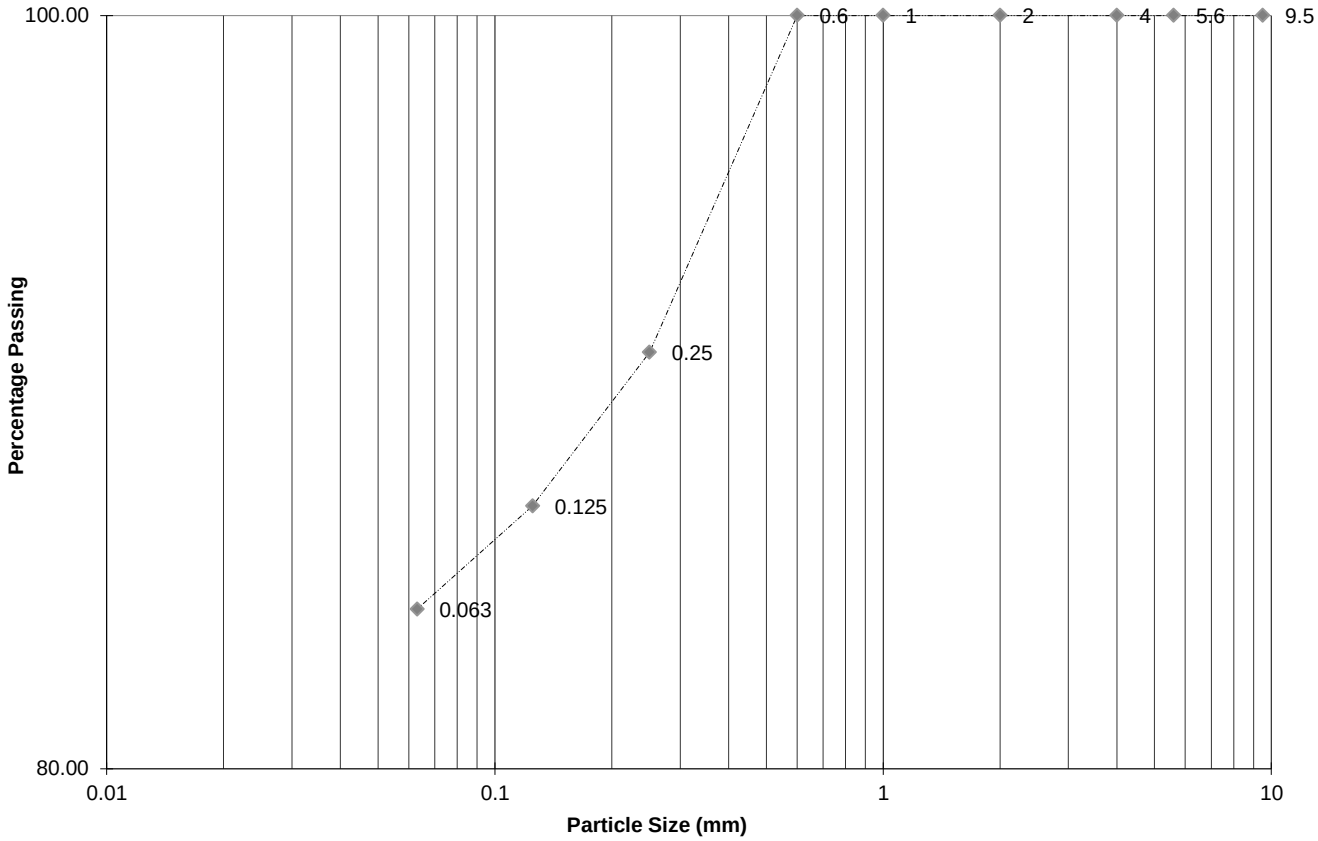
Sample Number 17360574
Client H_MOUCH_LIV
Sample ID CG 06
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	100.00
600um	100.00
250um	91.05
125um	86.97
63um	84.23

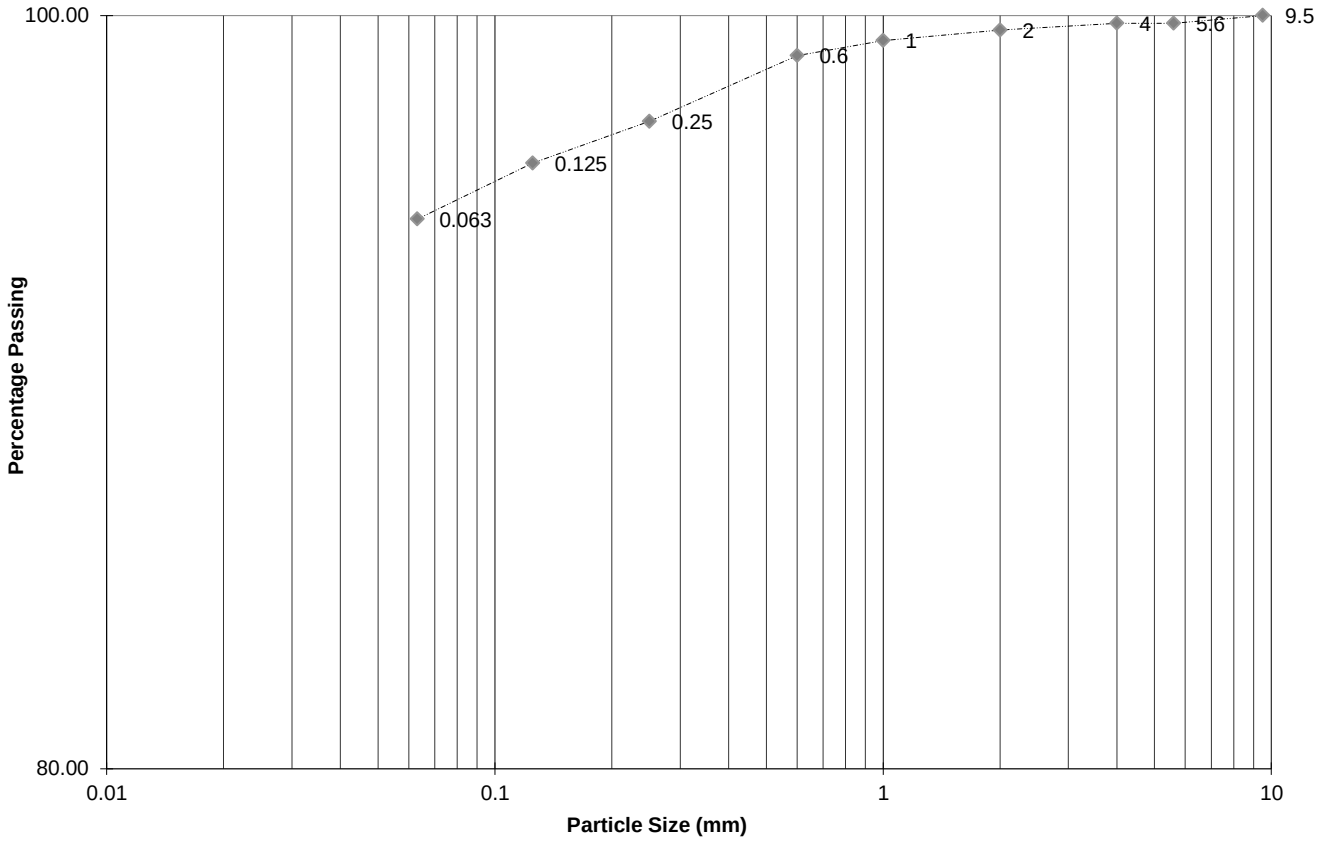
Sample Number 17360609
Client H_MOUCH_LIV
Sample ID CG07B
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	99.79
4	99.79
2	99.61
1	99.33
600um	98.93
250um	97.19
125um	96.08
63um	94.59

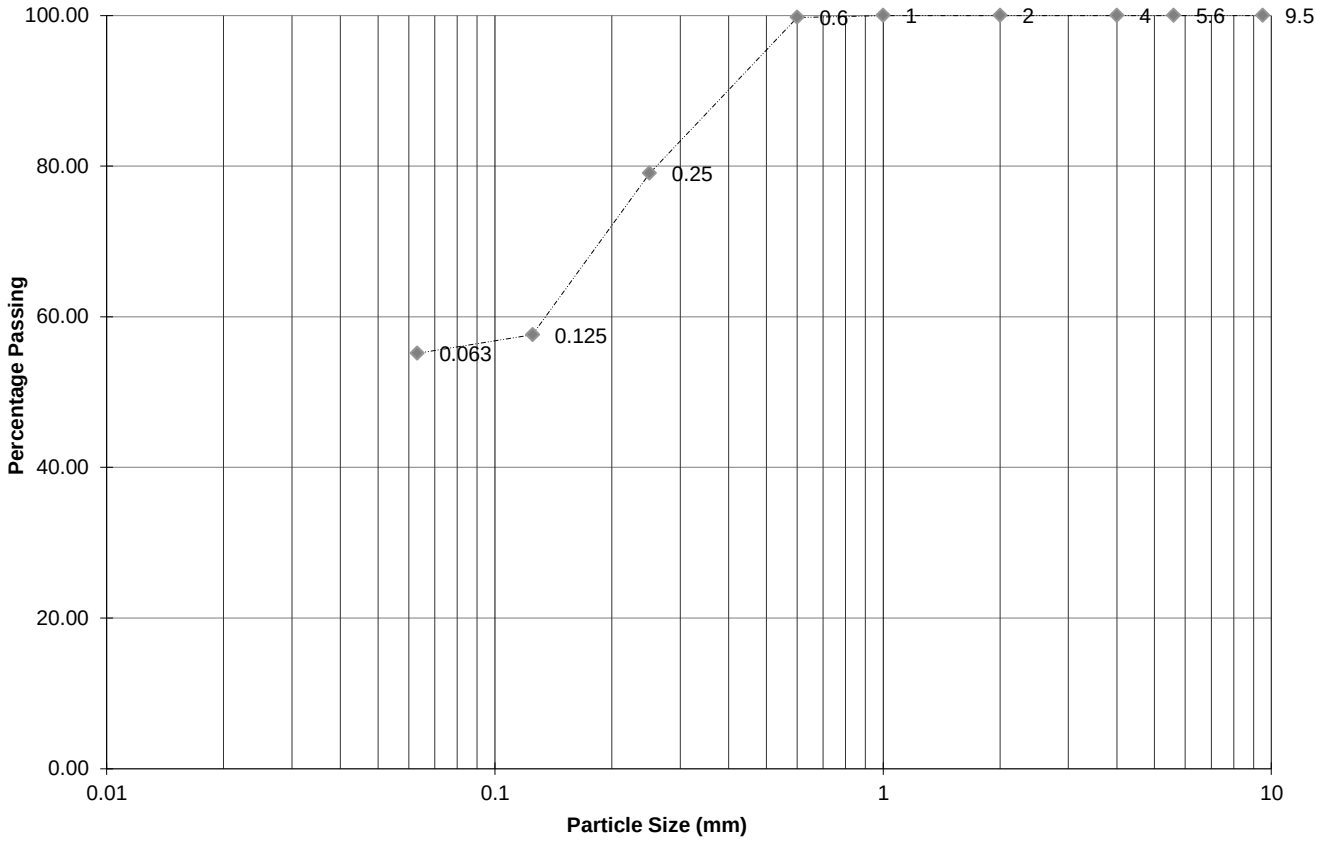
Sample Number 17360622
Client H_MOUCH_LIV
Sample ID CG 01
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	100.00
600um	99.74
250um	79.04
125um	57.61
63um	55.16

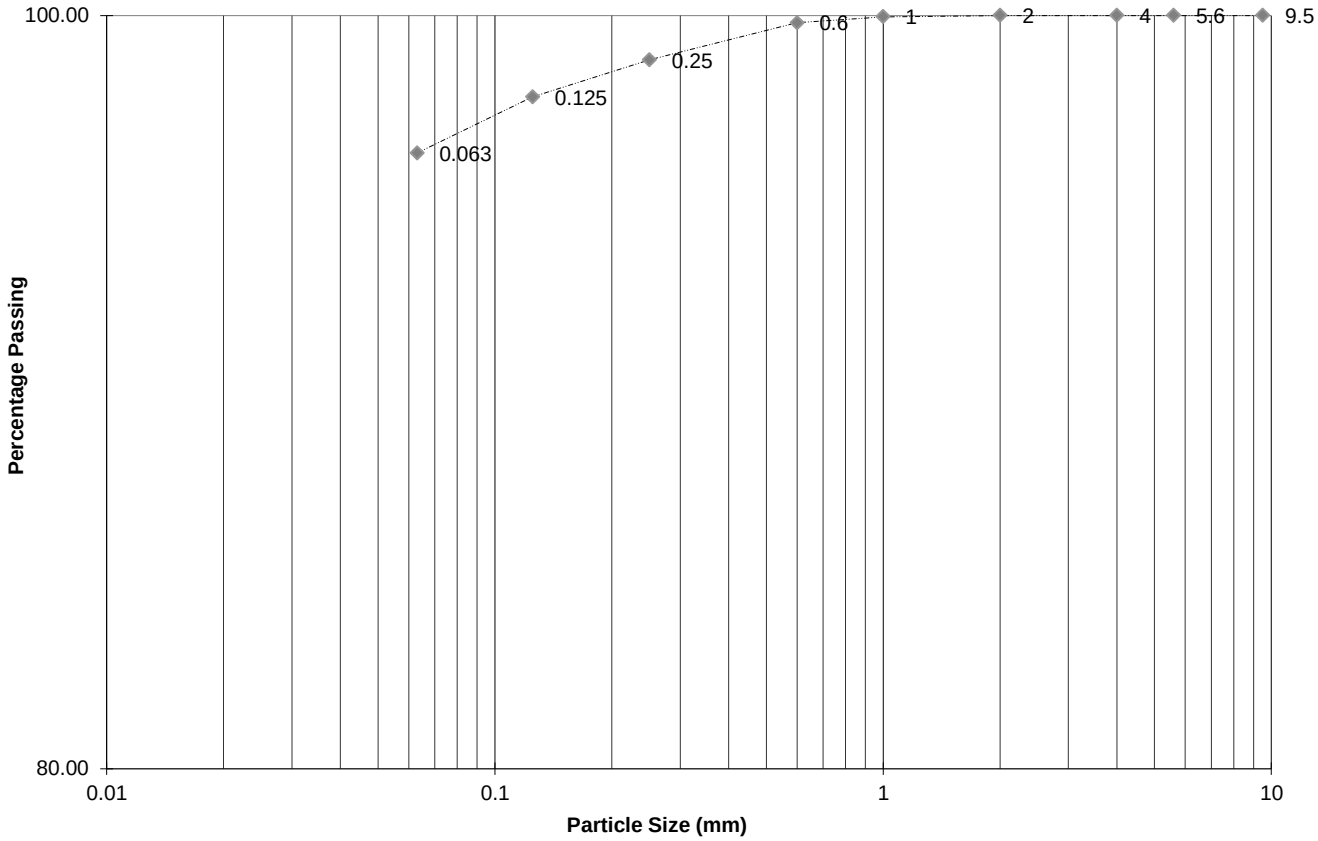
Sample Number 17360635
Client H_MOUCH_LIV
Sample ID CG 08
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	99.97
600um	99.81
250um	98.82
125um	97.84
63um	96.35

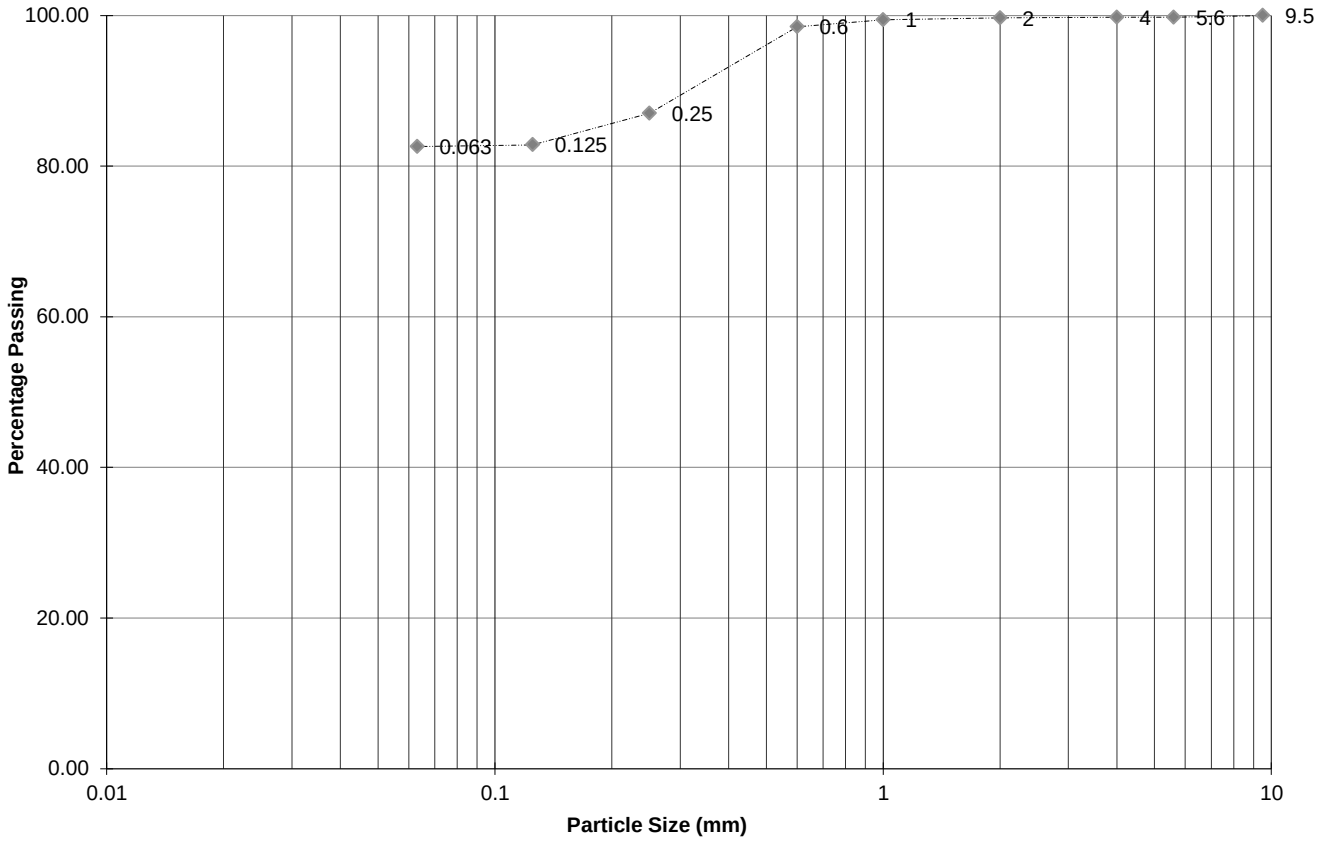
Sample Number 17361933
Client H_MOUCH_LIV
Sample ID CG 09
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	99.77
4	99.77
2	99.66
1	99.43
600um	98.51
250um	87.02
125um	82.83
63um	82.61

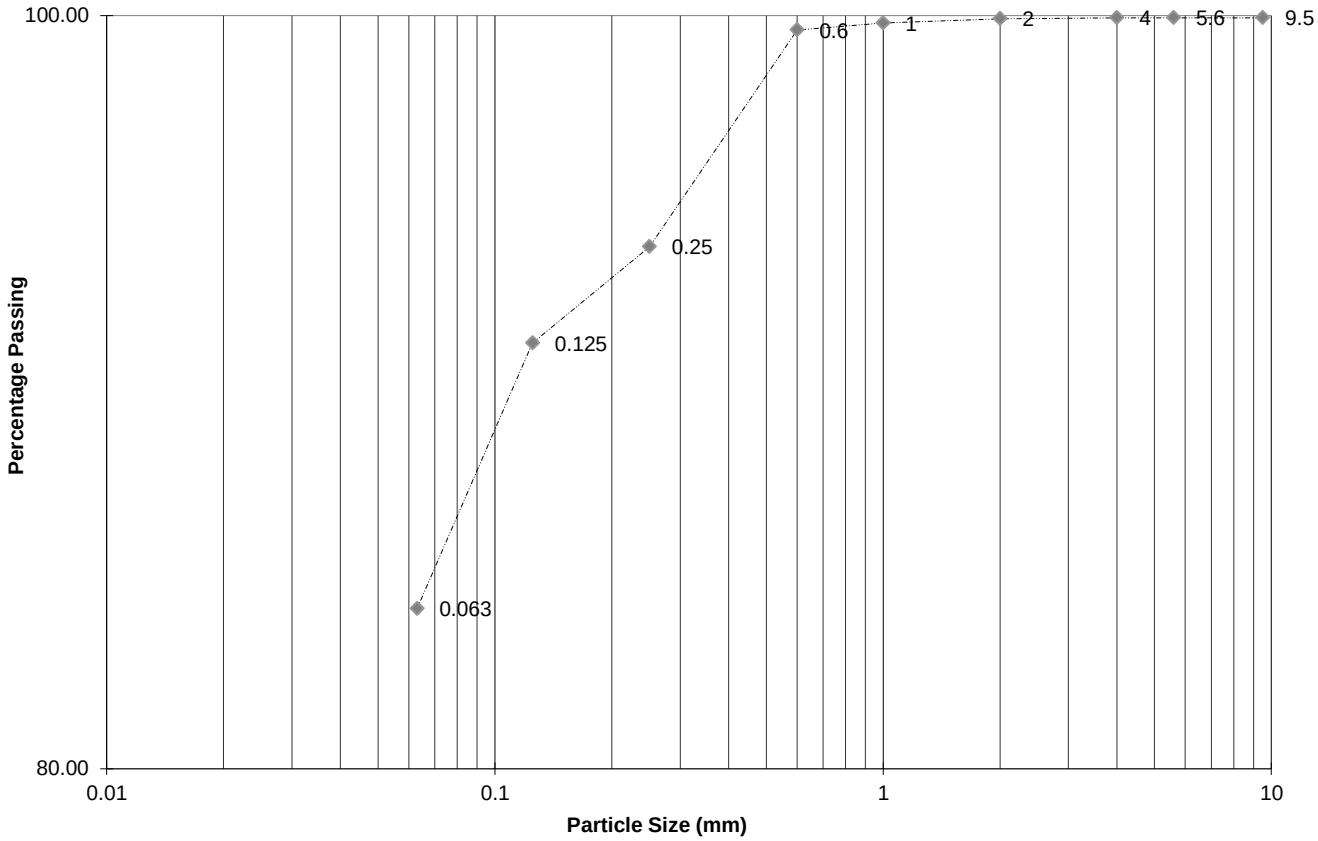
Sample Number 17361956
Client __MOUCH_LIV
Sample ID CG 03
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.94
5.6	99.94
4	99.94
2	99.91
1	99.80
600um	99.62
250um	93.86
125um	91.30
63um	84.25

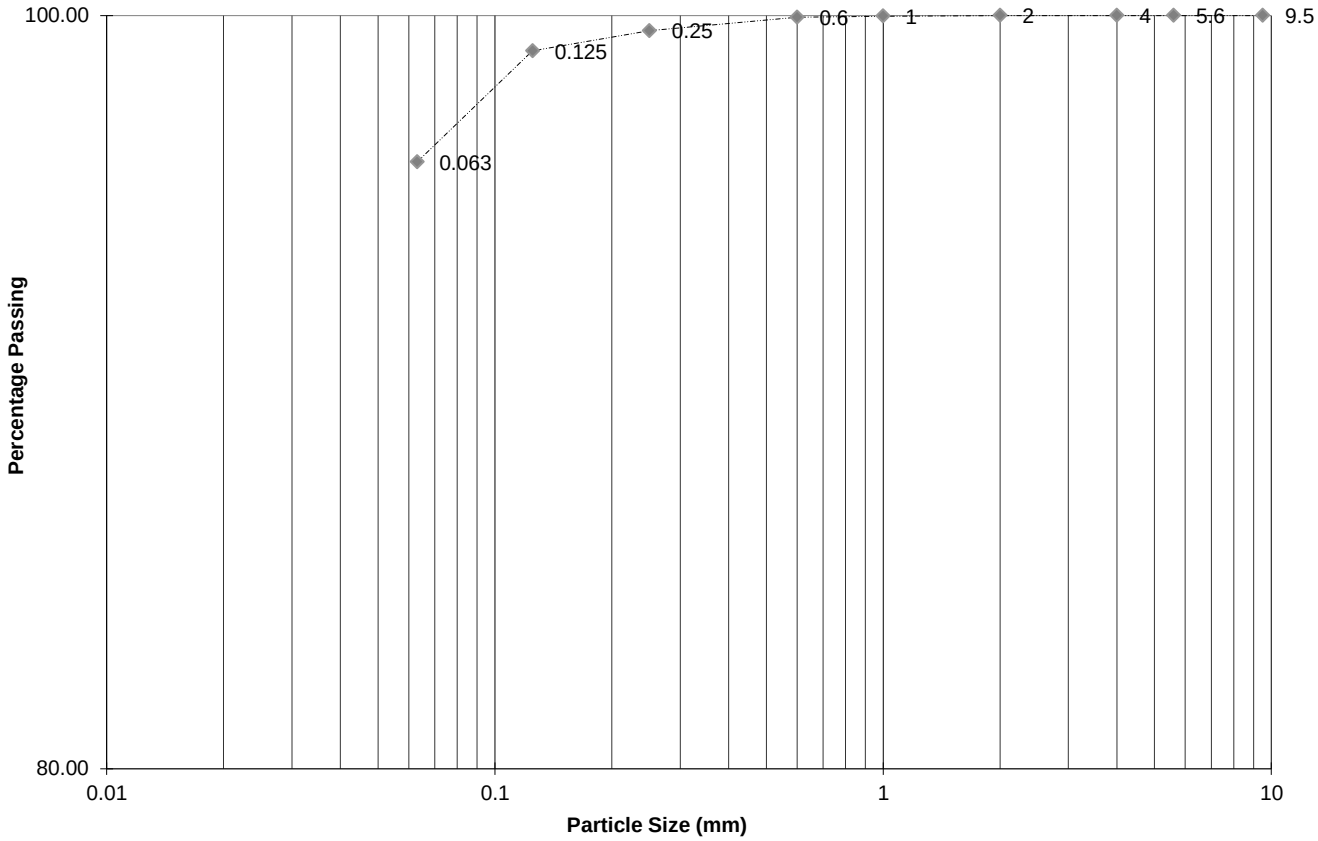
Sample Number 17361979
Client H_MOUCH_LIV
Sample ID CG10
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	99.98
600um	99.95
250um	99.60
125um	99.06
63um	96.11

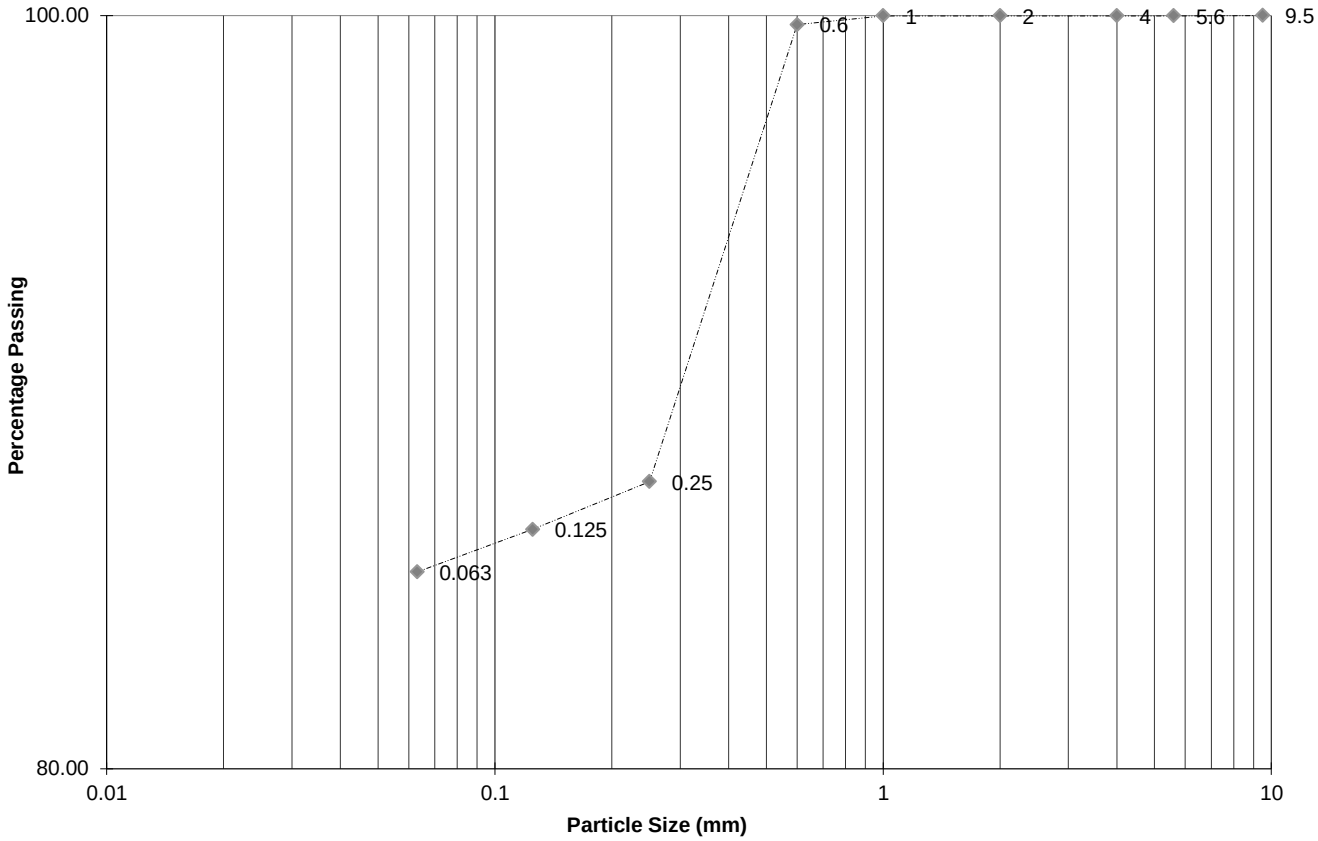
Sample Number 17362001
Client H_MOUCH_LIV
Sample ID CG 12
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	99.99
4	99.99
2	99.99
1	99.99
600um	99.75
250um	87.62
125um	86.35
63um	85.22

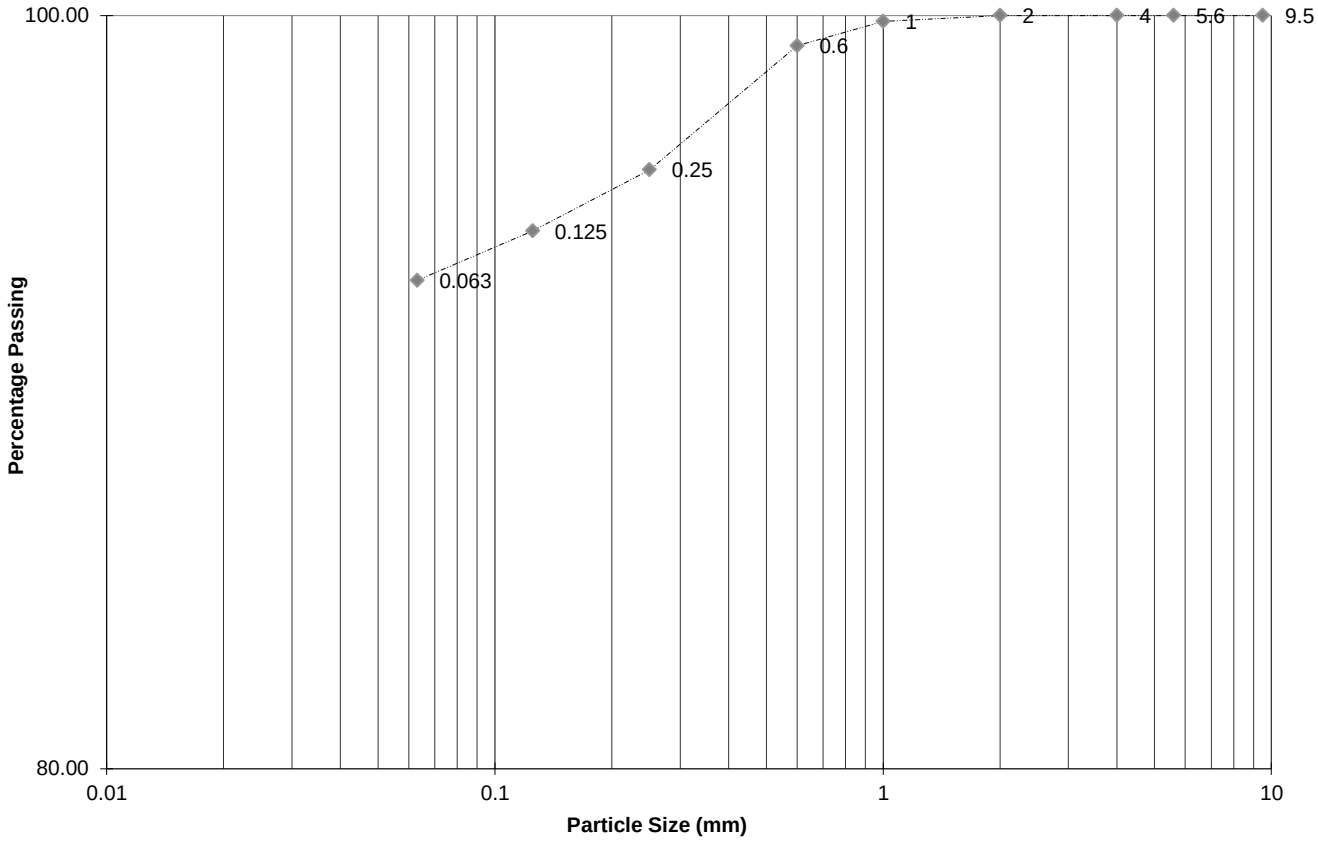
Sample Number 17362227
Client H_MOUCH_LIV
Sample ID CG 05
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	100.00
4	100.00
2	100.00
1	99.84
600um	99.19
250um	95.90
125um	94.27
63um	92.97

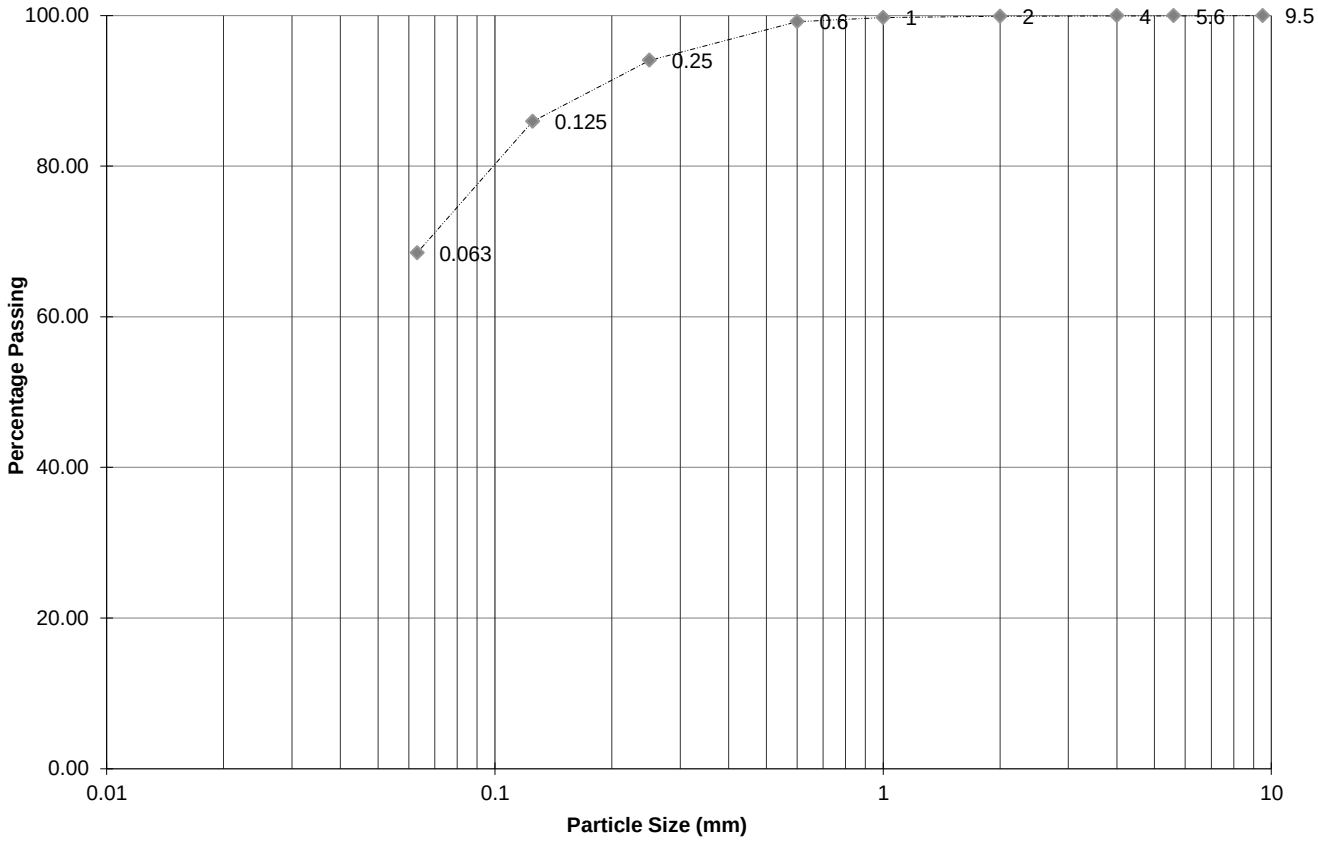
Sample Number 17362288
Client H_MOUCH_LIV
Sample ID CG 04
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	99.97
5.6	99.96
4	99.96
2	99.88
1	99.71
600um	99.17
250um	94.05
125um	85.92
63um	68.47

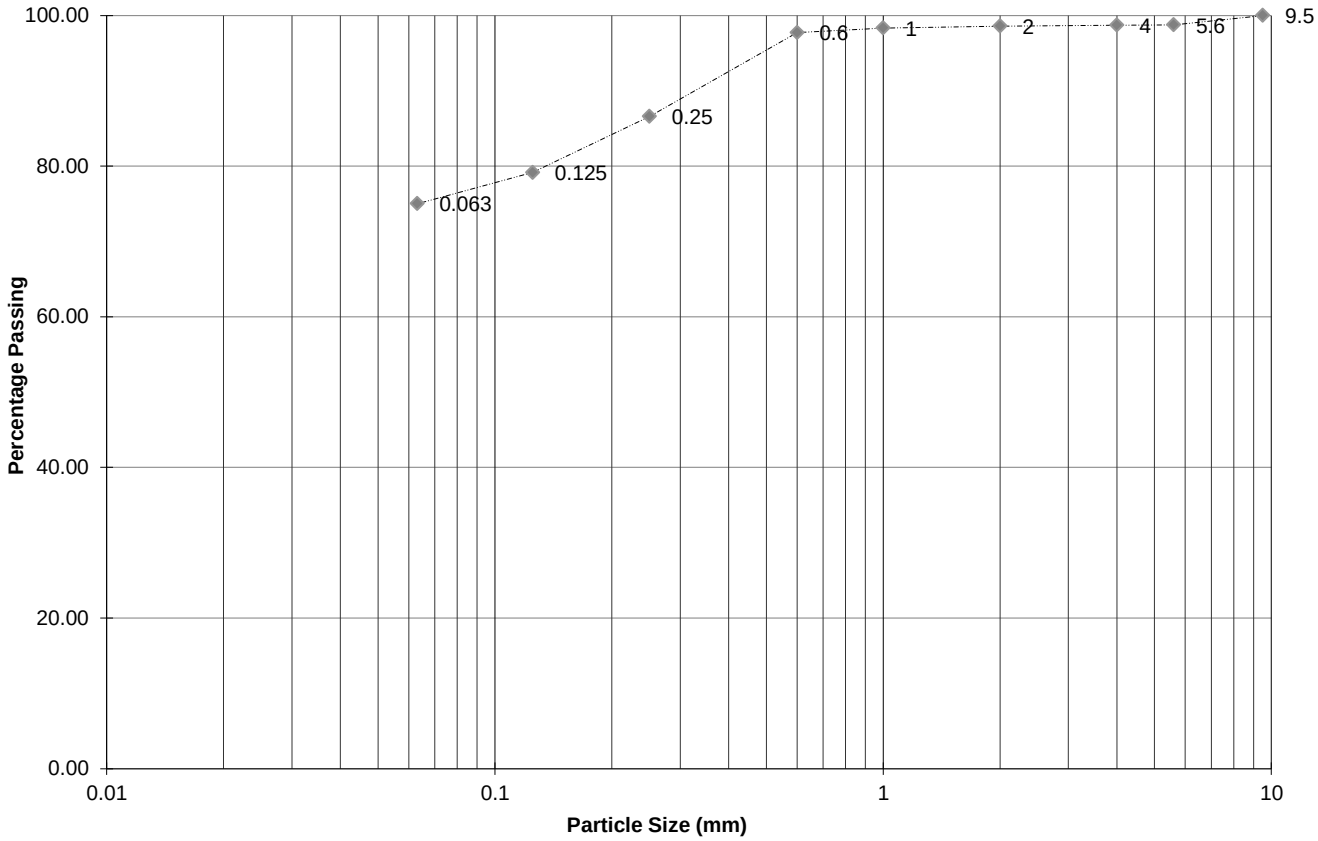
Sample Number 17362333
Client H_MOUCH_LIV
Sample ID CG 11
depth 0.00-0.16



Particle Size Distribution

Particle Size (mm)	% Passing
9.5	100.00
5.6	98.76
4	98.71
2	98.58
1	98.32
600um	97.71
250um	86.61
125um	79.14
63um	75.01

Sample Number 17362343
Client H_MOUCH_LIV
Sample ID CG 02
depth 0.00-0.16



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Certificate of Analysis

Report No.: 18-71044-1

Issue No.: 1
Date of Issue 30/04/2018

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	P60605
Customer Reference:	180412-80
Quotation Reference:	180222/01
Description:	12 soil samples
Date Received:	17/04/2018
Date Started:	18/04/2018
Date Completed:	27/04/2018
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None



Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

RPS Mountainheath Limited, Registered in England No. 2772276, a wholly-owned subsidiary of RPS Consulting Services Ltd.
A member of the RPS Group plc. Terms and conditions apply - copy on request

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Results Summary

Report No.: 18-71044-1

Customer Reference: 180412-80

Customer Order No: P60605

				Customer Sample No		**17365761**	**17364778**	**17363809**	**17373080**	**17373020**	**17365780**	**17365739**	**17365757**	**17362186**	**17363180**	**17373246**
				Customer Sample ID		CG01	CG02	CG03	CG04	CG05	CG06	CG07B	CG08	CG09	CG10	CG11
				RPS Sample No		360940	360941	360942	360943	360944	360945	360946	360947	360948	360949	360950
				Sample Type		**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
				Sample Depth (m)		0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16	0.00-0.16
				Sampling Date		09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	09/04/2018	10/04/2018	10/04/2018
				Sampling Time									:1			
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**											
dry solids (at 105øC)		N	397	% w/w		36.7	48.5	42.7	45.7	46.0	43.1	49.3	49.0	43.9	48.1	59.4
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.27	< 0.21	< 0.23	< 0.22	< 0.22	< 0.23	< 0.20	< 0.20	< 0.23	< 0.21	< 0.15
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	0.07	0.07	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.14	< 0.10	< 0.12	< 0.11	< 0.11	< 0.12	< 0.10	< 0.10	< 0.11	< 0.10	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.05	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.04	< 0.05	< 0.04	< 0.02

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Results Summary

Report No.: 18-71044-1

Customer Reference: 180412-80

Customer Order No: P60605

Customer Sample No	**17373252**
Customer Sample ID	CG12
RPS Sample No	360951
Sample Type	**SOIL**
Sample Depth (m)	0.00-0.16
Sampling Date	10/04/2018
Sampling Time	

Determinand	CAS No	Codes	SOP	Units	RL	
dry solids (at 105øC)		N	397	% w/w		46.5
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.04
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.04
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.22
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.04
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	< 0.04
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.11
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.04

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Deviating Samples

Report No.: 18-71044-1

Customer Reference: 180412-80

Customer Order No: P60605

Our policy on Deviating Samples and reference list of Holding Times applied can be supplied on request. These have been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling, and it is possible that samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be invalid. The reason for a sample being declared to be deviating is indicated below.
Where no sampling date was supplied, samples have been declared to be deviating. However, if a date of sampling can be supplied, the results may be reissued with the deviating sample status removed.
Where the sample container used was unsuitable, the appropriate Holding Time was exceeded, or the sample is flagged as deviating for some other reason, re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating Sample	Reason for Sample Deviation
360940	17365761		09/04/2018	60 ml Amber Jar	No	
360941	17364778		09/04/2018	60 ml Amber Jar	No	
360942	17363809		09/04/2018	60 ml Amber Jar	No	
360943	17373080		09/04/2018	60 ml Amber Jar	No	
360944	17373020		09/04/2018	60 ml Amber Jar	No	
360945	17365780		09/04/2018	60 ml Amber Jar	No	
360946	17365739		09/04/2018	60 ml Amber Jar	No	
360947	17365757		09/04/2018	60 ml Amber Jar	No	
360948	17362186		09/04/2018	60 ml Amber Jar	No	
360949	17363180		10/04/2018	60 ml Amber Jar	No	
360950	17373246		10/04/2018	60 ml Amber Jar	No	
360951	17373252		10/04/2018	60 ml Amber Jar	No	

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Report Information

Key to Report Codes

U	UKAS Accredited
F	UKAS Flexible Scope
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP UK Limited
3rd Floor
Station House
Mercury Court
Titheburn Street
Liverpool
L2 2QP

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	22 May 2018
Customer:	H_MOUCH_LIV
Sample Delivery Group (SDG):	180424-31
Your Reference:	62240712
Location:	Lowestoft
Report No:	457244

We received 34 samples on Tuesday April 24, 2018 and 34 of these samples were scheduled for analysis which was completed on Tuesday May 22, 2018. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Approved By:

[redacted]

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
17431917	VC02		0.80 - 1.20	20/04/2018
17431916	VC02		1.80 - 2.20	20/04/2018
17431915	VC02		2.80 - 3.20	20/04/2018
17431914	VC02		3.20 - 3.63	20/04/2018
17431903	VC03		0.80 - 1.20	20/04/2018
17431906	VC03		1.80 - 2.20	20/04/2018
17431905	VC03		2.80 - 3.20	20/04/2018
17431904	VC03		3.39 - 3.79	20/04/2018
17431908	VC04		0.80 - 1.20	19/04/2018
17431909	VC04		1.80 - 2.20	19/04/2018
17431910	VC04		2.80 - 3.20	19/04/2018
17431907	VC04		3.60 - 4.00	19/04/2018
17431895	VC05		0.80 - 1.20	19/04/2018
17431896	VC05		1.80 - 2.20	19/04/2018
17431898	VC05		2.53 - 2.93	19/04/2018
17431899	VC06		0.80 - 1.20	20/04/2018
17431900	VC06		2.00 - 2.46	20/04/2018
17431883	VC07		0.80 - 1.20	20/04/2018
17431882	VC07		1.60 - 2.00	20/04/2018
17431902	VC08		0.60 - 1.00	20/04/2018
17431901	VC08		1.00 - 1.45	20/04/2018
17431887	VC11		0.80 - 1.20	20/04/2018
17431886	VC11		1.80 - 2.20	20/04/2018
17431889	VC11		2.20 - 2.50	20/04/2018
17431891	VC10A		0.80 - 1.20	20/04/2018
17431890	VC10A		1.80 - 2.20	20/04/2018
17431892	VC10A		2.45 - 2.85	20/04/2018
17431913	VC12A		0.80 - 1.20	20/04/2018
17431911	VC12A		1.80 - 2.20	20/04/2018
17431912	VC12A		2.80 - 3.30	20/04/2018
17431884	VC01B		0.80 - 1.20	20/04/2018
17431885	VC01B		1.24 - 1.54	20/04/2018
17431893	VC09B		0.80 - 1.20	19/04/2018
17431894	VC09B		1.26 - 1.66	19/04/2018

Maximum Sample/Coolbox Temperature (°C) : **10.3**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	17431917	17431916	17431915	17431914	17431903	17431906	17431905
			Customer Sample Reference	VC02	VC02	VC02	VC02	VC03	VC03	VC03
			AGS Reference							
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20
			Container	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 34		X			X			X			X			X			X	
Anions by ion Chromatography	All	NDPs: 0 Tests: 34		X			X			X			X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X
CEN Readings	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 34		X			X			X			X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X	
Fluoride	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X		
Loss on Ignition in soils	All	NDPs: 1 Tests: 33		X			X			X			X			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X

17431896	VC05		1.80 - 2.20	1kg TUB	S				X	X	X			X	X				X					X
17431895	VC05		0.80 - 1.20	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	
				1kg TUB	S				X	X	X			X	X				X					X
17431907	VC04		3.60 - 4.00	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	
				1kg TUB	S				X	X	X			X	X				X					X
17431910	VC04		2.80 - 3.20	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	
				1kg TUB	S				X	X	X			X	X				X					X
17431909	VC04		1.80 - 2.20	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	
				1kg TUB	S				X	X	X			X	X				X					X
17431908	VC04		0.80 - 1.20	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	
				1kg TUB	S				X	X	X			X	X				X					X
17431904	VC03		3.39 - 3.79	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	
				1kg TUB	S				X	X	X			X	X				X					X
17431905	VC03		2.80 - 3.20	60g VOC (ALE215)	S																X			
				250g Amber Jar (ALE210)	S		X		X					X				X					X		X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	17431917	17431916	17431915	17431914	17431903	17431906	17431905
			Customer Sample Reference	VC02	VC02	VC02	VC02	VC03	VC03	VC03
			AGS Reference							
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20
			Container	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (ALE210) / 60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S
Metals in solid samples by OES	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Mineral Oil	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Organotins on soils*	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Passing Through >63µm sieve	All	NDPs: 1 Tests: 33	X		X	X	X	X	X	X
PCBs by GCMS	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 34	X		X	X	X	X	X	X
Polybrominated Diphenyl Ethers*	All	NDPs: 1 Tests: 33		X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Solid Content	All	NDPs: 0 Tests: 34		X	X	X	X	X	X	X
Total Dissolved Solids	All	NDPs: 0 Tests: 34	X		X	X	X	X	X	X

17431896	VC05		1.80 - 2.20	1kg TUB	S							x				x					x
17431895	VC05		0.80 - 1.20	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		
				1kg TUB	S							x				x					x
17431907	VC04		3.60 - 4.00	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		
				1kg TUB	S							x				x					x
17431910	VC04		2.80 - 3.20	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		
				1kg TUB	S							x				x					x
17431909	VC04		1.80 - 2.20	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		
				1kg TUB	S							x				x					x
17431908	VC04		0.80 - 1.20	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		
				1kg TUB	S							x				x					x
17431904	VC03		3.39 - 3.79	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		
				1kg TUB	S							x				x					x
17431905	VC03		2.80 - 3.20	60g VOC (ALE215)	S																
				250g Amber Jar (ALE210)	S	x	x	x	x	x		x	x	x		x	x	x	x		

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			17431917			17431916			17431915			17431914			17431903			17431906			17431905	
Customer Sample Reference			VC02			VC02			VC02			VC02			VC03			VC03			VC03	
AGS Reference																						
Depth (m)			0.80 - 1.20			1.80 - 2.20			2.80 - 3.20			3.20 - 3.63			0.80 - 1.20			1.80 - 2.20			2.80 - 3.20	
Container			1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
Total Sulphate	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
VOC MS (S)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		

17431896	VC05		1.80 - 2.20	1kg TUB	S					
17431895	VC05		0.80 - 1.20	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S				X	
				1kg TUB	S			X		
17431907	VC04		3.60 - 4.00	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S			X		
				1kg TUB	S		X			
17431910	VC04		2.80 - 3.20	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S			X		
				1kg TUB	S		X			
17431909	VC04		1.80 - 2.20	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S			X		
				1kg TUB	S		X			
17431908	VC04		0.80 - 1.20	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S			X		
				1kg TUB	S		X			
17431904	VC03		3.39 - 3.79	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S			X		
				1kg TUB	S		X			
17431905	VC03		2.80 - 3.20	60g VOC (ALE215)	S					X
				250g Amber Jar (ALE210)	S			X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	17431896		17431898			17431899			17431900			17431883			17431882			17431902	
			Customer Sample Reference	VC05		VC05			VC06			VC06			VC07			VC07			VC08	
			AGS Reference																			
			Depth (m)	1.80 - 2.20		2.53 - 2.93			0.80 - 1.20			2.00 - 2.46			0.80 - 1.20			1.60 - 2.00			0.60 - 1.00	
			Container	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Anions by ion Chromatography	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Anions by Kone (w)	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
CEN Readings	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Fluoride	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Loss on Ignition in soils	All	NDPs: 1 Tests: 33		X			X			X			X			X			X			X
Mercury Dissolved	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	

17431892	VC10A		2.45 - 2.85	250g Amber Jar (ALE210)	S		X		X					X				X	X				X	X	
				1kg TUB	S					X	X	X			X	X				X					X
17431890	VC10A		1.80 - 2.20	60g VOC (ALE215)	S																X				
				250g Amber Jar (ALE210)	S		X		X		X		X				X	X				X	X		
				1kg TUB	S					X		X			X	X				X					X
17431891	VC10A		0.80 - 1.20	60g VOC (ALE215)	S																X				
				250g Amber Jar (ALE210)	S		X		X				X				X	X				X	N		
				1kg TUB	S					X	X	X			X	X				X					X
17431889	VC11		2.20 - 2.50	60g VOC (ALE215)	S																X				
				250g Amber Jar (ALE210)	S		X		X				X				X	X				X	X		
				1kg TUB	S					X	X	X			X	X				X					X
17431886	VC11		1.80 - 2.20	60g VOC (ALE215)	S																X				
				250g Amber Jar (ALE210)	S		X		X				X				X	X				X	X		
				1kg TUB	S					X	X	X			X	X				X					X
17431887	VC11		0.80 - 1.20	60g VOC (ALE215)	S																X				
				250g Amber Jar (ALE210)	S		X		X				X				X	X				X	X		
				1kg TUB	S					X	X	X			X	X				X					X
17431901	VC08		1.00 - 1.45	60g VOC (ALE215)	S																X				
				250g Amber Jar (ALE210)	S		X		X				X				X	X				X	X		
				1kg TUB	S					X	X	X			X	X				X					X
17431902	VC08		0.60 - 1.00	60g VOC (ALE215)	S																X				

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	17431896		17431898			17431899			17431900			17431883			17431882			17431902
			Customer Sample Reference	VC05		VC05			VC06			VC06			VC07			VC07			VC08
			AGS Reference																		
			Depth (m)	1.80 - 2.20		2.53 - 2.93			0.80 - 1.20			2.00 - 2.46			0.80 - 1.20			1.60 - 2.00			0.60 - 1.00
			Container	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Metals in solid samples by OES	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Mineral Oil	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
OC, OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Organotins on soils*	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
PAH by GCMS	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Passing Through >63µm sieve	All	NDPs: 1 Tests: 33				X			X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
pH	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	
Polybrominated Diphenyl Ethers*	All	NDPs: 1 Tests: 33		X			X			X			X			X			X			X
Sample description	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Solid Content	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			X
Total Dissolved Solids	All	NDPs: 0 Tests: 34				X			X			X			X			X			X	

17431892	VC10A		2.45 - 2.85	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X		X		
				1kg TUB	S								X					X							X
17431890	VC10A		1.80 - 2.20	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X		X		
				1kg TUB	S													X							X
17431891	VC10A		0.80 - 1.20	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X		N		X		X		
				1kg TUB	S							N						X							X
17431889	VC11		2.20 - 2.50	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X		X		
				1kg TUB	S								X					X							X
17431886	VC11		1.80 - 2.20	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X		X		
				1kg TUB	S								X					X							X
17431887	VC11		0.80 - 1.20	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X		X		
				1kg TUB	S								X					X							X
17431901	VC08		1.00 - 1.45	60g VOC (ALE215)	S																				
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X		X		
				1kg TUB	S								X					X							X
17431902	VC08		0.60 - 1.00	60g VOC (ALE215)	S																				

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			17431896		17431898			17431899			17431900			17431883			17431882			17431902	
Customer Sample Reference			VC05		VC05			VC06			VC06			VC07			VC07			VC08	
AGS Reference																						
Depth (m)			1.80 - 2.20		2.53 - 2.93			0.80 - 1.20			2.00 - 2.46			0.80 - 1.20			1.60 - 2.00			0.60 - 1.00	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 34	X			X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			

17431892	VC10A		2.45 - 2.85	250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431890	VC10A		1.80 - 2.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431891	VC10A		0.80 - 1.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431889	VC11		2.20 - 2.50	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431886	VC11		1.80 - 2.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431887	VC11		0.80 - 1.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431901	VC08		1.00 - 1.45	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S		X		X		X
				1kg TUB	S						
17431902	VC08		0.60 - 1.00	60g VOC (ALE215)	S						X

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			17431892	17431913			17431911			17431912			17431884			17431885			17431893		
Customer Sample Reference			VC10A	VC12A			VC12A			VC12A			VC01B			VC01B			VC09B		
AGS Reference																						
Depth (m)			2.45 - 2.85	0.80 - 1.20			1.80 - 2.20			2.80 - 3.30			0.80 - 1.20			1.24 - 1.54			0.80 - 1.20		
Container			60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Anions by ion Chromatography	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
CEN Readings	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Fluoride	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 34	X			X			X			X			X			X				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Loss on Ignition in soils	All	NDPs: 1 Tests: 33			X			X			X			X			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 34		X			X			X			X			X			X			

| 17431894 | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

| | | |

| 17431894 | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			17431892	17431913			17431911			17431912			17431884			17431885			17431893		
Customer Sample Reference			VC10A	VC12A			VC12A			VC12A			VC01B			VC01B			VC09B		
AGS Reference																						
Depth (m)			2.45 - 2.85	0.80 - 1.20			1.80 - 2.20			2.80 - 3.30			0.80 - 1.20			1.24 - 1.54			0.80 - 1.20		
Container			60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 34			X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 34	X			X			X			X			X			X				X

| | | |

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
17431914	VC02	3.20 - 3.63	Dark Brown	Silty Clay Loam	None	None
17431915	VC02	2.80 - 3.20	Dark Brown	Sandy Clay Loam	None	None
17431916	VC02	1.80 - 2.20	Dark Brown	Silty Sand	Stones	None
17431917	VC02	0.80 - 1.20	Dark Brown	Sandy Silt Loam	Stones	None
17431903	VC03	0.80 - 1.20	Grey	N/A	None	None
17431904	VC03	3.39 - 3.79	Dark Brown	Silty Sand	Stones	None
17431905	VC03	2.80 - 3.20	Dark Brown	Silty Clay Loam	None	None
17431906	VC03	1.80 - 2.20	Dark Brown	Sand	None	None
17431907	VC04	3.60 - 4.00	Light Brown	Sand	None	None
17431908	VC04	0.80 - 1.20	Light Brown	Sand	None	None
17431909	VC04	1.80 - 2.20	Light Brown	Sand	Stones	None
17431910	VC04	2.80 - 3.20	Dark Brown	Silty Sand	Stones	None
17431895	VC05	0.80 - 1.20	Dark Brown	Loamy Sand	None	None
17431896	VC05	1.80 - 2.20	Dark Brown	Sand	None	None
17431898	VC05	2.53 - 2.93	Dark Brown	Loamy Sand	Stones	None
17431899	VC06	0.80 - 1.20	Light Brown	Silty Clay Loam	Stones	Vegetation
17431900	VC06	2.00 - 2.46	Light Brown	Silty Sand	Stones	Stones
17431882	VC07	1.60 - 2.00	Cream	Sand	None	None
17431883	VC07	0.80 - 1.20	Light Brown	Sand	None	None
17431901	VC08	1.00 - 1.45	Light Brown	Silty Sand	Stones	None
17431902	VC08	0.60 - 1.00	Grey	Sand	Stones	None
17431886	VC11	1.80 - 2.20	Cream	Sand	None	None
17431887	VC11	0.80 - 1.20	Dark Brown	Loamy Sand	None	None
17431889	VC11	2.20 - 2.50	Light Brown	Sand	Stones	None
17431890	VC10A	1.80 - 2.20	Light Brown	Loamy Sand	Stones	None
17431891	VC10A	0.80 - 1.20	Dark Brown	Loamy Sand	None	None
17431892	VC10A	2.45 - 2.85	Light Brown	Sand	None	None
17431911	VC12A	1.80 - 2.20	Grey	Sand	Stones	None
17431912	VC12A	2.80 - 3.30	Grey	Sandy Loam	Stones	None
17431913	VC12A	0.80 - 1.20	Dark Brown	Silty Clay Loam	None	Oil/Petroleum
17431884	VC01B	0.80 - 1.20	Dark Brown	Sand	None	None
17431885	VC01B	1.24 - 1.54	Dark Brown	Sand	None	None
17431893	VC09B	0.80 - 1.20	Dark Brown	Sandy Loam	Stones	None
17431894	VC09B	1.26 - 1.66	Light Brown	Silty Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		11	14	27	22	46	20
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1	<0.1 M
2,2',3,4,4',5'-hexabromodipheny l ether (BDE-138)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodipheny l ether (BDE-153)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,6'-hexabromodipheny l ether (BDE-154)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC		89	86	73	78	54	80
Loss on ignition	<0.7 %	TM018		6.24 M	<0.7 M	5.27 M	11.5 M	6.91	1.04 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019		0.0365 M	0.0109 M	0.182 M	0.117 M	0.0754	0.0147 M
Mineral oil >C10-C40	<1 mg/kg	TM061		13.2	<1	19.2	7.47	56.1	3.87
Mineral Oil Surrogate % recovery**	%	TM061		83.5	86.7	88.1	88.3	85.6	85.2
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01	<0.01 M
Organic Carbon, Total	<0.2 %	TM132		0.235 M	<0.2 M	0.78 M	0.552 M	1.37	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132		0.405 #	<0.35 #	1.34 #	0.952 #	2.36	<0.35 #
pH	1 pH Units	TM133		8.5 M	7.32 M	5.77 M	6.73 M	8.62	8.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1	<1 M
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		4.22 M	3.84 M	37.9 M	15.3 M	19.7	3.42 M
Boron	<0.7 mg/kg	TM181		4.93 #	<0.7 #	11.3 #	10.1 #	32.9	2.25 #
Cadmium	<0.02 mg/kg	TM181		0.098 M	0.0626 M	0.553 M	1.18 M	0.241	0.086 M
Chromium	<0.9 mg/kg	TM181		3.31 M	2.58 M	24.9 M	<0.9 M	22	5.45 M
Copper	<1.4 mg/kg	TM181		4.19 M	3.22 M	29.3 M	12.1 M	25.6	2.9 M
Lead	<0.7 mg/kg	TM181		7.83 M	2.65 M	31.1 M	13.5 M	31.7	4.27 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14	<0.14 M
Nickel	<0.2 mg/kg	TM181		4.38 M	3.47 M	35.9 M	21.5 M	23.4	3.3 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1	<1 #
Zinc	<1.9 mg/kg	TM181		16 M	11.6 M	104 M	61.7 M	95.8	18.7 M
ANC @ pH 4	<0.03 mol/kg	TM182		0.157	0.0613	0.101	0.0986	2.02	0.0787
ANC @ pH 6	<0.03 mol/kg	TM182		0.0689	<0.03	<0.03	<0.03	0.227	<0.03
Sulphate, Total	<48 mg/kg	TM221		68.8 M	<48 M	613 M	356 M	656	<48 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		23	13	19	15	13	13
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
2,2',3,4,4',5'-hexabromodipheny l ether (BDE-138)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodipheny l ether (BDE-153)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,6'-hexabromodipheny l ether (BDE-154)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC		77	87	81	85	87	87
Loss on ignition	<0.7 %	TM018		9.71 M	<0.7 M	1.96 M	<0.7 M	0.854 M	<0.7 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019		0.158 M	0.00798 M	0.0369 M	0.016 M	0.0454 M	0.0153 M
Mineral oil >C10-C40	<1 mg/kg	TM061		7.57	<1	5.09	<1	<1	<1
Mineral Oil Surrogate % recovery**	%	TM061		89.4	87.2	88.4	85.6	83	86.1
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Organic Carbon, Total	<0.2 %	TM132		0.414 M	<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132		0.714 #	<0.35 #	<0.35 #	<0.35 #	<0.35 #	<0.35 #
pH	1 pH Units	TM133		6.26 M	5.78 M	8.69 M	8.42 M	7.49 M	6.18 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		22.4 M	1.75 M	3.4 M	1.35 M	2.74 M	0.936 M
Boron	<0.7 mg/kg	TM181		7.28 #	0.832 #	5.62 #	1.71 #	1.45 #	<0.7 #
Cadmium	<0.02 mg/kg	TM181		1.01 M	0.0378 M	0.139 M	0.0362 M	0.0528 M	<0.02 M
Chromium	<0.9 mg/kg	TM181		<0.9 M	2.91 M	12 M	2.89 M	4.51 M	1.1 M
Copper	<1.4 mg/kg	TM181		8.11 M	2.9 M	10.8 M	2.29 M	5.46 M	<1.4 M
Lead	<0.7 mg/kg	TM181		10.9 M	4.52 M	10.2 M	3.54 M	9.64 M	3.31 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		18.3 M	2.78 M	12.9 M	3 M	6.32 M	1.1 M
Selenium	<1 mg/kg	TM181		1.87 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		47.5 M	9.05 M	31.6 M	8.28 M	15 M	4.24 M
ANC @ pH 4	<0.03 mol/kg	TM182		0.0825	0.0866	0.0799	0.0369	0.0605	0.0635
ANC @ pH 6	<0.03 mol/kg	TM182		<0.03	<0.03	0.0537	<0.03	0.0388	<0.03
Sulphate, Total	<48 mg/kg	TM221		425 M	<48 M	<48 M	98.9 M	54.9 M	<48 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		44	16	16	38	1.8	16
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
2,2',3,4,4',5'-hexabromodipheny l ether (BDE-138)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodipheny l ether (BDE-153)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,6'-hexabromodipheny l ether (BDE-154)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC		56	84	84	62	98.2	84
Loss on ignition	<0.7 %	TM018		<0.7 M	<0.7 M	2.24 M	<0.7 M	<0.7 M	<0.7 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019		0.0616 M	0.0221 M	0.0603 M	0.041 M	0.0174 M	0.0117 M
Mineral oil >C10-C40	<1 mg/kg	TM061		59.7	1.5	20.7	62.4	<1	<1
Mineral Oil Surrogate % recovery**	%	TM061		84.2	87	88.1	86	85.5	86.5
Phenol	<0.01 mg/kg	TM062 (S)		0.0179 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Organic Carbon, Total	<0.2 %	TM132		1.56 M	<0.2 M	<0.2 M	1.68 M	<0.2 M	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132		2.69 #	<0.35 #	<0.35 #	2.9 #	<0.35 #	<0.35 #
pH	1 pH Units	TM133		8.54 M	7.91 M	6.27 M	8.48 M	9.01 M	7.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		21 M	3.65 M	11.4 M	18.5 M	2.21 M	<0.6 M
Boron	<0.7 mg/kg	TM181		40.1 #	1.64 #	2.95 #	34.8 #	<0.7 #	<0.7 #
Cadmium	<0.02 mg/kg	TM181		0.241 M	0.0879 M	0.342 M	0.282 M	0.13 M	0.0301 M
Chromium	<0.9 mg/kg	TM181		24.7 M	1.73 M	<0.9 M	23 M	1.65 M	1.11 M
Copper	<1.4 mg/kg	TM181		23.3 M	5.48 M	7.98 M	20.1 M	2.14 M	3.43 M
Lead	<0.7 mg/kg	TM181		36.3 M	6.85 M	8.54 M	38.3 M	2.49 M	2.72 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		25.8 M	2.83 M	6.13 M	24.5 M	3.04 M	0.596 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	2.68 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		105 M	15.6 M	48.1 M	98.6 M	8.13 M	4.07 M
ANC @ pH 4	<0.03 mol/kg	TM182		2.46	0.0767	0.0849	2.13	0.0908	0.0389
ANC @ pH 6	<0.03 mol/kg	TM182		0.247	<0.03	<0.03	0.223	<0.03	<0.03
Sulphate, Total	<48 mg/kg	TM221		661 M	<48 M	<48 M	587 M	<48 M	<48 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		13	17	14	44	15	16
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
2,2',3,4,4',5'-hexabromodipheny l ether (BDE-138)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodipheny l ether (BDE-153)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,6'-hexabromodipheny l ether (BDE-154)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC		87	83	86	56	85	84
Loss on ignition	<0.7 %	TM018		<0.7 M	<0.7 M	<0.7 M	2.71 M	<0.7 M	<0.7 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019		0.0117 M	0.0155 M	0.1 M	0.0755 M	0.0135 M	0.0412 M
Mineral oil >C10-C40	<1 mg/kg	TM061		<1	1.16	<1	94	<1	<1
Mineral Oil Surrogate % recovery**	%	TM061		82.8	78.4	85.7	84.4	82.1	86
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Organic Carbon, Total	<0.2 %	TM132		<0.2 M	<0.2 M	<0.2 M	1.54 M	<0.2 M	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	<0.35 #	<0.35 #	2.65 #	<0.35 #	<0.35 #
pH	1 pH Units	TM133		7.11 M	8.97 M	8.56 M	8.65 M	7.4 M	7.76 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		0.832 M	1.19 M	<0.6 M	19.9 M	1.21 M	1.54 M
Boron	<0.7 mg/kg	TM181		1.2 #	<0.7 #	0.886 #	32.5 #	<0.7 #	0.906 #
Cadmium	<0.02 mg/kg	TM181		0.0674 M	<0.02 M	0.0247 M	0.277 M	0.0253 M	0.0308 M
Chromium	<0.9 mg/kg	TM181		1.69 M	2.11 M	1.23 M	25.2 M	1.6 M	1.76 M
Copper	<1.4 mg/kg	TM181		<1.4 M	1.69 M	<1.4 M	27 M	<1.4 M	2.69 M
Lead	<0.7 mg/kg	TM181		5.36 M	3.3 M	1.95 M	38.8 M	2.48 M	4.25 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		1.1 M	1.45 M	1.35 M	25.7 M	1.36 M	1.75 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		4.78 M	6.29 M	3.87 M	117 M	5.66 M	7.5 M
ANC @ pH 4	<0.03 mol/kg	TM182		0.0567	0.059	0.0826	2.19	0.0715	0.0734
ANC @ pH 6	<0.03 mol/kg	TM182		0.0353	0.0375	<0.03	0.185	0.0522	<0.03
Sulphate, Total	<48 mg/kg	TM221		<48 M	<48 M	118 M	685 M	<48 M	<48 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
AGS Reference						

Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	42	13	16	42	12	18
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
2,2',3,4,4',5'-hexabromodipheny l ether (BDE-138)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,5'-hexabromodipheny l ether (BDE-153)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5,6'-hexabromodipheny l ether (BDE-154)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
Solids, Total	<0.1 %	TBC	58	87	84	58	88	82
Loss on ignition	<0.7 %	TM018		0.728 M	<0.7 M	<0.7 M	<0.7 M	1.54 M
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0603 M	0.0156 M	0.0885 M	0.171 M	0.0107 M	0.0328 M
Mineral oil >C10-C40	<1 mg/kg	TM061	79.9	<1	12.3	184	6.49	6.2
Mineral Oil Surrogate % recovery**	%	TM061	85.7	85.5	87	84	82.2	89.9
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Organic Carbon, Total	<0.2 %	TM132	1.26 M	<0.2 M	<0.2 M	1.55 M	<0.2 M	<0.2 M
Soil Organic Matter (SOM)	<0.35 %	TM132	2.17 #	<0.35 #	<0.35 #	2.67 #	<0.35 #	<0.35 #
pH	1 pH Units	TM133	8.75 M	8.22 M	8.1 M	8.55 M	8.77 M	8.68 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181		19 M	1.67 M	1.09 M	18.3 M	1.08 M	4.54 M
Boron	<0.7 mg/kg	TM181		37.2 #	0.794 #	0.932 #	28.6 #	1.06 #	4.91 #
Cadmium	<0.02 mg/kg	TM181		0.243 M	0.0515 M	0.0453 M	0.373 M	0.0509 M	0.116 M
Chromium	<0.9 mg/kg	TM181		24.4 M	1.68 M	1.11 M	24.1 M	1.62 M	14 M
Copper	<1.4 mg/kg	TM181		23 M	1.45 M	1.92 M	26.2 M	1.99 M	10.4 M
Lead	<0.7 mg/kg	TM181		34.1 M	2.97 M	4.31 M	43.7 M	2.5 M	11.9 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		24.8 M	2.37 M	1.38 M	23 M	1.88 M	15.3 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		101 M	8.26 M	10.1 M	125 M	5.35 M	48.6 M
ANC @ pH 4	<0.03 mol/kg	TM182		2.12	0.0449	0.0553	1.74	0.0497	0.0616
ANC @ pH 6	<0.03 mol/kg	TM182		0.198	<0.03	<0.03	0.177	0.0344	0.0407
Sulphate, Total	<48 mg/kg	TM221		529 M	<48 M	55.8 M	631 M	<48 M	<48 M

Results Legend		Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
#	ISO17025 accredited.							
M	*m*CERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.	Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
tot.unfilt	Total / unfiltered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
*	Subcontracted test.	Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
		Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
		SDG Ref	180424-31	180424-31	180424-31	180424-31		
(F)	Trigger breach confirmed	Lab Sample No.(s)	17431884	17431885	17431893	17431894		
1-5&+§@	Sample deviation (see appendix)	AGS Reference						

Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	16	14	27	14		
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)*	mg/kg	SUB	<0.1 M	<0.1 M	<0.1 M	<0.1 M		
2,2',3,4,4',5'-hexabromodipheny l ether (BDE-138)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4',5,5'-hexabromodipheny l ether (BDE-153)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4',5,6'-hexabromodipheny l ether (BDE-154)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,4,4'-tribromodiphenyl ether (BDE-28)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)*	mg/kg	SUB	<0.1	<0.1	<0.1	<0.1		
Solids, Total	<0.1 %	TBC	84	86	73	86		
Loss on ignition	<0.7 %	TM018	<0.7 M	<0.7 M	13.5 M	<0.7 M		
Sulphate, 2:1 water soluble	<0.002 g/l	TM019	0.0154 M	0.0133 M	0.0655 M	0.011 M		
Mineral oil >C10-C40	<1 mg/kg	TM061	<1	<1	8.36	<1		
Mineral Oil Surrogate % recovery**	%	TM061	82.8	85.9	86.1	85.1		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M		
Organic Carbon, Total	<0.2 %	TM132	<0.2 M	<0.2 M	0.327 M	<0.2 M		
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #	<0.35 #	0.564 #	<0.35 #		
pH	1 pH Units	TM133	8.28 M	7.93 M	6.15 M	6.64 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M		
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M		
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21		
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B
Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66
Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018
Sample Time	11:50:00	11:50:00	13:44:00	13:44:00
Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018
SDG Ref	180424-31	180424-31	180424-31	180424-31
Lab Sample No.(s)	17431884	17431885	17431893	17431894
AGS Reference				

Component	LOD/Units	Method				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36
Arsenic	<0.6 mg/kg	TM181	2.24 M	1.32 M	36.1 M	0.703 M
Boron	<0.7 mg/kg	TM181	0.867 #	0.755 #	7.58 #	<0.7 #
Cadmium	<0.02 mg/kg	TM181	0.0375 M	0.0435 M	1.98 M	0.0321 M
Chromium	<0.9 mg/kg	TM181	2.16 M	1.69 M	<0.9 M	1.65 M
Copper	<1.4 mg/kg	TM181	5.08 M	26.9 M	3.79 M	<1.4 M
Lead	<0.7 mg/kg	TM181	4.42 M	9.04 M	11.3 M	2.34 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	2.44 M	2.24 M	14.7 M	1.16 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	3.05 #	<1 #
Zinc	<1.9 mg/kg	TM181	9.08 M	15.3 M	47.2 M	6.75 M
ANC @ pH 4	<0.03 mol/kg	TM182	0.08	0.0475	0.104	0.0853
ANC @ pH 6	<0.03 mol/kg	TM182	0.0318	0.0324	<0.03	<0.03
Sulphate, Total	<48 mg/kg	TM221	<48 M	<48 M	172 M	<48 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Hexachlorobenzene	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Trifluralin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Phorate	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Quintozene (PCNB)	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Triallate	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Disulfoton	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Heptachlor	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Aldrin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Chlorothalonil	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Telodrin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Isodrin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Heptachlor epoxide	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Triadimefon	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Pendimethalin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
o,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Endosulphan I	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Trans-chlordane	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
cis-Chlordane	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
p,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Dieldrin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Endrin	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
o,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
p,p-TDE (DDD)	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Endosulphan II	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
p,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
o,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
p,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Endosulphan sulphate	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50
Permethrin II	<50 µg/kg	TM073		<50	<50	<50	<50	<250	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Trifluralin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Phorate	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Quintozene (PCNB)	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Triallate	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Disulfoton	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Heptachlor	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Aldrin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Chlorothalonil	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Telodrin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Isodrin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Triadimefon	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Pendimethalin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
o,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Endosulphan I	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Trans-chlordane	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
cis-Chlordane	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
p,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Dieldrin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Endrin	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
o,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
p,p-TDE (DDD)	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Endosulphan II	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
p,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
o,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
p,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50
Permethrin II	<50 µg/kg	TM073		<50	<50	<50	<50	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Trifluralin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Phorate	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Quintozene (PCNB)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Triallate	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Disulfoton	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Heptachlor	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Aldrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Chlorothalonil	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Telodrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Isodrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Triadimefon	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Pendimethalin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p-DDE	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endosulphan I	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Trans-chlordane	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
cis-Chlordane	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-DDE	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Dieldrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p-DDT	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-TDE (DDD)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endosulphan II	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-DDT	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p-Methoxychlor	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-Methoxychlor	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Permethrin II	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Trifluralin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Phorate	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Quintozene (PCNB)	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Triallate	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Disulfoton	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Heptachlor	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Aldrin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Chlorothalonil	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Telodrin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Isodrin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Triadimefon	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Pendimethalin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
o,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Endosulphan I	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Trans-chlordane	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
cis-Chlordane	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
p,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Dieldrin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Endrin	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
o,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
p,p-TDE (DDD)	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Endosulphan II	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
p,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
o,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
p,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50
Permethrin II	<50 µg/kg	TM073		<50	<50	<50	<250	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Hexachlorobenzene	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Trifluralin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Phorate	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Quintozene (PCNB)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Triallate	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Disulfoton	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Heptachlor	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Aldrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Chlorothalonil	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Telodrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Isodrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Heptachlor epoxide	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Triadimefon	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Pendimethalin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p-DDE	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endosulphan I	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Trans-chlordane	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
cis-Chlordane	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-DDE	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Dieldrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endrin	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p-DDT	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-TDE (DDD)	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endosulphan II	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-DDT	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
o,p-Methoxychlor	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
p,p-Methoxychlor	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Endosulphan sulphate	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50
Permethrin II	<50 µg/kg	TM073		<250	<50	<50	<250	<50	<50

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Tecnazene	<50 µg/kg	TM073		<50	<50	<50	<50		
Hexachlorobenzene	<50 µg/kg	TM073		<50	<50	<50	<50		
Trifluralin	<50 µg/kg	TM073		<50	<50	<50	<50		
Phorate	<50 µg/kg	TM073		<50	<50	<50	<50		
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50		
Quintozene (PCNB)	<50 µg/kg	TM073		<50	<50	<50	<50		
Triallate	<50 µg/kg	TM073		<50	<50	<50	<50		
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<50	<50	<50	<50		
Disulfoton	<50 µg/kg	TM073		<50	<50	<50	<50		
Heptachlor	<50 µg/kg	TM073		<50	<50	<50	<50		
Aldrin	<50 µg/kg	TM073		<50	<50	<50	<50		
Chlorothalonil	<50 µg/kg	TM073		<50	<50	<50	<50		
Telodrin	<50 µg/kg	TM073		<50	<50	<50	<50		
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50	<50	<50	<50		
Isodrin	<50 µg/kg	TM073		<50	<50	<50	<50		
Heptachlor epoxide	<50 µg/kg	TM073		<50	<50	<50	<50		
Triadimefon	<50 µg/kg	TM073		<50	<50	<50	<50		
Pendimethalin	<50 µg/kg	TM073		<50	<50	<50	<50		
o,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50		
Endosulphan I	<50 µg/kg	TM073		<50	<50	<50	<50		
Trans-chlordane	<50 µg/kg	TM073		<50	<50	<50	<50		
cis-Chlordane	<50 µg/kg	TM073		<50	<50	<50	<50		
p,p-DDE	<50 µg/kg	TM073		<50	<50	<50	<50		
Dieldrin	<50 µg/kg	TM073		<50	<50	<50	<50		
o,p'-DDD (TDE)	<50 µg/kg	TM073		<50	<50	<50	<50		
Endrin	<50 µg/kg	TM073		<50	<50	<50	<50		
o,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50		
p,p-TDE (DDD)	<50 µg/kg	TM073		<50	<50	<50	<50		
Endosulphan II	<50 µg/kg	TM073		<50	<50	<50	<50		
p,p-DDT	<50 µg/kg	TM073		<50	<50	<50	<50		
o,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50		
p,p-Methoxychlor	<50 µg/kg	TM073		<50	<50	<50	<50		
Endosulphan sulphate	<50 µg/kg	TM073		<50	<50	<50	<50		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

OC, OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Permethrin I	<50 µg/kg	TM073		<50	<50	<50	<50		
Permethrin II	<50 µg/kg	TM073		<50	<50	<50	<50		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.5	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.01
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	0.06	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02		
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02		
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.05		
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02		
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1		
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02		
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		109	109	100	108	110	106
Acenaphthene-d10 % recovery**	%	TM218		103	102	97	108	111	107
Phenanthrene-d10 % recovery**	%	TM218		104	102	99	106	108	105
Chrysene-d12 % recovery**	%	TM218		90.9	87.4	97.9	93	96.2	98.5
Perylene-d12 % recovery**	%	TM218		82.4	82.9	93.8	99.2	102	109
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 M	<9 M	49.1	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	<8 M	46	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	36.1	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	140	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	<16 M	72.3	<16 M
Fluoranthene	<17 µg/kg	TM218		27.8 M	<17 M	<17 M	<17 M	270	<17 M
Pyrene	<15 µg/kg	TM218		22.8 M	<15 M	<15 M	<15 M	218	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	79.9	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	63	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	109	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	38.2	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	57.8	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	<18 M	39.9	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M	<24 M	55	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118	<118	<118	1270	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		105	97.7	92.1	108	95	109
Acenaphthene-d10 % recovery**	%	TM218		104	101	95.8	101	98.4	102
Phenanthrene-d10 % recovery**	%	TM218		103	102	95.9	102	98	103
Chrysene-d12 % recovery**	%	TM218		92.1	87.9	82.9	88.1	82.9	89.8
Perylene-d12 % recovery**	%	TM218		99.4	86.6	80	77.4	76.5	81.2
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118	<118	<118	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		103	105	106	104	103	92.9
Acenaphthene-d10 % recovery**	%	TM218		98.5	99.5	99.7	99.5	100	97.8
Phenanthrene-d10 % recovery**	%	TM218		103	101	99.9	104	97.5	102
Chrysene-d12 % recovery**	%	TM218		97.1	97.1	87	92.8	91.1	92.6
Perylene-d12 % recovery**	%	TM218		106	104	76.5	91.9	89.8	100
Naphthalene	<9 µg/kg	TM218		36.8 M	<9 M	<9 M	37.1 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	13.9 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	17.4 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		73 M	<15 M	<15 M	70.6 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		144 M	<17 M	<17 M	105 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218		119 M	<15 M	<15 M	83.9 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		55.5 M	<14 M	<14 M	33.2 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		46.1 M	<10 M	<10 M	35.3 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		81.6 M	<15 M	<15 M	56.1 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		35.5 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		49.6 M	<15 M	<15 M	29.9 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		49 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		690	<118	<118	483	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		112	107	95.3	108	112	103
Acenaphthene-d10 % recovery**	%	TM218		104	107	99.3	103	105	107
Phenanthrene-d10 % recovery**	%	TM218		105	105	100	107	106	109
Chrysene-d12 % recovery**	%	TM218		95.4	94.7	85.6	103	95	112
Perylene-d12 % recovery**	%	TM218		99.6	101	73.7	114	85.6	127
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 M	85.7 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	49.9 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	39.6 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	97.6 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	57.7 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		<17 M	<17 M	<17 M	500 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	368 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	97.7 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	64.4 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	97.2 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	40.8 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	58.4 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	34.5 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M	44 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118	<118	1640	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		103	102	105	95.6	112	110
Acenaphthene-d10 % recovery**	%	TM218		99.6	100	105	104	105	103
Phenanthrene-d10 % recovery**	%	TM218		105	88.5	102	112	105	104
Chrysene-d12 % recovery**	%	TM218		104	79.9	94.4	111	91.5	92.1
Perylene-d12 % recovery**	%	TM218		115	79.4	101	117	81.1	87.1
Naphthalene	<9 µg/kg	TM218		59.2 M	<9 M	<9 M	120 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		31.7 M	<8 M	<8 M	82.9 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		33.8 M	<10 M	<10 M	62.4 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		97.2 M	<15 M	<15 M	209 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218		73.3 M	<16 M	<16 M	104 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		418 M	<17 M	<17 M	610 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218		321 M	<15 M	<15 M	481 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		107 M	<14 M	<14 M	151 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		78.4 M	<10 M	<10 M	148 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		92.7 M	<15 M	<15 M	206 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		39.2 M	<14 M	<14 M	82.6 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		68 M	<15 M	<15 M	120 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		34.4 M	<18 M	<18 M	77.2 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		47.5 M	<24 M	<24 M	108 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		1500	<118	<118	2560	<118	<118
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		107	105	101	105		
Acenaphthene-d10 % recovery**	%	TM218		100	98.2	100	101		
Phenanthrene-d10 % recovery**	%	TM218		102	99.5	99.7	99.4		
Chrysene-d12 % recovery**	%	TM218		96.3	92.5	89.9	91.3		
Perylene-d12 % recovery**	%	TM218		100	98.1	93.4	92.3		
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 M	<9 M		
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M		
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	<8 M		
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M		
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M		
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	<16 M		
Fluoranthene	<17 µg/kg	TM218		<17 M	<17 M	<17 M	<17 M		
Pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M		
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M		
Chrysene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M		
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M		
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M		
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	<18 M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M	<24 M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118	<118	<118		
PAH total 17 (inclusive of Coronene)	<10 mg/kg	TM218		<10	<10	<10	<10		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100		
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100		
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100		
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100		
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100		
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100		
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100		
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100		
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100		
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100		
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100		
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		140	126	78	75	65	128
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44	<44	<44	<44	130	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089		<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089		<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	11.2	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	31.6	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	20.5	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	<10	27.9	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	<100	<100	590	3300	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		<100	<100	<100	1450	11000	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		<100	<100	3300	5280	41800	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	<100	<100	<100	8940	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		<100	<100	3300	7320	65000	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	18.6	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	<10	18.6	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100	<100	<100	1710	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	<100	663	1230	8690	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		<100	<100	2940	4160	31400	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		<100	<100	690	3330	13100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	<100	226	1380	4540	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		<100	<100	4290	8720	54900	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		<100	<100	7590	16000	120000	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		73	111	159	22	122	118
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44	<44	<44	<44	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089		<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089		<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	<100	<100	<100	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		<100	<100	1080	<100	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		2790	<100	2860	<100	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	<100	<100	<100	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		2790	<100	3940	<100	<100	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100	<100	<100	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	<100	<100	<100	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		2230	<100	<100	<100	<100	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		1320	<100	<100	<100	<100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	<100	<100	<100	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		3550	<100	<100	<100	<100	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		6340	<100	3940	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		63	104	112	55	115	17
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44	<44	<44	246	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089		<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089		<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	16.1	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		21.5	<10	<10	59.6	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		10.7	<10	<10	43.5	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	54.7	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		4120	<100	<100	1190	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		12800	<100	<100	4470	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		47100	<100	<100	22000	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		8200	<100	<100	3420	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		72200	<100	<100	31100	<100	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		10.7	<10	<10	35.4	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	37	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		2910	<100	<100	1690	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		10100	1860	<100	5640	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		35500	16000	<100	24700	<100	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		13300	7980	<100	11400	1120	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		4460	2660	<100	3700	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		61700	25800	<100	43400	1120	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		134000	25800	<100	74700	1120	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		115	115	116	66	113	122
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44	<44	<44	211	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089		<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089		<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	10.7	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	30.4	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	26.9	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	71.6	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	139	<100	5600	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		<100	<100	<100	14600	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		<100	<100	<100	38000	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	<100	<100	3710	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		<100	139	<100	61800	<100	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	21.5	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	48.3	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100	<100	3740	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	<100	<100	19000	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		<100	149	<100	43800	<100	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		<100	4380	<100	13200	<100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		<100	2850	<100	4880	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		<100	4530	<100	79800	<100	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		<100	4670	<100	142000	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		67	75	114	68	131	85
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		298	<44	82.1	824	<44	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089		<5	<5	<5	<5	<5	<5
Benzene	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Toluene	<2 µg/kg	TM089		<2	<2	<2	<2	<2	<2
Ethylbenzene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
m,p-Xylene	<6 µg/kg	TM089		<6	<6	<6	<6	<6	<6
o-Xylene	<3 µg/kg	TM089		<3	<3	<3	<3	<3	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089		<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089		<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089		15.4	<10	<10	18.9	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		49.6	<10	<10	75.7	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		42.8	10.4	27.4	151	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		94.1	<10	14.3	282	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		1140	<100	<100	4690	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		4200	<100	<100	10100	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		14800	<100	<100	22600	<100	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	<100	<100	<100	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		20100	<100	<100	37400	<100	<100
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		34.2	<10	19	108	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		63.3	<10	<10	187	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		1160	<100	<100	3860	<100	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		7400	<100	<100	14400	<100	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173		17400	<100	<100	23600	<100	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173		5280	<100	<100	3100	<100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173		2070	<100	<100	<100	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		31300	<100	<100	45000	<100	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		51700	<100	<100	83200	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
tot.unfilt	Total / unfiltered sample.	Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
*	Subcontracted test.	Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
		SDG Ref	180424-31	180424-31	180424-31	180424-31		
(F)	Trigger breach confirmed	Lab Sample No.(s)	17431884	17431885	17431893	17431894		
1-5&+§@	Sample deviation (see appendix)	AGS Reference						

Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	109	118	113	111		
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44	<44	<44	<44		
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5		
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10		
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2		
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3		
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6		
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3		
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9		
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24		
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	<100	271		
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	352	847		
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	2510	1850		
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	2740	<100		
Total Aliphatics >C12-C44	<100 µg/kg	TM173	<100	<100	5600	2970		
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100	<100	282		
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	<100	377		
Aromatics >EC21-EC35	<100 µg/kg	TM173	<100	<100	622	466		
Aromatics >EC35-EC44	<100 µg/kg	TM173	1380	<100	<100	<100		
Aromatics >EC40-EC44	<100 µg/kg	TM173	1100	<100	<100	<100		
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1380	<100	622	1120		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	1380	<100	6220	4100		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 | Client Reference: 62240712 | Report Number: 457244
Location: Lowestoft | Order Number: 62240712 | Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Dibromofluoromethane**	%	TM116		107	108	103	105	109	130
Toluene-d8**	%	TM116		101	101	97.5	96.7	98.7	99
4-Bromofluorobenzene**	%	TM116		97	96.2	83.4	83.8	91.7	101
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
Chloromethane	<7 µg/kg	TM116		<7 #	<7 #	<7 #	<7 #	<70 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
Bromomethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Chloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Trichlorofluorormethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<7 M	24.3 M	<7 M	<70 #	<7 M
Dichloromethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<80 #	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<60 #	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<10	<100	<10
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Chloroform	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<80 #	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<70 #	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<50 #	<5 M
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<90 #	<9 M
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<90 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Dibromomethane	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<90 #	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<70 #	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<70 #	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10	<100	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<70 #	<7 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.20 - 3.63	0.80 - 1.20	1.80 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	15:43:00	15:43:00	15:43:00	15:43:00	14:28:00	14:28:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431917	17431916	17431915	17431914	17431903	17431906
			AGS Reference						
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<50 #	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<50 #	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<40 #	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<50 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<160 #	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<90 #	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<80 #	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<140 #	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<90 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<100	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<80 #	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<50 #	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<110	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<100 #	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<140 #	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<100 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<200	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<200	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<130 #	<13 M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<20 #	<20 #	<20 #	<20 #	<200 #	<20 #

CERTIFICATE OF ANALYSIS

SDG: 180424-31 | Client Reference: 62240712 | Report Number: 457244
Location: Lowestoft | Order Number: 62240712 | Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Dibromofluoromethane**	%	TM116		125	106	105	102	103	101
Toluene-d8**	%	TM116		99.4	98.5	100	100	99.1	99.4
4-Bromofluorobenzene**	%	TM116		92.8	96.1	94.9	97.6	96.9	98.7
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluorormethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		17.5 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116		14.3 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC03	VC03	VC04	VC04	VC04	VC04
			Depth (m)	2.80 - 3.20	3.39 - 3.79	0.80 - 1.20	1.80 - 2.20	2.80 - 3.20	3.60 - 4.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018	19/04/2018	19/04/2018
			Sample Time	14:28:00	14:28:00	15:50:00	15:50:00	15:50:00	15:50:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431905	17431904	17431908	17431909	17431910	17431907
			AGS Reference						
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<20 #	<20 #	<20 #	<20 #	<20 #	<20 #

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Dibromofluoromethane**	%	TM116		103	113	150	141	104	111
Toluene-d8**	%	TM116		99.2	98.3	101	98.1	99.1	99.7
4-Bromofluorobenzene**	%	TM116		94.4	96.3	104	94.3	96.6	100
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116		<70 #	<7 #	<7 #	<70 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<100	<10	<10	<100	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116		<90 M	<9 M	<9 M	<90 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<90 #	<9 #	<9 #	<90 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<90 M	<9 M	<9 M	<90 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100	<10	<10	<100	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC05	VC05	VC05	VC06	VC06	VC07
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	0.80 - 1.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2018	19/04/2018	19/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	14:45:00	14:45:00	14:45:00	08:29:00	08:29:00	17:40:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431895	17431896	17431898	17431899	17431900	17431883
			AGS Reference						
Tetrachloroethene	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<40 M	<4 M	<4 M	<40 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<50 #	<5 #	<5 #	<50 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M	<16 M	<16 M	<160 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<90 M	<9 M	<9 M	<90 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<140 M	<14 M	<14 M	<140 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #	<9 #	<9 #	<90 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<100	<10	<10	<100	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<110	<11	<11	<110	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M	<14 M	<14 M	<140 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200	<20	<20	<200	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<200	<20	<20	<200	<20	<20
Naphthalene	<13 µg/kg	TM116		<130 M	<13 M	<13 M	<130 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #	<20 #	<20 #	<200 #	<20 #	<20 #

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Dibromofluoromethane**	%	TM116		102	104	103	111	110	105
Toluene-d8**	%	TM116		99.3	99.2	98.6	98.2	99	99.1
4-Bromofluorobenzene**	%	TM116		98.3	98.3	95.9	94.2	95.7	95.7
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116		<7 #	<7 #	<7 #	<140 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Trichlorofluorormethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<200	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<200	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<140 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC07	VC08	VC08	VC11	VC11	VC11
			Depth (m)	1.60 - 2.00	0.60 - 1.00	1.00 - 1.45	0.80 - 1.20	1.80 - 2.20	2.20 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	17:40:00	17:06:00	17:06:00	12:24:00	12:24:00	12:24:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431882	17431902	17431901	17431887	17431886	17431889
			AGS Reference						
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<80 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<320 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<280 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<200	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<220	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<280 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<400	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<400	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<260 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<20 #	<20 #	<20 #	<400 #	<20 #	<20 #

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Dibromofluoromethane**	%	TM116		122	104	101	118	107	111
Toluene-d8**	%	TM116		97.4	99	98.8	97.4	100	101
4-Bromofluorobenzene**	%	TM116		92.1	96.3	96.5	91.5	99.1	105
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116		<70 #	<7 #	<7 #	<70 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<70 M	<7 M	<7 M	147 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M	<6 M	<6 M	<60 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<100	<10	<10	<100	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116		<90 M	<9 M	<9 M	<90 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<90 #	<9 #	<9 #	<90 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<90 M	<9 M	<9 M	<90 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100	<10	<10	<100	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,3-Dichloropropane	<7 µg/kg	TM116		<70 M	<7 M	<7 M	<70 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
			Depth (m)	0.80 - 1.20	1.80 - 2.20	2.45 - 2.85	0.80 - 1.20	1.80 - 2.20	2.80 - 3.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018	20/04/2018
			Sample Time	09:24:00	09:24:00	09:24:00	13:27:00	13:27:00	13:27:00
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018	24/04/2018
			SDG Ref	180424-31	180424-31	180424-31	180424-31	180424-31	180424-31
			Lab Sample No.(s)	17431891	17431890	17431892	17431913	17431911	17431912
			AGS Reference						
Tetrachloroethene	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<40 M	<4 M	<4 M	<40 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<50 #	<5 #	<5 #	<50 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M	<16 M	<16 M	<160 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<90 M	<9 M	<9 M	<90 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<140 M	<14 M	<14 M	<140 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #	<9 #	<9 #	<90 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<100	<10	<10	<100	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M	<8 M	<8 M	<80 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M	<5 M	<5 M	<50 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<110	<11	<11	<110	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M	<10 M	<10 M	<100 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M	<14 M	<14 M	<140 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<10 #	<10 #	<100 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200	<20	<20	<200	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<200	<20	<20	<200	<20	<20
Naphthalene	<13 µg/kg	TM116		<130 M	<13 M	<13 M	<130 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #	<20 #	<20 #	<200 #	<20 #	<20 #

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Dibromofluoromethane**	%	TM116		160	111	116	103		
Toluene-d8**	%	TM116		103	99	99.1	99		
4-Bromofluorobenzene**	%	TM116		107	95.2	97.1	95.1		
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M		
Chloromethane	<7 µg/kg	TM116		<7 #	<7 #	<7 #	<7 #		
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M		
Bromomethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Chloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Trichlorofluorormethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M		
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #		
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M		
Dichloromethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M		
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<10		
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Chloroform	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M		
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M		
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M		
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M		
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #		
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Dibromomethane	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M		
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10		
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 Client Reference: 62240712 Report Number: 457244
Location: Lowestoft Order Number: 62240712 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B		
			Depth (m)	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	20/04/2018	20/04/2018	19/04/2018	19/04/2018		
			Sample Time	11:50:00	11:50:00	13:44:00	13:44:00		
			Date Received	24/04/2018	24/04/2018	24/04/2018	24/04/2018		
			SDG Ref	180424-31	180424-31	180424-31	180424-31		
			Lab Sample No.(s)	17431884	17431885	17431893	17431894		
			AGS Reference						
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M		
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M		
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M		
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #		
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #		
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #		
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M		
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M		
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #		
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10		
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M		
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M		
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11		
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M		
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #		
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20		
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20		
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M		
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<20 #	<20 #	<20 #	<20 #		

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC02 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 20:42:27 180424-31 17431917 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC02 1.80 - 2.20 SOLID 20/04/2018 00:00:00 25/04/2018 20:50:19 180424-31 17431916 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC02 2.80 - 3.20 SOLID 20/04/2018 00:00:00 25/04/2018 13:06:46 180424-31 17431915 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC02 3.20 - 3.63 SOLID 20/04/2018 00:00:00 25/04/2018 13:08:45 180424-31 17431914 TM048	30/04/2018	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC03 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 09:52:24 180424-31 17431903 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC03 1.80 - 2.20 SOLID 20/04/2018 00:00:00 24/04/2018 18:23:11 180424-31 17431906 TM048	30/04/2018	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC03 2.80 - 3.20 SOLID 20/04/2018 00:00:00 25/04/2018 09:51:11 180424-31 17431905 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC03 3.39 - 3.79 SOLID 20/04/2018 00:00:00 24/04/2018 18:19:07 180424-31 17431904 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC04 0.80 - 1.20 SOLID 19/04/2018 00:00:00 24/04/2018 18:03:51 180424-31 17431908 TM048	30/04/2018	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC04 1.80 - 2.20 SOLID 19/04/2018 00:00:00 25/04/2018 20:47:33 180424-31 17431909 TM048	02/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC04 2.80 - 3.20 SOLID 19/04/2018 00:00:00 24/04/2018 18:21:50 180424-31 17431910 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC04 3.60 - 4.00 SOLID 19/04/2018 00:00:00 25/04/2018 20:51:56 180424-31 17431907 TM048	02/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC05 0.80 - 1.20 SOLID 19/04/2018 00:00:00 25/04/2018 08:27:11 180424-31 17431895 TM048	01/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC05 1.80 - 2.20 SOLID 19/04/2018 00:00:00 25/04/2018 20:45:16 180424-31 17431896 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC05 2.53 - 2.93 SOLID 19/04/2018 00:00:00 25/04/2018 08:23:57 180424-31 17431898 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC06 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 20:43:48 180424-31 17431899 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC06 2.00 - 2.46 SOLID 20/04/2018 00:00:00 25/04/2018 15:08:49 180424-31 17431900 TM048	02/05/2018	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC07 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 14:53:52 180424-31 17431883 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC07 1.60 - 2.00 SOLID 20/04/2018 00:00:00 25/04/2018 14:52:46 180424-31 17431882 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC08 0.60 - 1.00 SOLID 20/04/2018 00:00:00 25/04/2018 09:49:32 180424-31 17431902 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC08 1.00 - 1.45 SOLID 20/04/2018 00:00:00 25/04/2018 20:41:09 180424-31 17431901 TM048	02/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC11 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 08:35:34 180424-31 17431887 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC11 1.80 - 2.20 SOLID 20/04/2018 00:00:00 25/04/2018 08:38:06 180424-31 17431886 TM048	01/05/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC11 2.20 - 2.50 SOLID 20/04/2018 00:00:00 25/04/2018 13:01:12 180424-31 17431889 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC10A 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 08:39:49 180424-31 17431891 TM048	01/05/2018	Lucy Caroe	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC10A 1.80 - 2.20 SOLID 20/04/2018 00:00:00 24/04/2018 17:53:03 180424-31 17431890 TM048	01/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC10A 2.45 - 2.85 SOLID 20/04/2018 00:00:00 25/04/2018 08:41:53 180424-31 17431892 TM048	30/04/2018	Lucy Caroe	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC12A 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 12:59:32 180424-31 17431913 TM048	01/05/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Trace
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC12A 1.80 - 2.20 SOLID 20/04/2018 00:00:00 25/04/2018 20:48:59 180424-31 17431911 TM048	02/05/2018	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC12A 2.80 - 3.30 SOLID 20/04/2018 00:00:00 24/04/2018 18:20:21 180424-31 17431912 TM048	30/04/2018	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC01B 0.80 - 1.20 SOLID 20/04/2018 00:00:00 25/04/2018 14:56:21 180424-31 17431884 TM048	02/05/2018	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC01B 1.24 - 1.54 SOLID 20/04/2018 00:00:00 25/04/2018 14:57:45 180424-31 17431885 TM048	02/05/2018	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC09B 0.80 - 1.20 SOLID 19/04/2018 00:00:00 25/04/2018 08:25:40 180424-31 17431893 TM048	30/04/2018	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	VC09B 1.26 - 1.66 SOLID 19/04/2018 00:00:00 25/04/2018 08:30:37 180424-31 17431894 TM048	30/04/2018	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431882
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC07
Depth (m)	1.60 - 2.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.11	-	>6	-
ANC to pH 6 (mol/kg)	0.0353	-	-	-
ANC to pH 4 (mol/kg)	0.0567	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00395	<0.0005	0.0395	<0.005	0.5	2	25
Barium	0.00297	<0.0002	0.0297	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00228	<0.001	0.0228	<0.01	0.5	10	70
Copper	0.00212	<0.0003	0.0212	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00126	<0.0004	0.0126	<0.004	0.4	10	40
Lead	0.00204	<0.0002	0.0204	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00352	<0.001	0.0352	<0.01	4	50	200
Chloride	3.2	<2	32	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	26.7	<5	267	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.33
Conductivity (µS/cm)	20.30
Temperature (°C)	19.90
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431883
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC07
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.08	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0389	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00273	<0.0005	0.0273	<0.005	0.5	2	25
Barium	0.00111	<0.0002	0.0111	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000555	<0.0003	0.00555	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000599	<0.0004	0.00599	<0.004	0.4	10	40
Lead	0.000669	<0.0002	0.00669	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00105	<0.001	0.0105	<0.01	4	50	200
Chloride	2.7	<2	27	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	17.5	<5	175	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.93
Conductivity (µS/cm)	17.70
Temperature (°C)	20.00
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431884
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC01B
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.28	-	>6	-
ANC to pH 6 (mol/kg)	0.0318	-	-	-
ANC to pH 4 (mol/kg)	0.08	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0072	<0.0005	0.072	<0.005	0.5	2	25
Barium	0.00378	<0.0002	0.0378	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00566	<0.001	0.0566	<0.01	0.5	10	70
Copper	0.0104	<0.0003	0.104	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00504	<0.003	0.0504	<0.03	0.5	10	30
Nickel	0.00479	<0.0004	0.0479	<0.004	0.4	10	40
Lead	0.00525	<0.0002	0.0525	<0.002	0.5	10	50
Antimony	0.00145	<0.001	0.0145	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0115	<0.001	0.115	<0.01	4	50	200
Chloride	11.2	<2	112	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	53.7	<5	537	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.03	<3	70.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.48
Conductivity (µS/cm)	66.20
Temperature (°C)	20.10
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431885
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC01B
Depth (m)	1.24 - 1.54

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.93	-	>6	-
ANC to pH 6 (mol/kg)	0.0324	-	-	-
ANC to pH 4 (mol/kg)	0.0475	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00551	<0.0005	0.0551	<0.005	0.5	2	25
Barium	0.00204	<0.0002	0.0204	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00122	<0.001	0.0122	<0.01	0.5	10	70
Copper	0.00342	<0.0003	0.0342	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00116	<0.0004	0.0116	<0.004	0.4	10	40
Lead	0.000973	<0.0002	0.00973	<0.002	0.5	10	50
Antimony	0.0011	<0.001	0.011	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00279	<0.001	0.0279	<0.01	4	50	200
Chloride	5.6	<2	56	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	40.5	<5	405	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.14	<3	51.4	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.54
Conductivity (µS/cm)	48.30
Temperature (°C)	19.90
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431886
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC11
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.4	-	>6	-
ANC to pH 6 (mol/kg)	0.0522	-	-	-
ANC to pH 4 (mol/kg)	0.0715	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0069	<0.0005	0.069	<0.005	0.5	2	25
Barium	0.000795	<0.0002	0.00795	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00112	<0.0003	0.0112	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000467	<0.0004	0.00467	<0.004	0.4	10	40
Lead	0.00074	<0.0002	0.0074	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	3	<2	30	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	18.4	<5	184	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.92
Conductivity (µS/cm)	20.30
Temperature (°C)	20.10
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.122	**Natural Moisture Content (%)**	35.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	73.7
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431887
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC11
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.54	3	5	6
Loss on Ignition (%)	2.71	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	94	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.65	-	>6	-
ANC to pH 6 (mol/kg)	0.185	-	-	-
ANC to pH 4 (mol/kg)	2.19	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0205	<0.0005	0.205	<0.005	0.5	2	25
Barium	0.0285	<0.0002	0.285	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.01	<0.001	0.1	<0.01	0.5	10	70
Copper	0.00849	<0.0003	0.0849	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0158	<0.003	0.158	<0.03	0.5	10	30
Nickel	0.00656	<0.0004	0.0656	<0.004	0.4	10	40
Lead	0.00923	<0.0002	0.0923	<0.002	0.5	10	50
Antimony	0.00197	<0.001	0.0197	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0191	<0.001	0.191	<0.01	4	50	200
Chloride	179	<2	1790	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	24.8	<2	248	<20	1000	20000	50000
Total Dissolved Solids	592	<5	5920	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	10.9	<3	109	<30	500	800	1000

Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	7.90
Conductivity (µS/cm)	765.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.868

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431889
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC11
Depth (m)	2.20 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.76	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0734	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00653	<0.0005	0.0653	<0.005	0.5	2	25
Barium	0.00204	<0.0002	0.0204	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00184	<0.001	0.0184	<0.01	0.5	10	70
Copper	0.000954	<0.0003	0.00954	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00135	<0.0004	0.0135	<0.004	0.4	10	40
Lead	0.00237	<0.0002	0.0237	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00292	<0.001	0.0292	<0.01	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	42.3	<5	423	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.78	<3	47.8	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.83
Conductivity (µS/cm)	18.60
Temperature (°C)	18.50
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431890
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC10A
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.728	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.22	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0449	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0149	<0.0005	0.149	<0.005	0.5	2	25
Barium	0.00126	<0.0002	0.0126	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000387	<0.0003	0.00387	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000945	<0.0004	0.00945	<0.004	0.4	10	40
Lead	0.000573	<0.0002	0.00573	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00132	<0.001	0.0132	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	7.1	<2	71	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	46.9	<5	469	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.31	<3	43.1	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.46
Conductivity (µS/cm)	56.60
Temperature (°C)	20.10
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.180	**Natural Moisture Content (%)**	100
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	49.9
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431891
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC10A
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.26	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	79.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.75	-	>6	-
ANC to pH 6 (mol/kg)	0.198	-	-	-
ANC to pH 4 (mol/kg)	2.12	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0359	<0.0005	0.359	<0.005	0.5	2	25
Barium	0.03	<0.0002	0.3	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00526	<0.001	0.0526	<0.01	0.5	10	70
Copper	0.00971	<0.0003	0.0971	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.033	<0.003	0.33	<0.03	0.5	10	30
Nickel	0.00847	<0.0004	0.0847	<0.004	0.4	10	40
Lead	0.00521	<0.0002	0.0521	<0.002	0.5	10	50
Antimony	0.0036	<0.001	0.036	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0138	<0.001	0.138	<0.01	4	50	200
Chloride	676	<10	6760	<100	800	15000	25000
Fluoride	0.714	<0.5	7.14	<5	10	150	500
Sulphate (soluble)	4	<2	40	<20	1000	20000	50000
Total Dissolved Solids	1810	<5	18100	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	25.7	<3	257	<30	500	800	1000

Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	8.46
Conductivity (µS/cm)	2,710.00
Temperature (°C)	19.70
Volume Leachant (Litres)	0.810

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431892
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC10A
Depth (m)	2.45 - 2.85

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	12.3	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.1	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0553	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00909	<0.0005	0.0909	<0.005	0.5	2	25
Barium	0.00207	<0.0002	0.0207	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00201	<0.001	0.0201	<0.01	0.5	10	70
Copper	0.00271	<0.0003	0.0271	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00304	<0.0004	0.0304	<0.004	0.4	10	40
Lead	0.00189	<0.0002	0.0189	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00393	<0.001	0.0393	<0.01	4	50	200
Chloride	5.4	<2	54	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	28	<5	280	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.72	<3	47.2	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.25
Conductivity (µS/cm)	32.20
Temperature (°C)	20.00
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.123	**Natural Moisture Content (%)**	37
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	73
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431893
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC09B
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.327	3	5	6
Loss on Ignition (%)	13.5	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	8.36	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	6.15	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.104	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00691	<0.0005	0.0691	<0.005	0.5	2	25
Barium	0.00534	<0.0002	0.0534	<0.002	20	100	300
Cadmium	0.000341	<0.00008	0.00341	<0.0008	0.04	1	5
Chromium	0.00148	<0.001	0.0148	<0.01	0.5	10	70
Copper	0.00459	<0.0003	0.0459	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.0025	<0.0004	0.025	<0.004	0.4	10	40
Lead	0.0013	<0.0002	0.013	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00957	<0.001	0.0957	<0.01	4	50	200
Chloride	16	<2	160	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	10.4	<2	104	<20	1000	20000	50000
Total Dissolved Solids	98	<5	980	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.93	<3	59.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.09
Conductivity (µS/cm)	124.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.867

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.104	**Natural Moisture Content (%)**	16.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431894
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC09B
Depth (m)	1.26 - 1.66

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	6.64	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0853	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00342	<0.0005	0.0342	<0.005	0.5	2	25
Barium	0.00451	<0.0002	0.0451	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0145	<0.001	0.145	<0.01	0.5	10	70
Copper	0.00691	<0.0003	0.0691	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00552	<0.0004	0.0552	<0.004	0.4	10	40
Lead	0.00181	<0.0002	0.0181	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00342	<0.001	0.0342	<0.01	4	50	200
Chloride	5.7	<2	57	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	25	<5	250	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.8	<3	78	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.67
Conductivity (µS/cm)	27.20
Temperature (°C)	20.20
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.161	**Natural Moisture Content (%)**	78.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	56
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431895
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC05
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.56	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	59.7	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.54	-	>6	-
ANC to pH 6 (mol/kg)	0.247	-	-	-
ANC to pH 4 (mol/kg)	2.46	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0213	<0.0005	0.213	<0.005	0.5	2	25
Barium	0.0448	<0.0002	0.448	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00429	<0.0003	0.0429	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0235	<0.003	0.235	<0.03	0.5	10	30
Nickel	0.00447	<0.0004	0.0447	<0.004	0.4	10	40
Lead	0.00261	<0.0002	0.0261	<0.002	0.5	10	50
Antimony	0.00221	<0.001	0.0221	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00803	<0.001	0.0803	<0.01	4	50	200
Chloride	1160	<20	11600	<200	800	15000	25000
Fluoride	0.62	<0.5	6.2	<5	10	150	500
Sulphate (soluble)	18.2	<2	182	<20	1000	20000	50000
Total Dissolved Solids	2950	<20	29500	<200	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	17.7	<3	177	<30	500	800	1000

Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	8.13
Conductivity (µS/cm)	3,740.00
Temperature (°C)	19.70
Volume Leachant (Litres)	0.829

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431896
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC05
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	1.5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.91	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0767	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00221	<0.0005	0.0221	<0.005	0.5	2	25
Barium	0.0163	<0.0002	0.163	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00145	<0.0003	0.0145	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00211	<0.0004	0.0211	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00173	<0.001	0.0173	<0.01	4	50	200
Chloride	113	<2	1130	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.1	<2	41	<20	1000	20000	50000
Total Dissolved Solids	395	<5	3950	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.16	<3	31.6	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.65
Conductivity (µS/cm)	518.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431898
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC05
Depth (m)	2.53 - 2.93

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	2.24	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	20.7	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	6.27	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0849	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0141	<0.0005	0.141	<0.005	0.5	2	25
Barium	0.0169	<0.0002	0.169	<0.002	20	100	300
Cadmium	0.0000959	<0.00008	0.000959	<0.0008	0.04	1	5
Chromium	0.00364	<0.001	0.0364	<0.01	0.5	10	70
Copper	0.0137	<0.0003	0.137	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000439	<0.00001	0.000439	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00557	<0.0004	0.0557	<0.004	0.4	10	40
Lead	0.0185	<0.0002	0.185	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00178	<0.001	0.0178	<0.01	0.1	0.5	7
Zinc	0.109	<0.001	1.09	<0.01	4	50	200
Chloride	12.5	<2	125	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	5.8	<2	58	<20	1000	20000	50000
Total Dissolved Solids	33.2	<5	332	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.64
Conductivity (µS/cm)	39.40
Temperature (°C)	19.40
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.145	**Natural Moisture Content (%)**	61.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	62
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431899
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC06
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.68	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	62.4	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.48	-	>6	-
ANC to pH 6 (mol/kg)	0.223	-	-	-
ANC to pH 4 (mol/kg)	2.13	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0169	<0.0005	0.169	<0.005	0.5	2	25
Barium	0.0192	<0.0002	0.192	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00289	<0.0003	0.0289	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0209	<0.003	0.209	<0.03	0.5	10	30
Nickel	0.00464	<0.0004	0.0464	<0.004	0.4	10	40
Lead	0.000626	<0.0002	0.00626	<0.002	0.5	10	50
Antimony	0.00275	<0.001	0.0275	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00148	<0.001	0.0148	<0.01	4	50	200
Chloride	366	<4	3660	<40	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	1080	<5	10800	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	24.1	<3	241	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.32
Conductivity (µS/cm)	1,420.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.845

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.092	**Natural Moisture Content (%)**	1.83
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	98.2
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431900
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC06
Depth (m)	2.00 - 2.46

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	9.01	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0908	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0112	<0.0005	0.112	<0.005	0.5	2	25
Barium	0.00329	<0.0002	0.0329	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00325	<0.001	0.0325	<0.01	0.5	10	70
Copper	0.00438	<0.0003	0.0438	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00388	<0.003	0.0388	<0.03	0.5	10	30
Nickel	0.00158	<0.0004	0.0158	<0.004	0.4	10	40
Lead	0.00156	<0.0002	0.0156	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00343	<0.001	0.0343	<0.01	4	50	200
Chloride	12.7	<2	127	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	64.1	<5	641	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.23	<3	62.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.87
Conductivity (µS/cm)	62.90
Temperature (°C)	19.90
Volume Leachant (Litres)	0.898

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431901
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC08
Depth (m)	1.00 - 1.45

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.56	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0826	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00362	<0.0005	0.0362	<0.005	0.5	2	25
Barium	0.00512	<0.0002	0.0512	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00477	<0.001	0.0477	<0.01	0.5	10	70
Copper	0.000852	<0.0003	0.00852	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00281	<0.0004	0.0281	<0.004	0.4	10	40
Lead	0.000305	<0.0002	0.00305	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	74.5	<2	745	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	10.3	<2	103	<20	1000	20000	50000
Total Dissolved Solids	224	<5	2240	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.10
Conductivity (µS/cm)	285.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	20.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431902
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC08
Depth (m)	0.60 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	1.16	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.97	-	>6	-
ANC to pH 6 (mol/kg)	0.0375	-	-	-
ANC to pH 4 (mol/kg)	0.059	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00823	<0.0005	0.0823	<0.005	0.5	2	25
Barium	0.00549	<0.0002	0.0549	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000726	<0.0003	0.00726	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00425	<0.003	0.0425	<0.03	0.5	10	30
Nickel	0.000502	<0.0004	0.00502	<0.004	0.4	10	40
Lead	0.000444	<0.0002	0.00444	<0.002	0.5	10	50
Antimony	0.00177	<0.001	0.0177	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	56	<2	560	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.4	<2	44	<20	1000	20000	50000
Total Dissolved Solids	183	<5	1830	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.03	<3	40.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.18
Conductivity (µS/cm)	239.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.167	**Natural Moisture Content (%)**	85.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	54
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431903
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC03
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.37	3	5	6
Loss on Ignition (%)	6.91	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	56.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.62	-	>6	-
ANC to pH 6 (mol/kg)	0.227	-	-	-
ANC to pH 4 (mol/kg)	2.02	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.035	<0.0005	0.35	<0.005	0.5	2	25
Barium	0.0286	<0.0002	0.286	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00283	<0.0003	0.0283	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.021	<0.003	0.21	<0.03	0.5	10	30
Nickel	0.00298	<0.0004	0.0298	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00127	<0.001	0.0127	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0056	<0.001	0.056	<0.01	4	50	200
Chloride	588	<10	5880	<100	800	15000	25000
Fluoride	0.614	<0.5	6.14	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	1610	<5	16100	<50	4000	60000	100000
Total Monohydric Phenols (W)	0.02	<0.016	0.2	<0.16	1	-	-
Dissolved Organic Carbon	22	<3	220	<30	500	800	1000

Leach Test Information

Date Prepared	27-Apr-2018
pH (pH Units)	8.30
Conductivity (µS/cm)	2,290.00
Temperature (°C)	19.40
Volume Leachant (Litres)	0.823

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431904
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC03
Depth (m)	3.39 - 3.79

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	5.78	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0866	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00688	<0.0005	0.0688	<0.005	0.5	2	25
Barium	0.112	<0.0002	1.12	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00231	<0.001	0.0231	<0.01	0.5	10	70
Copper	0.00263	<0.0003	0.0263	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00228	<0.0004	0.0228	<0.004	0.4	10	40
Lead	0.00167	<0.0002	0.0167	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00362	<0.001	0.0362	<0.01	0.1	0.5	7
Zinc	0.0148	<0.001	0.148	<0.01	4	50	200
Chloride	7.3	<2	73	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	49.3	<5	493	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	8.36	<3	83.6	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.42
Conductivity (µS/cm)	44.70
Temperature (°C)	20.10
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.117	**Natural Moisture Content (%)**	29.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	77
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431905
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC03
Depth (m)	2.80 - 3.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.414	3	5	6
Loss on Ignition (%)	9.71	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	7.57	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	6.26	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0825	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00378	<0.0005	0.0378	<0.005	0.5	2	25
Barium	0.0096	<0.0002	0.096	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000823	<0.0003	0.00823	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00775	<0.0004	0.0775	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00193	<0.001	0.0193	<0.01	4	50	200
Chloride	8.8	<2	88	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	3.7	<2	37	<20	1000	20000	50000
Total Dissolved Solids	128	<5	1280	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.83	<3	38.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.31
Conductivity (µS/cm)	162.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.873

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.113	**Natural Moisture Content (%)**	25
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	80
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431906
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC03
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.04	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	3.87	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.08	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0787	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00436	<0.0005	0.0436	<0.005	0.5	2	25
Barium	0.00322	<0.0002	0.0322	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00135	<0.0003	0.0135	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000709	<0.0004	0.00709	<0.004	0.4	10	40
Lead	0.000574	<0.0002	0.00574	<0.002	0.5	10	50
Antimony	0.00133	<0.001	0.0133	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00113	<0.001	0.0113	<0.01	4	50	200
Chloride	15	<2	150	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	78.5	<5	785	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.15	<3	31.5	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.35
Conductivity (µS/cm)	100.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431907
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC04
Depth (m)	3.60 - 4.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	6.18	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0635	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00381	<0.0005	0.0381	<0.005	0.5	2	25
Barium	0.0033	<0.0002	0.033	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00184	<0.001	0.0184	<0.01	0.5	10	70
Copper	0.00536	<0.0003	0.0536	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000123	<0.00001	0.000123	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00115	<0.0004	0.0115	<0.004	0.4	10	40
Lead	0.00249	<0.0002	0.0249	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00295	<0.001	0.0295	<0.01	4	50	200
Chloride	14.1	<2	141	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	66.8	<5	668	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.23	<3	32.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.80
Conductivity (µS/cm)	53.60
Temperature (°C)	20.00
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431908
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC04
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.96	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	5.09	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.69	-	>6	-
ANC to pH 6 (mol/kg)	0.0537	-	-	-
ANC to pH 4 (mol/kg)	0.0799	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00379	<0.0005	0.0379	<0.005	0.5	2	25
Barium	0.00958	<0.0002	0.0958	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00198	<0.0003	0.0198	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00881	<0.003	0.0881	<0.03	0.5	10	30
Nickel	0.00177	<0.0004	0.0177	<0.004	0.4	10	40
Lead	0.001	<0.0002	0.01	<0.002	0.5	10	50
Antimony	0.00168	<0.001	0.0168	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	45.6	<2	456	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.3	<2	23	<20	1000	20000	50000
Total Dissolved Solids	172	<5	1720	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.23	<3	42.3	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.08
Conductivity (µS/cm)	218.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.879

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431909
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC04
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.42	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0369	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00634	<0.0005	0.0634	<0.005	0.5	2	25
Barium	0.00406	<0.0002	0.0406	<0.002	20	100	300
Cadmium	0.000131	<0.00008	0.00131	<0.0008	0.04	1	5
Chromium	0.0107	<0.001	0.107	<0.01	0.5	10	70
Copper	0.00943	<0.0003	0.0943	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00639	<0.0004	0.0639	<0.004	0.4	10	40
Lead	0.00739	<0.0002	0.0739	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0192	<0.001	0.192	<0.01	4	50	200
Chloride	18	<2	180	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	60.7	<5	607	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.16	<3	71.6	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.09
Conductivity (µS/cm)	73.60
Temperature (°C)	18.40
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431910
Sampled Date	19-Apr-2018
Customer Sample Ref.	VC04
Depth (m)	2.80 - 3.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.854	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.49	-	>6	-
ANC to pH 6 (mol/kg)	0.0388	-	-	-
ANC to pH 4 (mol/kg)	0.0605	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00843	<0.0005	0.0843	<0.005	0.5	2	25
Barium	0.00643	<0.0002	0.0643	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00144	<0.0003	0.0144	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00581	<0.0004	0.0581	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00456	<0.001	0.0456	<0.01	4	50	200
Chloride	28.1	<2	281	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.9	<2	29	<20	1000	20000	50000
Total Dissolved Solids	163	<5	1630	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.52	<3	45.2	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.41
Conductivity (µS/cm)	213.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	13.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431911
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC12A
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	6.49	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.77	-	>6	-
ANC to pH 6 (mol/kg)	0.0344	-	-	-
ANC to pH 4 (mol/kg)	0.0497	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00534	<0.0005	0.0534	<0.005	0.5	2	25
Barium	0.00226	<0.0002	0.0226	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000939	<0.0003	0.00939	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000878	<0.0004	0.00878	<0.004	0.4	10	40
Lead	0.00106	<0.0002	0.0106	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00119	<0.001	0.0119	<0.01	0.1	0.5	7
Zinc	0.00123	<0.001	0.0123	<0.01	4	50	200
Chloride	13.6	<2	136	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	60.8	<5	608	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.95	<3	49.5	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.86
Conductivity (µS/cm)	74.20
Temperature (°C)	20.10
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431912
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC12A
Depth (m)	2.80 - 3.30

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.54	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	6.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.68	-	>6	-
ANC to pH 6 (mol/kg)	0.0407	-	-	-
ANC to pH 4 (mol/kg)	0.0616	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00959	<0.0005	0.0959	<0.005	0.5	2	25
Barium	0.0028	<0.0002	0.028	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00494	<0.0003	0.0494	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00903	<0.003	0.0903	<0.03	0.5	10	30
Nickel	0.00217	<0.0004	0.0217	<0.004	0.4	10	40
Lead	0.0016	<0.0002	0.016	<0.002	0.5	10	50
Antimony	0.00549	<0.001	0.0549	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00153	<0.001	0.0153	<0.01	4	50	200
Chloride	13.2	<2	132	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	53.7	<5	537	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.85	<3	58.5	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.22
Conductivity (µS/cm)	66.20
Temperature (°C)	20.00
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.155	**Natural Moisture Content (%)**	72.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	58
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431913
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC12A
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.55	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	184	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.55	-	>6	-
ANC to pH 6 (mol/kg)	0.177	-	-	-
ANC to pH 4 (mol/kg)	1.74	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0438	<0.0005	0.438	<0.005	0.5	2	25
Barium	0.0161	<0.0002	0.161	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00503	<0.001	0.0503	<0.01	0.5	10	70
Copper	0.0017	<0.0003	0.017	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0239	<0.003	0.239	<0.03	0.5	10	30
Nickel	0.00496	<0.0004	0.0496	<0.004	0.4	10	40
Lead	0.000316	<0.0002	0.00316	<0.002	0.5	10	50
Antimony	0.0029	<0.001	0.029	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00533	<0.001	0.0533	<0.01	4	50	200
Chloride	379	<4	3790	<40	800	15000	25000
Fluoride	0.516	<0.5	5.16	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	1120	<5	11200	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	20	<3	200	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.61
Conductivity (µS/cm)	1,440.00
Temperature (°C)	18.20
Volume Leachant (Litres)	0.835

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.115	**Natural Moisture Content (%)**	28.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	78
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431914
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC02
Depth (m)	3.20 - 3.63

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.552	3	5	6
Loss on Ignition (%)	11.5	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	7.47	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	6.73	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0986	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00242	<0.0005	0.0242	<0.005	0.5	2	25
Barium	0.0133	<0.0002	0.133	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00318	<0.0003	0.0318	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00884	<0.0004	0.0884	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00809	<0.001	0.0809	<0.01	4	50	200
Chloride	21.1	<2	211	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.5	<2	45	<20	1000	20000	50000
Total Dissolved Solids	184	<5	1840	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.17	<3	41.7	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.38
Conductivity (µS/cm)	243.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.875

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.123	**Natural Moisture Content (%)**	37
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	73
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431915
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC02
Depth (m)	2.80 - 3.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.78	3	5	6
Loss on Ignition (%)	5.27	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	19.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	5.77	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.101	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0136	<0.0005	0.136	<0.005	0.5	2	25
Barium	0.0104	<0.0002	0.104	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0052	<0.001	0.052	<0.01	0.5	10	70
Copper	0.00656	<0.0003	0.0656	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00272	<0.0004	0.0272	<0.004	0.4	10	40
Lead	0.00184	<0.0002	0.0184	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00957	<0.001	0.0957	<0.01	4	50	200
Chloride	21.3	<2	213	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	6.5	<2	65	<20	1000	20000	50000
Total Dissolved Solids	92.2	<5	922	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.16	<3	51.6	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.20
Conductivity (µS/cm)	117.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.867

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431916
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC02
Depth (m)	1.80 - 2.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	<0.7	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.32	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0613	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0109	<0.0005	0.109	<0.005	0.5	2	25
Barium	0.00347	<0.0002	0.0347	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00225	<0.0003	0.0225	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0113	<0.003	0.113	<0.03	0.5	10	30
Nickel	0.00104	<0.0004	0.0104	<0.004	0.4	10	40
Lead	0.000231	<0.0002	0.00231	<0.002	0.5	10	50
Antimony	0.00281	<0.001	0.0281	<0.01	0.06	0.7	5
Selenium	0.00127	<0.001	0.0127	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	23.2	<2	232	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	138	<5	1380	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.49	<3	64.9	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	7.92
Conductivity (µS/cm)	157.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Lowestoft
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	12.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89
Particle Size <4mm	>95%		

Case	
SDG	180424-31
Lab Sample Number(s)	17431917
Sampled Date	20-Apr-2018
Customer Sample Ref.	VC02
Depth (m)	0.80 - 1.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.235	3	5	6
Loss on Ignition (%)	6.24	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	13.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.5	-	>6	-
ANC to pH 6 (mol/kg)	0.0689	-	-	-
ANC to pH 4 (mol/kg)	0.157	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0128	<0.0005	0.128	<0.005	0.5	2	25
Barium	0.00729	<0.0002	0.0729	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00126	<0.001	0.0126	<0.01	0.5	10	70
Copper	0.00351	<0.0003	0.0351	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00536	<0.003	0.0536	<0.03	0.5	10	30
Nickel	0.00179	<0.0004	0.0179	<0.004	0.4	10	40
Lead	0.00183	<0.0002	0.0183	<0.002	0.5	10	50
Antimony	0.00369	<0.001	0.0369	<0.01	0.06	0.7	5
Selenium	0.00128	<0.001	0.0128	<0.01	0.1	0.5	7
Zinc	0.00319	<0.001	0.0319	<0.01	4	50	200
Chloride	119	<2	1190	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	374	<5	3740	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.17	<3	71.7	<30	500	800	1000

Leach Test Information

Date Prepared	26-Apr-2018
pH (pH Units)	8.54
Conductivity (µS/cm)	491.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
22/05/2018 17:18:21

17:17:48 22/05/2018

Validated

CERTIFICATE OF ANALYSIS

SDG:	180424-31	**Client Reference:**	62240712	**Report Number:**	457244
Location:	Lowestoft	**Order Number:**	62240712	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 24/04/2018 11:01:28

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
17431891	VC10A	0.80 - 1.20	Loss on Ignition in soils	Unsuitable sample for analysis
17431891	VC10A	0.80 - 1.20	Polybrominated Diphenyl Ethers*	Unsuitable sample for analysis
17431891	VC10A	0.80 - 1.20	Passing Through >63µm sieve	Unsuitable sample for analysis

Table of Results - Appendix

Method No	Reference	Description
ASB_PREP		
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TBC		
TM008	BS 1377:Part 1977	Particle size distribution of solid samples
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM019	Modified: US EPA Method 9056	Determination of Anions in Soils using Ion Chromatography
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Test Completion Dates

Lab Sample No(s)	17431914	17431915	17431916	17431917	17431903	17431904	17431905	17431906	17431907	17431908
Customer Sample Ref.	VC02	VC02	VC02	VC02	VC03	VC03	VC03	VC03	VC04	VC04
AGS Ref.										
Depth	3.20 - 3.63	2.80 - 3.20	1.80 - 2.20	0.80 - 1.20	0.80 - 1.20	3.39 - 3.79	2.80 - 3.20	1.80 - 2.20	3.60 - 4.00	0.80 - 1.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018		30-Apr-2018	27-Apr-2018	30-Apr-2018	30-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	30-Apr-2018
Anions by ion Chromatography	03-May-2018		02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	30-Apr-2018	30-Apr-2018	02-May-2018	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	02-May-2018	30-Apr-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	27-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
CEN Readings	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	30-Apr-2018		01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	30-Apr-2018	30-Apr-2018
Dissolved Metals by ICP-MS	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018
Dissolved Organic/Inorganic Carbon	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	02-May-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
EPH CWG (Aliphatic) GC (S)	01-May-2018		30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
EPH CWG (Aromatic) GC (S)	01-May-2018		30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Fluoride	04-May-2018	04-May-2018	03-May-2018	04-May-2018	03-May-2018	04-May-2018	04-May-2018	04-May-2018	04-May-2018	03-May-2018
GRO by GC-FID (S)	01-May-2018		01-May-2018	01-May-2018	02-May-2018	03-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018
Hexavalent Chromium (s)	30-Apr-2018		03-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018	02-May-2018	03-May-2018	03-May-2018	02-May-2018
Loss on Ignition in soils	02-May-2018		03-May-2018	03-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018
Mercury Dissolved	02-May-2018	02-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	02-May-2018	03-May-2018	03-May-2018
Metals in solid samples by OES	01-May-2018		30-Apr-2018	30-Apr-2018	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	01-May-2018		30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018
OC, OP Pesticides and Triazine Herb	02-May-2018		02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018		11-May-2018	11-May-2018	11-May-2018	11-May-2018	22-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	02-May-2018		01-May-2018	01-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	02-May-2018	02-May-2018	03-May-2018	04-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018
PCBs by GCMS	03-May-2018		30-Apr-2018	30-Apr-2018	03-May-2018	03-May-2018	03-May-2018	02-May-2018	02-May-2018	02-May-2018
pH	27-Apr-2018		28-Apr-2018	28-Apr-2018	27-Apr-2018	28-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Phenols by HPLC (S)	29-Apr-2018		29-Apr-2018	29-Apr-2018	27-Apr-2018	29-Apr-2018	27-Apr-2018	29-Apr-2018	29-Apr-2018	27-Apr-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018		17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018
Sample description	25-Apr-2018		24-Apr-2018	24-Apr-2018	25-Apr-2018	24-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018
Semi Volatile Organic Compounds	02-May-2018		02-May-2018	02-May-2018	27-Apr-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Solid Content	26-Apr-2018		25-Apr-2018	25-Apr-2018	27-Apr-2018	25-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Total Organic Carbon	30-Apr-2018		27-Apr-2018	27-Apr-2018	30-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	01-May-2018		30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
TPH CWG GC (S)	01-May-2018		01-May-2018	01-May-2018	02-May-2018	03-May-2018	01-May-2018	02-May-2018	02-May-2018	01-May-2018
VOC MS (S)	01-May-2018		01-May-2018	01-May-2018	03-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Lab Sample No(s)	17431909	17431910	17431895	17431896	17431898	17431899	17431900	17431882	17431883	17431901
Customer Sample Ref.	VC04	VC04	VC05	VC05	VC05	VC06	VC06	VC07	VC07	VC08
AGS Ref.										
Depth	1.80 - 2.20	2.80 - 3.20	0.80 - 1.20	1.80 - 2.20	2.53 - 2.93	0.80 - 1.20	2.00 - 2.46	1.60 - 2.00	0.80 - 1.20	1.00 - 1.45
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018	30-Apr-2018	30-Apr-2018	27-Apr-2018	03-May-2018	02-May-2018	30-Apr-2018	27-Apr-2018	30-Apr-2018	02-May-2018
Anions by ion Chromatography	02-May-2018	02-May-2018	03-May-2018	02-May-2018	04-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	02-May-2018	30-Apr-2018	01-May-2018	02-May-2018	30-Apr-2018	02-May-2018	02-May-2018	02-May-2018	30-Apr-2018	02-May-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	27-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
CEN Readings	27-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018
Dissolved Metals by ICP-MS	03-May-2018	03-May-2018	03-May-2018	04-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	04-May-2018
Dissolved Organic/Inorganic Carbon	02-May-2018	02-May-2018	01-May-2018	01-May-2018	03-May-2018	02-May-2018	01-May-2018	01-May-2018	02-May-2018	02-May-2018
EPH CWG (Aliphatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
EPH CWG (Aromatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
Fluoride	03-May-2018	04-May-2018	04-May-2018	04-May-2018	03-May-2018	03-May-2018	04-May-2018	04-May-2018	03-May-2018	04-May-2018
GRO by GC-FID (S)	01-May-2018	02-May-2018	02-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Hexavalent Chromium (s)	03-May-2018	30-Apr-2018	03-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	02-May-2018	03-May-2018	30-Apr-2018
Loss on Ignition in soils	03-May-2018	02-May-2018	02-May-2018	03-May-2018	01-May-2018	04-May-2018	03-May-2018	03-May-2018	02-May-2018	03-May-2018
Mercury Dissolved	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	03-May-2018	02-May-2018	02-May-2018
Metals in solid samples by OES	30-Apr-2018	30-Apr-2018	02-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	03-May-2018	01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
OC, OP Pesticides and Triazine Herb	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	03-May-2018	02-May-2018	02-May-2018	04-May-2018	02-May-2018	04-May-2018	04-May-2018	04-May-2018	02-May-2018	03-May-2018
PCBs by GCMS	02-May-2018	02-May-2018	03-May-2018	02-May-2018	03-May-2018	03-May-2018	02-May-2018	02-May-2018	03-May-2018	03-May-2018
pH	27-Apr-2018	28-Apr-2018	27-Apr-2018	27-Apr-2018	28-Apr-2018	28-Apr-2018	28-Apr-2018	28-Apr-2018	27-Apr-2018	28-Apr-2018
Phenols by HPLC (S)	01-May-2018	29-Apr-2018	29-Apr-2018	01-May-2018	29-Apr-2018	29-Apr-2018	01-May-2018	29-Apr-2018	30-Apr-2018	01-May-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018	17-May-2018	17-May-2018	17-May-2018	17-May-2018	22-May-2018	22-May-2018	22-May-2018	22-May-2018	22-May-2018
Sample description	25-Apr-2018	24-Apr-2018	25-Apr-2018	25-Apr-2018	24-Apr-2018	24-Apr-2018	24-Apr-2018	25-Apr-2018	25-Apr-2018	24-Apr-2018
Semi Volatile Organic Compounds	27-Apr-2018	03-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018	03-May-2018	27-Apr-2018	02-May-2018	02-May-2018
Solid Content	26-Apr-2018	25-Apr-2018	27-Apr-2018	26-Apr-2018	25-Apr-2018	26-Apr-2018	25-Apr-2018	26-Apr-2018	26-Apr-2018	25-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Total Organic Carbon	27-Apr-2018	27-Apr-2018	30-Apr-2018	27-Apr-2018	03-May-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	30-Apr-2018	30-Apr-2018	01-May-2018	30-Apr-2018	03-May-2018	01-May-2018	30-Apr-2018	30-Apr-2018	01-May-2018	01-May-2018
TPH CWG GC (S)	01-May-2018	02-May-2018	02-May-2018	02-May-2018	01-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
VOC MS (S)	01-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018	03-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Lab Sample No(s)	17431902	17431886	17431887	17431889	17431890	17431891	17431892	17431911	17431912	17431913
Customer Sample Ref.	VC08	VC11	VC11	VC11	VC10A	VC10A	VC10A	VC12A	VC12A	VC12A
AGS Ref.										
Depth	0.60 - 1.00	1.80 - 2.20	0.80 - 1.20	2.20 - 2.50	1.80 - 2.20	0.80 - 1.20	2.45 - 2.85	1.80 - 2.20	2.80 - 3.30	0.80 - 1.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018		30-Apr-2018	27-Apr-2018	02-May-2018	30-Apr-2018	27-Apr-2018
Anions by ion Chromatography	02-May-2018	03-May-2018	03-May-2018	02-May-2018		03-May-2018	02-May-2018	02-May-2018	02-May-2018	04-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018		05-May-2018	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	30-Apr-2018	01-May-2018	30-Apr-2018	30-Apr-2018		01-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018	01-May-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	27-Apr-2018	01-May-2018		27-Apr-2018	26-Apr-2018	01-May-2018	01-May-2018	26-Apr-2018
CEN Readings	30-Apr-2018	30-Apr-2018	30-Apr-2018	02-May-2018		28-Apr-2018	30-Apr-2018	02-May-2018	02-May-2018	27-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	01-May-2018
Dissolved Metals by ICP-MS	03-May-2018	03-May-2018	03-May-2018	03-May-2018		03-May-2018	04-May-2018	03-May-2018	03-May-2018	03-May-2018
Dissolved Organic/Inorganic Carbon	30-Apr-2018	30-Apr-2018	03-May-2018	01-May-2018		02-May-2018	30-Apr-2018	02-May-2018	02-May-2018	01-May-2018
EPH CWG (Aliphatic) GC (S)	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
EPH CWG (Aromatic) GC (S)	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	30-Apr-2018
Fluoride	04-May-2018	03-May-2018	03-May-2018	04-May-2018		04-May-2018	03-May-2018	04-May-2018	03-May-2018	04-May-2018
GRO by GC-FID (S)	03-May-2018	02-May-2018	03-May-2018	02-May-2018		02-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018
Hexavalent Chromium (s)	03-May-2018	02-May-2018	30-Apr-2018	30-Apr-2018		30-Apr-2018	30-Apr-2018	02-May-2018	02-May-2018	30-Apr-2018
Loss on Ignition in soils	02-May-2018	02-May-2018	02-May-2018	02-May-2018			02-May-2018	03-May-2018	02-May-2018	02-May-2018
Mercury Dissolved	03-May-2018	03-May-2018	03-May-2018	03-May-2018		03-May-2018	03-May-2018	02-May-2018	02-May-2018	03-May-2018
Metals in solid samples by OES	01-May-2018	30-Apr-2018	02-May-2018	30-Apr-2018		02-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	01-May-2018	01-May-2018	01-May-2018	30-Apr-2018		01-May-2018	30-Apr-2018	01-May-2018	01-May-2018	01-May-2018
OC, OP Pesticides and Triazine Herb	02-May-2018	02-May-2018	02-May-2018	02-May-2018		02-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018	11-May-2018	11-May-2018	11-May-2018		11-May-2018	11-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	02-May-2018	01-May-2018	01-May-2018	01-May-2018	03-May-2018	01-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	02-May-2018	02-May-2018	02-May-2018	02-May-2018			02-May-2018	04-May-2018	02-May-2018	02-May-2018
PCBs by GCMS	03-May-2018	03-May-2018	03-May-2018	03-May-2018		03-May-2018	02-May-2018	02-May-2018	02-May-2018	02-May-2018
pH	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018		27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	28-Apr-2018
Phenols by HPLC (S)	27-Apr-2018	29-Apr-2018	29-Apr-2018	27-Apr-2018		29-Apr-2018	27-Apr-2018	01-May-2018	01-May-2018	29-Apr-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	03-May-2018		01-May-2018	01-May-2018	03-May-2018	03-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018	17-May-2018	17-May-2018	17-May-2018			17-May-2018	22-May-2018	17-May-2018	17-May-2018
Sample description	25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018		25-Apr-2018	25-Apr-2018	25-Apr-2018	25-Apr-2018	24-Apr-2018
Semi Volatile Organic Compounds	02-May-2018	27-Apr-2018	02-May-2018	27-Apr-2018		02-May-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	03-May-2018
Solid Content	26-Apr-2018	26-Apr-2018	27-Apr-2018	26-Apr-2018		27-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	01-May-2018	01-May-2018		01-May-2018	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Total Organic Carbon	30-Apr-2018	27-Apr-2018	30-Apr-2018	27-Apr-2018		30-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	01-May-2018	01-May-2018	01-May-2018	01-May-2018		01-May-2018	01-May-2018	01-May-2018	30-Apr-2018	01-May-2018
TPH CWG GC (S)	03-May-2018	02-May-2018	03-May-2018	02-May-2018		02-May-2018	02-May-2018	01-May-2018	01-May-2018	01-May-2018
VOC MS (S)	02-May-2018	01-May-2018	03-May-2018	01-May-2018		03-May-2018	01-May-2018	01-May-2018	01-May-2018	02-May-2018

Validated

CERTIFICATE OF ANALYSIS

SDG: 180424-31 **Client Reference:** 62240712 **Report Number:** 457244
Location: Lowestoft **Order Number:** 62240712 **Superseded Report:**

Lab Sample No(s)	17431884	17431885	17431893	17431894
Customer Sample Ref.	VC01B	VC01B	VC09B	VC09B
AGS Ref.				
Depth	0.80 - 1.20	1.24 - 1.54	0.80 - 1.20	1.26 - 1.66
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	02-May-2018	30-Apr-2018	27-Apr-2018	27-Apr-2018
Anions by ion Chromatography	02-May-2018	02-May-2018	03-May-2018	02-May-2018
Anions by Kone (w)	05-May-2018	05-May-2018	05-May-2018	05-May-2018
Asbestos ID in Solid Samples	02-May-2018	02-May-2018	30-Apr-2018	30-Apr-2018
CEN 10:1 Leachate (1 Stage)	26-Apr-2018	26-Apr-2018	26-Apr-2018	26-Apr-2018
CEN Readings	30-Apr-2018	30-Apr-2018	28-Apr-2018	30-Apr-2018
Cyanide Comp/Free/Total/Thiocyanate	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Dissolved Metals by ICP-MS	03-May-2018	04-May-2018	03-May-2018	04-May-2018
Dissolved Organic/Inorganic Carbon	01-May-2018	01-May-2018	02-May-2018	02-May-2018
EPH CWG (Aliphatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018
EPH CWG (Aromatic) GC (S)	01-May-2018	30-Apr-2018	01-May-2018	01-May-2018
Fluoride	03-May-2018	03-May-2018	03-May-2018	04-May-2018
GRO by GC-FID (S)	02-May-2018	02-May-2018	02-May-2018	03-May-2018
Hexavalent Chromium (s)	30-Apr-2018	03-May-2018	30-Apr-2018	30-Apr-2018
Loss on Ignition in soils	03-May-2018	03-May-2018	02-May-2018	02-May-2018
Mercury Dissolved	03-May-2018	03-May-2018	03-May-2018	03-May-2018
Metals in solid samples by OES	01-May-2018	30-Apr-2018	30-Apr-2018	30-Apr-2018
Mineral Oil	01-May-2018	30-Apr-2018	01-May-2018	30-Apr-2018
OC, OP Pesticides and Triazine Herb	02-May-2018	02-May-2018	02-May-2018	02-May-2018
Organotins on soils*	11-May-2018	11-May-2018	11-May-2018	11-May-2018
PAH by GCMS	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Passing Through >63µm sieve	03-May-2018	04-May-2018	02-May-2018	02-May-2018
PCBs by GCMS	03-May-2018	03-May-2018	02-May-2018	30-Apr-2018
pH	27-Apr-2018	27-Apr-2018	28-Apr-2018	28-Apr-2018
Phenols by HPLC (S)	27-Apr-2018	02-May-2018	29-Apr-2018	01-May-2018
Phenols by HPLC (W)	01-May-2018	01-May-2018	01-May-2018	01-May-2018
Polybrominated Diphenyl Ethers*	17-May-2018	17-May-2018	17-May-2018	17-May-2018
Sample description	25-Apr-2018	25-Apr-2018	24-Apr-2018	24-Apr-2018
Semi Volatile Organic Compounds	27-Apr-2018	02-May-2018	02-May-2018	02-May-2018
Solid Content	26-Apr-2018	26-Apr-2018	25-Apr-2018	25-Apr-2018
Total Dissolved Solids	01-May-2018	01-May-2018	02-May-2018	01-May-2018
Total Organic Carbon	30-Apr-2018	01-May-2018	27-Apr-2018	27-Apr-2018
Total Sulphate	01-May-2018	01-May-2018	01-May-2018	01-May-2018
TPH CWG GC (S)	02-May-2018	02-May-2018	02-May-2018	03-May-2018
VOC MS (S)	02-May-2018	01-May-2018	02-May-2018	01-May-2018

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjecte to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Annex E

HUMAN HEALTH RISK ASSESSMENT
BACKGROUND INFORMATION

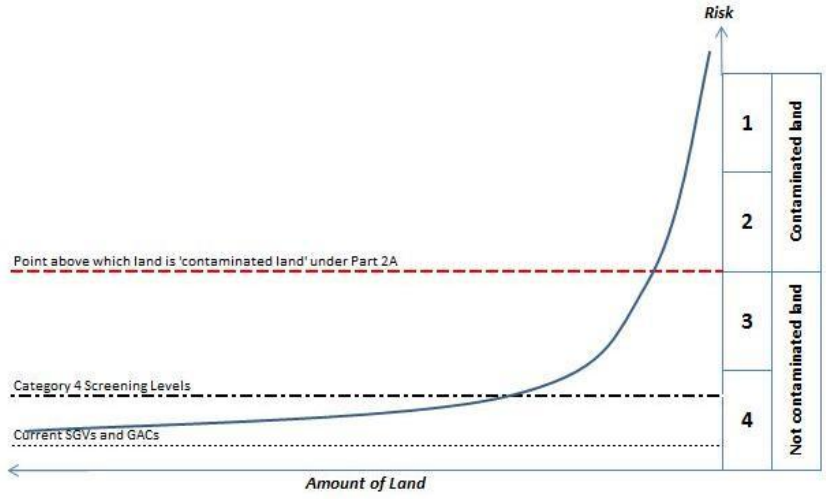
METHODOLOGY FOR THE DERIVATION OF GENERIC QUANTITATIVE ASSESSMENT CRITERIA TO EVALUATE RISKS TO HUMAN HEALTH FROM SOIL & GROUNDWATER CONTAMINATION

UK APPROACH

In the UK, the potential risks to human health from contamination in the ground are usually evaluated through a generic quantitative risk assessment (GQRA) approach. This allows generic and conservative exposure assumptions to be readily applied to risk assessments and can be a useful tool for rapidly screening data and to identify those contaminants or scenarios that could benefit from further investigation and/or site-specific detailed quantitative risk assessment (DQRA). Current industry good practice is to use the approach presented in the Environment Agency (EA) publications SR2[1] and SR3[2]. This approach allows the derivation of Generic Assessment Criteria (GACs), primarily for chronic exposure.

In April 2012, the Department of Environment, Food and Rural Affairs (Defra) published updated statutory guidance[3] which introduced a four category approach to determining whether land in England and Wales is contaminated or not on the grounds of significant possibility of significant harm (SPOSH). **Figure 1** presents a graphical representation of the categories.

Figure 1: Four Categories for Determining if Land Represent a SPOSH



Cases classified as Category 1 are considered to be SPOSH based on actual evidence or an unacceptably high probability of harm existing. Category 4 cases are those where there is no risk, or a low risk of SPOSH.

[1] Environment Agency '*Human Health Toxicological Assessment of Contaminants in Soil',* Report SC050021/SR2. January 2009.
[2] Environment Agency '*Updated Technical Background to the CLEA Model*,' Report SC050021/SR3. January 2009.
[3] Defra '*Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance'.* April 2012.

GACs represent a minimal risk level, well within Category 4. A 2014 publication by Contaminated Land: Applicatons in Real Environments (CL:AIRE),SP1010[4] and endorsed by Defra[5] provided an approach to determine Category 4 Screening Levels (C4SLs) which are higher than the GACs whilst being "more pragmatic but still strongly precautionary". It also provided C4SLs for six contaminants of concern. Although the C4SLs were designed to support Part 2A assessments to determine 'contaminated land' they are specifically mentioned, along with reference to the Part 2A statutory guidance, by the Department for Communities and Local Government (DCLG) for use in a planning context[6].

An updated version the Contaminated Land Exposure Assessment (CLEA) Workbook (v1.071) was released by the EA in September 2015 to take into account the publication of SP1010. The updates comprised: additional toxicity data for the six chemicals for which C4SLs were derived; two new public open space land use scenarios; updated exposure parameters; options to run the model using C4SL exposure assumptions; and increased functionality. There were no changes to algorithms, so it is still possible to replicate the withdrawn SGVs using the input parameters held within v1.071.

It should be noted that the four category approach has not been adopted in Scotland under Part 2A or the planning regime. The Part 2A statutory guidance applicable in Scotland (Paper SE/2006/44 dated May 2006) does not reflect the changes introduced by Defra in April 2012 which allow for the use of C4SLs within Part 2A risk assessments. Additionally, it is considered that the principal of 'minimal risk' should still apply under planning in Scotland, based on current guidance.

WSP APPROACH

Following the withdrawal of the SGVs, and in the absence of an industry-wide, accepted set of GACs it is down to individual practitioners to derive their own soil assessment criteria. WSP has used the approach provided within SR2, SR3, SP1010, CLEA Workbook v1.071and SR4[7] to produce a set of minimal risk GACs. The chemical-specific data within two key publications were considered during their production: CL:AIRE 2010[8] and LQM 2015[9]. Both documents provide comprehensive sets of GACs for different contaminants of concern.

The LQM Suitable For Use Levels (S4ULs) have selected exposure parameters someway between those of the SR3 land uses and the C4SL exposure scenarios. This approach was rejected by WSP as not representing minimal risk, however, the LQM S4UL document was critically reviewed and the approach and chemical input parameters were utilised where considered to be appropriate.

An industry-led C4SL Working Group is in the process of deriving a larger set of C4SLs in the near future, for approximately 20 contaminants. This will include a critical review of the chemical input data for all selected substances, and may therefore lead to further amendments to the chemical input data used in the WSP in-house screening values. It is considered likely that the contaminant list will

---

[4] CL:AIRE *'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination'* SP1010, Final Project Report (Revision 2). September 2014.
[5] Defra 'SP1010: *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document'*. December 2014.
[6] DCLG Planning Practice Guidance '*Land Affected by Contamination'*, particularly Paragraphs 001 and 007. Ref IDs: 33-001-20140306 & 33-007-20140612.
[7] Environment Agency '*CLEA Software (Version 1.05) Handbook (and Software)',* Report SC050021/SR4. September 2009.
[8] CL:AIRE 'The EIC/AGS/CL:AIRE *Soil Generic Assessment Criteria for Human Health Risk Assessment'.* ISBN 978-1-05046-20-1. January 2010.
[9] Nathanail et al '*The LQM/CIEH S4ULs for Human Health Risk Assessment*', Land Quality Press, ISBN 978-0-9931084-0-2. 2015.

crossover with the current CL:AIRE GACs. As such, this document was not critically reviewed by WSP.

WSP's current approach to the assessment of risks to human health is to continue to evaluate minimal risk through the use of in-house derived GACs, and to use the published C4SLs as a secondary tier of assessment until such time as additional C4SLs are published and/or in-house values are derived.

EXPOSURE MODELS

LAND USES

WSP has largely adopted the exposure assumptions of the generic land use scenarios included within SR3, with two additional public open space scenarios included from within SP1010:

- Residential with homegrown produce consumption;
- Residential without homegrown produce consumption;
- Allotments;
- Commercial;
- Public open space near residential housing (POS_{resi}); and
- Public park (POS_{park}).

Exceptions are described in the following Sections.

SOIL PROPERTIES

SR3 assumes a sandy loam soil with a pH of 7 and a Soil Organic Matter (SOM) content of 6% for its generic land uses, based on the geographical spread of topsoils in the UK. WSP has adopted these default values. In addition, GACs based on an SOM of 1% and 2.5% have been derived, based on common experience of the nature of Made Ground and lack of topsoil on many brownfield sites.

RECEPTOR CHARACTERISTICS AND BEHAVIOURS

SP1010 provides some updated exposure parameters for long-term inhalation rates[10] and the consumption rates for homegrown produce[11] compared to those provided in SR3. This data was used to derived WSP's GACs.

The changes in inhalation rates do not apply to the allotment generic land use scenario, as these are based on the breathing rates for short-term exposure of light to moderate intensity activity which were derived from a study that was not updated in USEPA 2011, so the SR3 rates were retained.

[10] USEPA, National Centre for Environmental Assessment '*Exposure Factors Handbook: 2011 Edition*' EPA/600/R-09/052F. September 2011.
[11] National Diet and Nutrition Survey 2008/2009 to 2010/2011.

CHEMICAL DATA

PHYSICO-CHEMICAL PARAMETERS

Physico-chemical properties for the contaminants for which GACs have been derived have been obtained following critical review of the following hierarchy of data sources:

1. Environment Agency/Defra SGV reports where available.
2. Environment Agency '*Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values*', Report SC050021/SR7, November 2008.
3. Published fate and transport reviews within Nathanail et. al 2015 and CL:AIRE 2010.

Where appropriate, and where sufficient data is available, values were adjusted to reflect a UK soil temperature of 10ºC (e.g. K_{aw}).

TOXICOLOGICAL DATA

Toxicological data for the derivation of minimal risk Health Criteria Values (HCV) for each contaminant was selected with due regard to the approach presented in SR2. Where appropriate, the following hierarchy of data sources was used:

1. UK toxicity reviews published by authoritative bodies including:
   - EA;
   - Public Health England (PHE);
   - Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT); and
   - Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC).
2. Authoritative European sources such as European Food Standards Agency (EFSA)
3. International organisations including:
   - World Health Organisation (WHO); and
   - Joint FAO/WHO Expert Committee on Food Additives (JECFA).
4. Authoritative country-specific sources including:
   - United States Environmental Protection Agency (USEPA);
   - US Agency for Toxic Substances and Disease Registry (ATSDR);
   - US Integrated Risk Information System (IRIS); and
   - Netherlands National Institute for Public Health and the Environment (RIVM).

Factors such as the applicability of the data to human health (e.g. epidemiological vs. animal studies), the quality of the data, the level of uncertainty in the results and the age of the data were also taken into account in the final selection. Details for specific substances are available on request.

MEAN DAILY INTAKES

Estimations of background exposure for each threshold substance have been updated. In line with the SR2 approach, the exposure from non-threshold substances in the soil does not take into account exposure from other sources, and as such GACs were derived without consideration of the Mean Daily Intake (MDI) for those substances.

The data published by the EA in its series of TOX reports between 2002 and 2009 was evaluated to determine whether the values were considered to remain valid today. Values from these current UK published sources were not amended unless they were considered to be significantly different so that the GACs remained as comparable as possible with the revoked SGVs.

ORAL MEAN DAILY INTAKES

Oral MDI were generally estimated as the sum of exposure via the ingestion of food and drinking water using the default adult physiological parameters presented in Table 3.3 of SR2.

Data on the exposure of substances from food ingestion was generally obtained from UK Total Diet Studies (TDS) published by the Food Standards Agency (FSA) and its predecessor the Ministry of Agriculture, Fisheries and Food (MAFF) and from studies commissioned by COT. Where no UK-specific data was available, MDI were derived from the European Food Safety Authority (EFSA), Health Canada and US sources. This was a rare occurrence, and in these instances, the data was evaluated to determine its applicability to the UK.

Data on the concentrations of substances in tap water was obtained from a variety of sources. UK data was used where available, with preference given to Drinking Water Inspectorate (DWI) 2014 data from water company tap water testing (LOD, 1st and 99th percentile data is available). Where the substance was not included in tap water testing, other UK sources of information were considered including:

- à DWI data from water company tap water testing from previous years;
- à COT; and
- à FSA.

Where UK data was not available, a number of other data sources were considered, largely WHO International Programme on Chemical Safety (IPCS) Concise International Chemical Assessment Documents (CICADs) and background documents for the development of Guidelines for Drinking Water Quality, using professional judgement on the relevance of the data to the UK. The final decision on the MDI from drinking water was made using professional judgement on the balance of relevance and probability, taking into account the detection limit where not detected, Koc and solubility, reduction in use of the substance, banned substances, tight controls (e.g. on explosives) and with due consideration to the SR2 instruction that “if no data or information in background exposure are available, background exposure should be assumed to be negligible and the MDI set to zero….”.

Data from other countries was generally not used because it was considered that the hydrogeology of these countries along with industrial practices were unlikely to be reflective of the UK.

INHALATION MEAN DAILY INTAKES

Inhalation MDIs were based on estimates of average daily exposure by the inhalation pathway and calculated using the default adult physiological parameters presented in Table 3.3 of SR2.

The inhalation MDIs were generally estimated using background exposure data from the UK, derived from Defra's UK-AIR: Air Information Resource[12], which provides ambient air quality data from a number of sites forming a UK-wide monitoring network. The MDIs for heavy metals were based on rolling annual average metal mass concentration data from Defra's UK Heavy Metals Monitoring Network from the period October 2009 to September 2010[13].

Information for some substances was obtained from UK sources including Environment Agency TOX reports and data from the UK Expert Panel on Air Quality Standards (EPAQS). Where recent UK data was not available, data was sourced from the International Programme on Chemical Safety (IPCS), the World Health Organisation (WHO), the Agency for Toxic Substances and Diseases Registry (ATSDR), Health Canada, and various other peer-reviewed sources summarised by LQM/CIEH[14].

For other substances, where no data or information on background exposure was available, background exposure was assumed to be negligible and the MDI set at 0.5*TDI in accordance with guidance in SR2.

PLANT UPTAKE

Soil to plant concentration factors are available in CLEA v1.071 for arsenic, cadmium, hexavalent chromium, lead, mercury, nickel and selenium. For all remaining inorganic chemicals, concentration factors were obtained using the PRISM model. Substance-specific correction factors have been selected in accordance with the guidance established within SR3. This is consistent to the approach utilised in the derivation of the LQM S4UL values and the EIC/AGS/CL:AIRE GAC.

Where there is a lack of appropriate data to enable the derivation of specific soil to plant concentrations factors for organic chemicals, plant uptake was modelled within CLEA v1.071 using the generic equations recommended within SR3, as follows:

- Green Vegetables – Ryan et al. (1988);
- Root Vegetables – Trapp (2002);
- Tuber Vegetables – Trapp et al. (2007); and
- Tree Fruit – Trapp et al. (2003).

There are no suitable models available for modelling uptake for herbaceous fruit or shrub fruit. Exposure is considered negligible.

[12] Crown 2016 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL).
[13] Defra, 2013 Spreadsheet of historic data for multiple years for the Metals network. Available online at: http://uk-air.defra.gov.uk/data/metals-data. [Accessed 13/03/2016].
[14] LQM/CIEH, 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment.

SOIL SATURATION LIMITS

GACs are not limited to their theoretical soil saturation within CLEA, although where either the aqueous or the vapour-based saturation is exceeded, this is highlighted within the Workbook (compared with the lower of the two values). This affects pathways which depend on partitioning calculations so in reality this only affects the vapour pathways and is relevant to organic substances and other substances, such as elemental mercury, that have a significant volatile component. However, the Workbook highlights saturation for direct contact pathways to indicate to the user where further qualitative consideration of free phase contamination at surface may be required.

Where the lower of the two saturation limits is exceeded and the vapour pathway is the only exposure route being considered, the chronic risks to human health are likely to be negligible. Further evaluation could be undertaken using an alternative model suitable for evaluating non-aqueous phase liquids (NAPLs), such as the Johnson & Ettinger (J&E) approach described in USEPA 2003. However, WSP considers that if NAPLs are suspected, given the known limitations and over-simplifications of J&E, soil vapour monitoring is a more accurate way of assessing potential risks.

Where the lower saturation limit is exceeded for the vapour pathway and a number of exposure routes are being considered, then the contribution from the NAPL via vapour inhalation to the overall exposure can be evaluated using the procedure provided in SR4. WSP would evaluate this as part of a DQRA process or through soil vapour monitoring on-site to determine site-specific soil vapour concentrations.

CHEMICAL SPECIFIC ASSUMPTIONS

CYANIDES

Cyanide has high acute toxicity, and short term exposure is an important consideration when assessing the risks from soils contaminated with cyanide. The primary risk to human receptors from free cyanide in soils is an acute risk.

There is no current UK guidance available for calculating acute risks from free cyanide. Consequently, GAC for acute exposure were derived using the algorithms presented in MADEP 1992[15] and assuming a one-off ingestion of 10g of soil (this conservative value has been taken as an upper bound estimate for a one-off soil ingestion rate amongst children). Receptor body weights have been selected according to the critical receptor for each exposure scenario. The lowest of the chronic and acute GAC for each land use scenario were adopted by WSP. Brinckerhoff.

LEAD

The SGV for lead was withdrawn by the EA in 2009, and in 2011 the EA withdrew their published TOX report in light of new scientific evidence. The C4SL for lead was derived using the latest scientific evidence from a large human dataset. As such, no chemical-specific margin was applied in the derivation of the C4SL for lead. It may be possible for WSP to derive a GAC for lead using the same dataset and applying a chemical-specific margin, but the value is likely to be lower than UK natural background concentrations. Therefore, WSP has adopted the toxicological data used to derive the C4SLs in deriving the GAC for lead until such time as alternative GACs are published by an authoritative body. The relative bioavailability was set at 100% in line with the approach taken for other GACs, whereas the C4SL assumes 60% for soil and 64% for airborne dust. Thus, the WSP GAC are lower than the C4SLs.

[15] MADEP '*Background Documentation for the Development of an "Available Cyanide" Benchmark Concentration'* 1992. http://www.mass.gov/dep/toxics/cn_soil.htm

POLYCYCLIC AROMATIC HYDROCARBONS

WSP's approach to the assessment of polycyclic aromatic hydrocarbons (PAHs) uses the surrogate marker approach. BaP was used as a surrogate marker for all genotoxic PAHs in line with the Health Protection Agency 2010[16] recommendations and SP1010. This assumes that the PAH profile of the data is similar to that of the coal tars used in the Culp *et al* oral carcinogenicity study from which the toxicity data for BaP was produced. In reality, this profile has been shown by HPA to be applicable on the majority of contaminated sites based on assessment of sites across the country.

The alternative is the Toxic Equivalency Factor (TEF) approach which uses a reference compound and assigns TEFs for other compounds based on estimates of potency. Key uncertainties with this approach include the assumption that all compounds have the same toxic mechanism of action within the body and that no compounds with a greater potency than the reference compound are present. It is considered by the HPA that the TEF approach is likely to under predict the true carcinogenicity of PAHs and therefore favours the surrogate marker approach.

For these reasons, WSP considers that the adoption of BaP as a surrogate marker for genotoxic PAHs as opposed to the TEF approach is reasonable, even in cases where the PAH profile may differ from that of the Culp *et al* study. In addition, WSP has derived a GAC for naphthalene, which is commonly a risk driver due to its high volatility, relative to other PAH compounds, as an indicator compound for threshold PAHs.

TRIMETHYLBENZENES

The GAC for trimethylbenzenes can be used for the assessment of any individual isomer (1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene or 1,3,5-trimethylbenzene), or a mixture of the three isomers.

CHEMICAL GROUPS

For a number of chemical groups, the available toxicity data is for combinations of chemicals. Given that the physico-chemical parameters may differ between the chemicals, the GACs for the chemicals within the groups have been calculated and then the lowest GAC selected to represent the entire group. This was the approach taken by the EA for m-, o- and p-xylenes, and has also been adopted by WSP for:

- 2-chlorophenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol and 2,3,4,6-tetrachlorophenol;
- 2-, 3- and 4-methylphenol (total cresols);
- aldrin and dieldrin; and
- α- and β-endosulphan.

[16] HPA Contaminated Land Information Sheet '*Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)* 2010

EXPOSURE TO VAPOURS

INHALATION OF MEASURED VAPOURS

WSP has derived a set of soil vapour GACs (GAC_{sv}) that allow for the assessment of measured site soil vapour concentrations, using J&E, in order to establish potential risks via indoor inhalation of vapours. This methodology enables a more robust assessment of exposure via the inhalation of soil vapours indoors than using CLEA-derived soil GAC, as it is based upon measured soil vapour concentrations beneath the site. It also allows for the assessment of vapours from all source terms (i.e. groundwater, soil or NAPL). Outdoor inhalation was not included. WSP considers that the indoor inhalation pathway is the significantly dominant risk-driver.

The generic land use scenarios within CLEA (residential and commercial) that were used to derive the soil GAC were used to define the receptor and building characteristics for the soil vapour GAC. Only residential and commercial generic land use scenarios include the indoor inhalation of vapours pathway.

The GAC_{sv} were derived for three different soil types; sand, sandy loam and clay, reflecting the importance of this parameter within the J&E model. A depth to contamination of 0.85 m below the base of the building foundation was assumed (i.e. 1 m below ground level). This differs from the depth assumed for the soil GAC (0.5 m bgl), but was selected by WSP as a reasonable worst case scenario.

It is acknowledged that the J&E commonly over-predicts indoor vapour concentrations. In particular, it will significantly over-predict vapour concentrations for suspended floor slabs, which many new builds are constructed with, it does not take into account lateral migration and assumes an infinite source of contamination at steady state conditions. In addition, it is common for soil gas/vapour wells to be installed with at least 1 m of plain riser at the surface and this equates to a total depth of 0.85 m below the building foundation plus a 0.15 m thick foundation, and so is more representative of the depth that samples will be taken from.

The TDSIs and IDs for each substance were converted from $\mu gkg^{-1}{}_{bw}day^{-1}$ to μgm^{-3} using the standard conversions quoted in Table 3.3 of SR2, thereby replacing the need to model C_{air} in the equation:

$$C_{air} = \alpha . C_{vap} . 1{,}000{,}000 cm^3 m^{-3}$$

Where:

C_{air} is the concentration of vapours within the building, mg^{-3}

α is the steady state attenuation coefficient between soil and indoor air, dimensionless

C_{vap} is the soil vapour concentration, $mgcm^{-3}$

The target concentrations within indoor air for each substance (C_{air}) are a function of receptor inhalation rates and occupancy periods, as defined by the site conceptual exposure model (assuming standard CLEA occupancy periods and receptors).

The attenuation factor was calculated using J&E (Equation 10.4 in SR3) and the resulting C_{vap} is equivalent to the GAC_{sv} for the modelled exposure scenario.

Where the calculated GAC_{sv} for a substance exceeds the vapour saturation limit, no GAC_{sv} has been proposed.

INHALATION OF GROUNDWATER-DERIVED VAPOURS

The CLEA model does not have the capacity to derive GACs to assess vapours derived from dissolved phase contamination. WSP has derived a set of groundwater GACs (GAC_{gw}) to evaluate the potential risks through the indoor inhalation of groundwater-derived vapours by first applying the approach described above for the derivation of the WSP GAC_{sv} to determine the acceptable concentration in soil vapour directly above the water table.

The depth to groundwater was assumed to be 1 m bgl (i.e. 0.85 m below the base of the building foundation). This depth was considered to be more representative of commonly encountered groundwater conditions than the 0.5 m below the base of the building foundation (i.e. 0.65 m bgl) that is used by CLEA for an unsaturated source present in the overlying soil.

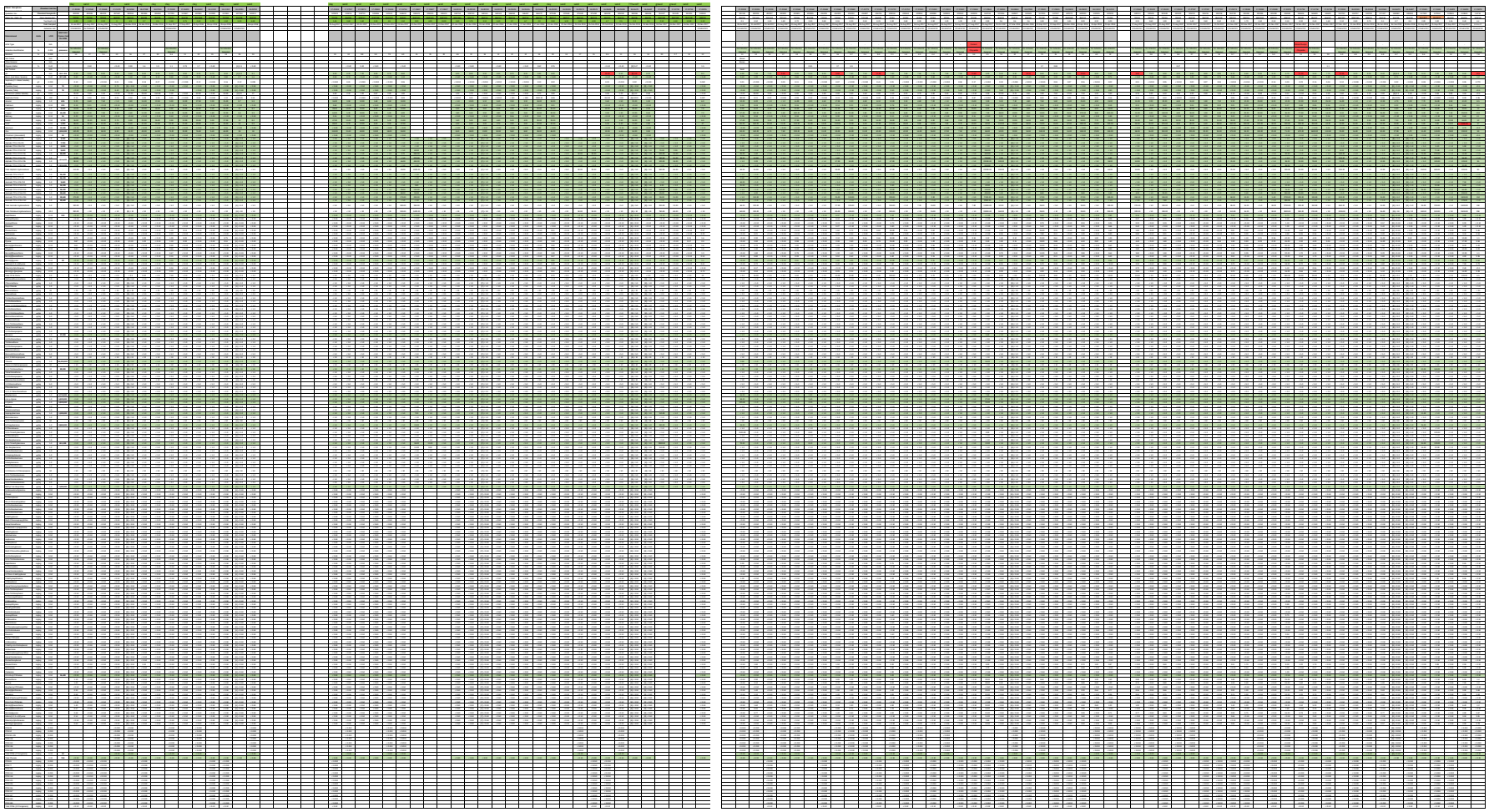
The GAC_{gw} was then back-calculated from the GAC_{sv} using the air-water partition coefficient (K_{aw}) for each substance.

Where the calculated GAC_{gw} for a substance exceeds the solubility limit, no GAC_{gw} has been proposed.

Annex F

CHEMICAL SCREENING

Admin-Leitung
Nutzung Visual Merchandising Kopf / Verkaufsfläche Verwaltung



Lake Lothing
Human Health Screening
Public Open Space And Use

| | Northern Site Area - Natural Soils | | |

Lake Lotbing
Hazardous Properties Assessment Part 1

| Determinand (laboratory concentrations) | Unit | BH/C06 | | TP/C05 | | TP/C103 | | TP/C103[1] | | TP/C101 | | TP/C06[1] | | BH/C06[1] | | TP/C03 | | TP/C04 | | TP/C04[1] | | TP/C01 | | TP/C02 | | BH/C02[1] | | TP/C01 | | TP/C02 | | BH/C03 | | TP/C02 | | TP/C21 | | TP/C21[1] | | TP/C22 | | TP/C23 | | TP/C23[1] | | BH/C04 | | BH/C05 | | BH/C08 | | BH/C08[1] | | BH/C08[2] | | BH/C101 | | WS/C17 | | WS/C19 | | WS/C14 | | WS/C19A | | WS/C19A[1] | | WS/C22 | | WS/C23 | | BH/C103 | | BH/102 | | BH/102[1] | | BH/C27 | | BH/C27[1] | | BH/C101[1] | | BH/C101[2] | | BH/C102[3] | | BH/C101[4] | | WS/C19A[2] | |
|---|---|---

Lake Lotting
Hazardous Properties Assessment Part 2

| Determinand (laboratory concentrations) | Unit | WSC19A | | WSC21 | | WSC21[1] | | BHC14 | | BHC14[1] | | BHC15 | | BHC15[1] | | BHC17 | | BHC17[1] | | BHC18 | | BHC19 | | BHC19[1] | | BHC20 | | BHC24 | | BHC26 | | BHC26[1] | | BHC23 | | BHC23[1] | | BHC32 | | BHC32[1] | | BHC08 | | BHC08[1] | | BHC05 | | TPC02 | | TPC07 | | TPC08 | | BH13CP | | BH13CP[1] | | BHC30 | | BHC31 | | BHC31[2] | | BHC102 | | BHC102[1] | | BHC102[2] | | BHC06B | | BHC06B[1] | | BHC10 | | BHC01 | | BHC01[1] | | TPC09 | | TPC09[1] | | BHC09 | | BHC09[1] | | WSC23 | | WSC16 | |
|---|---|---

Lake Lothing
Groundwater Screening
UK DWS

						Januray 2018		Groundwater Sampling Visit 1								Groundwater Sampling Visit 2								Groundwater Sampling Visit 3					
			Chemtest Job No.:			18-00330	18-00356	18-13183	18-13032	18-13180	18-13180	18-13535	18-13535	18-13535	18-13535	18-14854	18-15148	18-14854	18-14854	18-14854	18-14854	18-14854	18-14854	18-16841	18-16645	18-16841	18-16841	18-16841	18-16841
			Chemtest Sample ID.:			560625	560719	621158	620297	621138	621139	623008	623009	623010	623011	628914	630539	628019	628912	628911	628909	628913	630538	637752	636837	637748	637750	637749	637753
			Client Sample Ref.:			BHC102	BHC02	BHC09	BHC07	BHC27	BHC24	BHC24(D)	BHC08	BHC01	BHC14	BHC09	BHC07	BHC27	BHC24 (s)	BHC24 (d)	BHC08	BHC01	BHC02	BHC09	BHC07	BHC27	BHC24 (S)	BHC24 (D)	BHC08
			Client Sample ID.:			W1	W1		W1							W3	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3
			Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:			04-Jan-2018	05-Jan-2018	10-May-2018	09-May-2018	11-May-2018	11-May-2018	14-May-2018	14-May-2018	14-May-2018	14-May-2018	24-May-2018	30-May-2018	23-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	30-May-2018	24-May-2018	11-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	**DWS Screen**																								
pH	U	1010		N/A	<6.5 >10	8.4	6.9	11.7	8.2	8.6	12.4	12.3	9.9	13.2	12.8	8.5	8.3	8.7	11.8	11.4	9.1	12.6	7.7	8.4	8.3	7.9	8.6	11.2	8.2	8.3
Ammonia (Free) as N	U	1220	mg/l	0.010	.	0.25	< 0.010	1.1	0.39	0.15	1.1	0.57	0.55	0.31	0.66	0.28	0.32	0.16	0.9	0.49	0.096	0.25	< 0.050	0.098	0.17	< 0.050	0.11	0.27	0.078	0.068
Sulphur	N	1220	mg/l	1.0	.	18	22																						
Sulphate	U	1220	mg/l	1.0	250	53	65	160	33	120	38	28	100	350	8.7	160.0	27.0	120.0	9.2	37.0	79.0	110.0	110.0	50.0	140	130	140	190	71	160
Cyanide (Total)	U	1300	mg/l	0.050	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	10	9.2	3.1	3.8	5.1	17	2.9	6.7	4.2	2.4	2.4	7.6	7.2	9.8	2.1	2.3	1.4	1.3	3.4	3.4	8.2	3.5	7.0	2.1	1.6	4.2
Boron (Dissolved)	U	1450	µg/l	20	1000	150	110	34	270	210	< 20	< 20	64	< 20	< 20	60.0	250.0	170.0	< 20	< 20	60.0	< 20	140.0	130.0	95	170	260	48	130	140
Cadmium (Dissolved)	U	1450	µg/l	0.080	5	< 0.080	< 0.080	0.082	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.088	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.1	< 0.080	0.085	0.14	< 0.080	0.12	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	50	5.1	6.0	19	9.7	12	2.4	16	22	160	7.4	3.0	3.1	7.3	< 1.0	< 1.0	1.0	42.0	2.7	< 1.0	< 1.0	5.8	< 1.0	< 1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	2000	8.8	1.0	4.8	1.5	3.1	37	1.9	1.6	61	23	2.1	< 1.0	1.9	19.0	< 1.0	2.2	36.0	3.1	< 1.0	3.3	4.3	1.6	5.0	1.7	1.9
Mercury (Dissolved)	U	1450	µg/l	0.50	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	20	9.9	3.4	11	1.9	3.3	77	8.3	16	43	19	8.7	2.7	1.8	41.0	4.8	19.0	30.0	2.4	1.8	7.5	2.2	2.4	41	4.2	9.4
Lead (Dissolved)	U	1450	µg/l	1.0	10	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	5.2	1.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0	< 1.0	1.8	8.4	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	10	2.2	2.5	9.8	7.8	4.8	9.4	10	4.2	9.6	7.2	5.2	2.8	5.7	5.1	5.9	7.4	2.7	3.9	2.7	3.6	4.4	5.9	7.8	5.7	3.3
Zinc (Dissolved)	U	1450	µg/l	1.0	.	24	12	7.6	7.0	9.0	3.4	< 1.0	2.7	17	6.4	6.3	1.9	5.8	1.4	< 1.0	2.7	5.5	11	1.6	3.7	18	22	4.5	1.3	4.7
Chromium (Hexavalent)	U	1490	µg/l	20	.	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	160	< 20	< 20	< 20	< 20	< 20	< 20	< 20	40	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	15000	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	15000	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	62	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	6.8	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	53	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	.	< 5.0	< 5.0	< 5.0	< 5.0	62	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	60	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	700	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	9.5	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	63	46	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	59	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	50	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	36	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	.	< 5.0	< 5.0	< 5.0	< 5.0	30	< 5.0	< 5.0	< 5.0	63	46	< 5.0	< 5.0	72	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	100	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	.	< 10	< 10	< 10	< 10	92	< 10	< 10	< 10	63	46	< 10	< 10	130	< 10	< 10	< 10	< 10	< 10	110	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	0.01	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	.	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	.	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total of 4 PAHs			µg/l		0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dichlorodifluoromethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	.	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	.	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	.	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	.	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	.	< 1.0	< 1.0	< 1.0

Lake Lothing
Groundwater Screening
UK DWS

| | | |

Lake Lothing
Groundwater Screening
EQS

						Januray 2018		Groundwater Sampling Visit 1								Groundwater Sampling Visit 2								Groundwater Sampling Visit 3							
	Chemtest Job No.:					18-00330	18-00356	18-13183	18-13032	18-13180	18-13180	18-13535	18-13535	18-13535	18-13535	18-14854	18-15148	18-14854	18-14854	18-14854	18-14854	18-14854	18-15148	18-14854	18-16841	18-16645	18-16841	18-16841	18-16841	18-16841	18-16841	18-16645
	Chemtest Sample ID.:					560625	560719	621158	620297	621138	621139	623008	623009	623010	623011	628914	630539	628019	628912	628911	628909	628913	630538	628910	637752	636837	637748	637750	637749	637753	637751	636836
	Client Sample Ref.:					BHC102	BHC02	BHC09	BHC07	BHC27	BHC24	BHC24(D)	BHC08	BHC01	BHC14	BHC09	BHC07	BHC27	BHC24 (s)	BHC24 (d)	BHC08	BHC01	BHC02	BHC102	BHC09	BHC07	BHC27	BHC24 (S)	BHC24 (D)	BHC08	BHC01	BHC02
	Client Sample ID.:					W1	W1		W1																W3	W3	W3	W3	W3	W3	W3	W3
	Sample Type:					WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	11-Jun-2018
	Date Sampled:					04-Jan-2018	05-Jan-2018	10-May-2018	09-May-2018	11-May-2018	11-May-2018	14-May-2018	14-May-2018	14-May-2018	14-May-2018	24-May-2018	30-May-2018	23-May-2018	24-May-2018	24-May-2018	24-May-2018	25-May-2018	30-May-2018	24-May-2018	12-Jun-2018	11-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	12-Jun-2018	11-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	**EQS Screen**																										
pH	U	1010		N/A	-	8.4	6.9	11.7	8.2	8.6	12.4	12.3	9.9	13.2	12.8	8.5	8.3	8.7	11.8	11.4	9.1	12.6	7.7	8.4	8.3	7.9	8.6	11.2	8.2	8.3	12.2	8.4
Ammonia (Free) as N	U	1220	mg/l	0.010	-	0.25	< 0.010	1.1	0.39	0.15	1.1	0.57	0.55	0.31	0.66	0.28	0.32	0.16	0.9	0.49	0.096	0.25	< 0.050	0.098	0.17	< 0.050	0.11	0.27	0.078	0.068	0.17	0.31
Sulphur	N	1220	mg/l	1.0	-	18	22																									
Sulphate	U	1220	mg/l	1.0	-	53	65	160	33	120	38	28	100	350	8.7	160	27	120	9.2	37	79	110	110	50	140	130	140	190	71	160	49	26
Cyanide (Total)	U	1300	mg/l	0.050	0.001	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	0.001	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	25	9.2	3.1	3.8	5.1	17	2.9	6.7	4.2	2.4	2.4	7.6	7.2	9.8	2.1	2.3	1.4	1.3	3.4	3.4	8.2	3.5	7.0	2.1	1.6	4.2	1.3	7.6
Boron (Dissolved)	U	1450	µg/l	20	-	150	110	34	270	210	< 20	< 20	64	< 20	< 20	60	250	170	< 20	< 20	60	< 20	140	130	95	170	260	48	130	140	26	220
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.2	< 0.080	< 0.080	0.082	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.088	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.098	< 0.080	0.085	0.14	< 0.080	0.12	< 0.080	< 0.080	0.12	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	-	5.1	6.0	19	9.7	12	2.4	16	22	160	7.4	3	3.1	7.3	< 1.0	< 1.0	1	42	2.7	< 1.0	< 1.0	5.8	< 1.0	< 1.0	< 1.0	< 1.0	14	5.8
Copper (Dissolved)	U	1450	µg/l	1.0	3.76	8.8	1.0	4.8	1.5	3.1	37	1.9	1.6	61	23	2.1	< 1.0	1.9	19	< 1.0	2.2	36	3.1	< 1.0	3.3	4.3	1.6	5.0	1.7	1.9	38	1.4
Mercury (Dissolved)	U	1450	µg/l	0.50	0.07	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.68	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	8.6	9.9	3.4	11	1.9	3.3	77	8.3	16	43	19	8.7	2.7	1.8	41	4.8	19	30	2.4	1.8	7.5	2.2	2.4	41	4.2	9.4	38	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	5.2	1.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0	< 1.0	1.8	8.4	< 1.0	< 1.0	< 1.0	< 1.0	5.5	1.6
Selenium (Dissolved)	U	1450	µg/l	1.0	-	2.2	2.5	9.8	7.8	4.8	9.4	10	4.2	9.6	7.2	5.2	2.8	5.7	5.1	5.9	7.4	2.7	3.9	2.7	3.6	4.4	5.9	7.8	5.7	3.3	2.2	2.5
Zinc (Dissolved)	U	1450	µg/l	1.0	6.8	24	12	7.6	7.0	9.0	3.4	< 1.0	2.7	17	6.4	6.3	1.9	5.8	1.4	< 1.0	2.7	5.5	11	1.6	3.7	18	22	4.5	1.3	4.7	11	2.1
Chromium (Hexavalent)	U	1490	µg/l	20	0.6	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	160	< 20	< 20	< 20	< 20	< 20	< 20	< 20	40	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	62	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	6.8	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	53	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	62	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	60	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	9.5	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	63	46	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	59	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	50	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	36	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	30	< 5.0	< 5.0	< 5.0	63	46	< 5.0	< 5.0	72	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	100	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	-	< 10	< 10	< 10	< 10	92	< 10	< 10	< 10	63	46	< 10	< 10	130	< 10	< 10	< 10	< 10	< 10	110	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	0.0063	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	0.017	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	0.017	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	0.00017	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	0.00082	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	-	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	-	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-D

Lake Lothing
Groundwater Screening
EQS

						Groundwater Sampling Visit 4							
	Chemtest Job No.:					18-16645	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455	18-18455
	Chemtest Sample ID.:					636835	644758	644759	644760	644761	645238	645239	645240	645241
	Client Sample Ref.:					BHC102	BHC27	BHC102	BHC07	BHC02	BHC01	BHC08	BHC09	BHC24(D)
	Client Sample ID.:					W3	W4	W4	W4	W4	W4	W4	W4	W4
	Sample Type:					11-Jun-2018	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:					11-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	25-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	**EQS Screen**									
pH	U	1010		N/A	-	8.2	10.4	7.5	7.5	7.2	12.5	7.8	9.1	9.9
Ammonia (Free) as N	U	1220	mg/l	0.010	-	0.050	0.53	< 0.050	0.10	< 0.050	1.1	0.054	2.1	1.3
Sulphur	N	1220	mg/l	1.0	-									
Sulphate	U	1220	mg/l	1.0	-	48	110	45	32	150	11	160	160	67
Cyanide (Total)	U	1300	mg/l	0.050	0.001	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	0.001	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	25	6.2	7.9	7.9	4.7	3.7	1.8	4.0	5.1	1.9
Boron (Dissolved)	U	1450	µg/l	20	-	94	150	170	240	200	< 20	90	61	73
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.2	< 0.080	< 0.080	< 0.080	< 0.080	0.19	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	-	5.0	1.8	4.6	4.9	3.6	8.2	< 1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	3.76	1.2	7.9	2.4	2.0	11	53	5.2	3.2	1.8
Mercury (Dissolved)	U	1450	µg/l	0.50	0.07	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	8.6	1.1	3.6	1.5	1.3	2.8	43	11	13	4.7
Lead (Dissolved)	U	1450	µg/l	1.0	1.3	13	< 1.0	< 1.0	< 1.0	< 1.0	4.6	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	-	1.5	2.7	1.2	2.3	5.3	< 1.0	3.5	2.6	5.2
Zinc (Dissolved)	U	1450	µg/l	1.0	6.8	2.4	13	2.0	1.2	23	19	10	3.6	4.5
Chromium (Hexavalent)	U	1490	µg/l	20	0.6	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	16	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	16	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	19	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	51	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	29	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	140	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.6	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	17	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	200	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	-	< 10	< 10	< 10	< 10	< 10	< 10	250	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	0.0063	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	0.017	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	0.017	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	0.00017	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	0.00082	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	-	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	0.0077	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	0.0042	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	0.004	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-

Lake Lothing
Soil leachate
DWS Screening

						sand										sand					sand										
Client: Geosphere Environmental Ltd			**Chemtest Job No.:**			17-20019	17-20560	17-20560	17-20669	17-21231	17-21712	17-21913	17-22420	17-22844	17-26355	17-27357	17-29383	17-30076	17-31448	17-31794	17-33041	18-00159	18-02644	18-03574	18-06475	18-06487	18-07089	17-25501	17-25501	17-26029	18-09432	18-11312	17-29274
Quotation No.:			**Chemtest Sample ID.:**			491165	493823	493826	494333	496746	499158	500003	502630	504746	521396	526215	535385	538508	545141	546616	552743	559757	571137	575449	588382	588453	591585	517037	517043	519841	602978	612825	534738
Order No.: 2543, GI			Client Sample Ref.:			BHC06	TPC101	TPC06	TPC01	BHC02	IPC01	IPC05	TPC23	BHC04	BHC05	BHC28	WSC19A	WSC23	BHC103	BH102	BHC101	WSC19A	BHC18	BHC19	BHC26	BHC23	BHC08	TPC08	BH13CP	BHC30	BHC068	BHC01	WSC16
			Top Depth (m):			0.5	1.80	1.10	0.20	0.25	0.30	1.20	1.00	0.90	0.6	2.60	1.50	0.50	4.5	0.30	2.10	0.80	0.1	3.00	0.7	0.8	2.6	2.00	2.00	1.15	0.45	0.30	0.4
			Date Sampled:			28-Jul-2017	01-Aug-2017	01-Aug-2017	03-Aug-2017	10-Aug-2017	15-Aug-2017	16-Aug-2017	21-Aug-2017	25-Aug-2017	03-Oct-2017	13-Oct-2017	02-Nov-2017	09-Nov-2017	22-Nov-2017	24-Nov-2017	07-Dec-2017	02-Jan-2018	26-Jan-2018	05-Feb-2018	26-Feb-2018	05-Mar-2018	09-Mar-2018	22-Sep-2017	21-Sep-2017	27-Sep-2017	29-Mar-2018	19-Apr-2018	31-Oct-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	**DWS Screen**																										
pH	U	1010		N/A	>6.5 >10	8.00	10.00	8.90	8.10	11.00	8.30	8.40	9.10	8.40	9.50	8.40	8.40	9.70		10.40	9.80	8.30	8.70		7.60	7.10	9.70	7.50	8.00	9.00	8.70	8.60	9.9
Ammonia (Free)	U	1220	mg/l	0.010	-	< 0.010	0.10	0.06	< 0.010	0.09	0.02	0.02	0.06	0.02	0.63	0.03	< 0.010	0.05		0.06	0.12	< 0.010	0.14		< 0.050	< 0.050	0.85	< 0.010	< 0.010	0.03	0.16	< 0.050	0.2
Sulphate	U	1220	mg/l	1.0	250	< 1.0	8.70	8.20	1.10	45.00	23.00	< 1.0	24.00	100.00	24.00	9.30	3.20	16.00		17.00	82.00	2.90	15.00		9.90	6.40	13.00	4.90	3.70	40.00	13.00	< 1.0	150.0
Cyanide (Total)	U	1300	mg/l	0.050	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	<0.050
Cyanide (Free)	U	1300	mg/l	0.050	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	<0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	10	3.50	5.30	4.10	2.70	1.40	8.50	1.70	7.00	2.30	25.00	7.20	1.10	10.00		6.70	2.90	7.90	1.70		1.90	1.10	5.80	2.30	1.40	2.30	2.00	< 1.0	1.4
Boron (Dissolved)	U	1450	µg/l	20	1000	37.00	< 20	< 20	27.00	210.00	22.00	< 20	25.00	68.00	39.00	27.00	23.00	37.00		< 20	< 20	< 20	< 20		41.00	25.00	30.00	< 20	< 20	< 20	36.00	< 20	48.0
Cadmium (Dissolved)	U	1450	µg/l	0.080	5	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.11	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080		< 0.080	< 0.080	< 0.080	< 0.080		< 0.080	< 0.080	0.21	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	<0.08
Chromium (Dissolved)	U	1450	µg/l	1.0	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.50	< 1.0	1.90	< 1.0	2.40	10.00	1.30	1.80		< 1.0	2.00	< 1.0	< 1.0		1.20	< 1.0	52.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	15.0
Copper (Dissolved)	U	1450	µg/l	1.0	2000	15.00	2.60	2.80	4.20	7.40	10.00	3.20	7.40	5.10	19.00	3.80	< 1.0	2.80		32.00	4.30	1.50	1.20		4.60	1.60	22.00	< 1.0	< 1.0	1.80	3.00	< 1.0	3.0
Mercury (Dissolved)	U	1450	µg/l	0.50	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	0.53	< 0.50	0.52	< 0.50	< 0.50	< 0.50	<0.5
Nickel (Dissolved)	U	1450	µg/l	1.0	20	1.50	< 1.0	< 1.0	1.20	< 1.0	4.40	< 1.0	< 1.0	1.00	2.30	1.00	6.30	2.10		< 1.0	< 1.0	< 1.0	< 1.0		1.10	< 1.0	65.00	< 1.0	< 1.0	< 1.0	1.20	< 1.0	<1
Lead (Dissolved)	U	1450	µg/l	1.0	10	6.30	< 1.0	1.40	6.30	< 1.0	25.00	2.20	2.30	2.30	2.90	3.60	1.10	< 1.0		14.00	< 1.0	5.20	1.80		3.70	1.80	19.00	< 1.0	< 1.0	1.30	1.20	< 1.0	<1
Selenium (Dissolved)	U	1450	µg/l	1.0	10	< 1.0	1.30	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.60	1.70	3.70	2.60	< 1.0	1.10		< 1.0	< 1.0	< 1.0	< 1.0		< 1.0	< 1.0	7.80	1.10	< 1.0	< 1.0	< 1.0	< 1.0	<1
Zinc (Dissolved)	U	1450	µg/l	1.0	-	3.40	< 1.0	2.10	11.00	2.80	20.00	4.00	3.10	7.80	2.20	3.20	5.10	< 1.0		< 1.0	4.30	4.90	3.00		3.40	2.80	190.00	1.90	< 1.0	3.50	2.30	1.10	7.1
Chromium (Hexavalent)	U	1490	µg/l	20	-	< 20	< 20	< 20	< 20	[B] < 20	[B] < 20	< 20	< 20	[B] < 20	< 20	< 20	[B] < 20	< 20		< 20	< 20	< 20	< 20		[B] < 20	[B] < 20	< 20	< 20	[B] < 20	[B] < 20	[B] < 20	< 20	<20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	15000	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	15000	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.80	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	29.00	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	97.00	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	310.00	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	18.00	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	6.90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	76.00	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	140.00	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	310.00	[B] < 5.0	[B] < 5.0	< 5.0	< 5.0	94.00	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	700	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	300	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	8.00	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.90	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	110.00	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	[B] < 0.10	[B] < 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	-	< 0.10																											
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	220.00	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	7.90	[B] < 5.0	[B] < 5.0	< 5.0	< 5.0	110.00	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	140.00	< 10	< 10	220.00	< 10	< 10	< 10	< 10	< 10	320.00	[B] < 10	[B] < 10	< 10	< 10	210.00	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.70	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.00	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.30	< 0.10	< 0.10	< 0.10	8.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10	2.90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.20	< 0.10	< 0.10	< 0.10	7.60	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.10	< 0.10	< 0.10	< 0.10	6.70	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	0.01	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total 4 PAHs			µg/l		0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	< 2.0
Total Of 16 PAH's	U	1700	µg/l	2.0	-	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	13.00	< 2.0	< 2.0	< 2.0	26.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 1.0
Benzene	U	1760	µg/l	1.0	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		[B] < 1.0	[B] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	700	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		[B] < 1.0	[B] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	300	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.60	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		[B] < 1.0	[B] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	500	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	9.40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		[B] < 1.0	[B] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	500	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		[B] < 1.0	[B] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	1760	µg/l	1.0	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		[B] < 1.0	[B] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.590
N-Nitrosodimethylamine	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Lake Lothing
Soil Leachate
EQS Screen

| | | |

Lake Lothing
Surface Water Samples
EQS Screening

			17424916	17424917	17424918	17424919
		SDG ID.	180423-34	180423-34	180423-34	180423-34
		Project Site	Lowestoft	Lowestoft	Lowestoft	Lowestoft
		Sample Description	WS01	WS02	WS03	WS04
		Sample Depth	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20
		Date Sampled	19/04/2018	19/04/2018	19/04/2018	19/04/2018
		Received On	23/04/2018	23/04/2018	23/04/2018	23/04/2018
		Date Complete	30/04/2018	30/04/2018	30/04/2018	30/04/2018
		EQS Coastal Screen				
Carbon						
Organic Carbon, Total	mg/l	.	<3	<3	<3	<3
Inorganics						
Alkalinity, Total as CaCO3	mg/l	.	135	124	122	122
Ammoniacal Nitrogen as N	mg/l	.	<0.2	<0.2	<0.2	<0.2
Apparent Colour	mg/l Pt/Co	.	27.3	13.7	9.61	11.3
Chloride	mg/l	.	18400	18500	18000	18300
Conductivity @ 20 deg.C	mS/cm	.	45.8	46.7	46.3	45.1
Nitrate as NO3	mg/l	.	<0.3	<0.3	<0.3	<0.3
pH	pH Units	.	7.9	7.92	7.93	7.9
Phosphate (Ortho as PO4)	mg/l	.	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/l	.	2640	2620	2610	2600
Suspended solids, Total	mg/l	.	42.3	36.8	40.8	34.2
True Colour	mg/l Pt/Co	.	1.38	1.95	1.49	1.51
Filtered (Dissolved) Metals						
Aluminium (diss.filt)	µg/l	.	<60	<60	<60	<60
Arsenic (diss.filt)	µg/l	25	<3	<3	<3	<3
Cadmium (diss.filt)	µg/l	0.2	<0.48	<0.48	<0.48	<0.48
Chromium (diss.filt)	µg/l	0.6	<6	<6	<6	<6
Copper (diss.filt)	µg/l	3.76	3.32	1.84	<1.8	<1.8
Iron (Dis.Filt)	mg/l	1	<0.114	<0.114	<0.114	<0.114
Lead (diss.filt)	µg/l	1.3	<1.2	<1.2	<1.2	<1.2
Manganese (diss.filt)	µg/l	.	<18	18.5	22.3	18.9
Mercury (diss.filt)	µg/l	0.07	<0.01	<0.01	<0.01	<0.01
Nickel (diss.filt)	µg/l	8.6	3.13	<2.4	<2.4	3.32
Zinc (diss.filt)	µg/l	6.8	26.8	19.9	21.2	8.88
Unfiltered (Total) Metals						
Calcium (Tot. Unfilt.)	mg/l	.	440	450	415	461
Magnesium (Tot. Unfilt.)	mg/l	.	1130	1160	1150	1130
Potassium (Tot. Unfilt.)	mg/l	.	361	356	355	349
Sodium (Tot. Unfilt.)	mg/l	.	8440	8940	9050	8890
Gasoline Range Organics (GRO)						
EPH (C6-C10)	µg/l	.	<100	<100	<100	<100
GRO >C5-C10	µg/l	.	<10	<10	<10	<10
EPH (Extractable Petroleum Hydrocarbons)						
EPH Range >C10 - C40 (aq)	µg/l	.	<100	<100	<100	<100
TPH Criteria Working Group (TPH CWG)						
Benzene	µg/l	8	<7	<7	<7	<7
Ethylbenzene	µg/l	20	<5	<5	<5	<5
m,p-Xylene	µg/l	30	<8	<8	<8	<8
Methyl tertiary butyl ether (MTBE)	µg/l	.	<3	<3	<3	<3
o-Xylene	µg/l	30	<3	<3	<3	<3
Sum of detected BTEX	µg/l	.	<28	<28	<28	<28
Toluene	µg/l	74	<4	<4	<4	<4
Total EPH (C6-C40) (aq)	µg/l	.	<100	<100	<100	<100

Lake Lothing
Sediment Grab Sample Screening

Sample	Location				Contaminant	Arsenic	Cadmium	Chromium	Copper	Mercury	Nickel	Lead	Zinc	Organotins; (TBT, DBT, MBT)	PCB's, ICES 7	PCB's, 25 congeners	Boron	Selenium	Total Metal Load Vs AL1
					Action Level 1	20	0.4	40	40	0.3	20	50	130	0.1	0.01	0.02	N/A	N/A	100
	E	N	Lat	Long	Action Level 2	100	5	400	400	3	200	500	800	1	0.139	0.2	N/A	N/A	
G01	652497.9	292762.6	52°28′27.59″N	001°42′59.65″E		19.1	0.392	26.2	131	<0.14	24.7	65.8	212	<LOD	<LOD	<LOD	40.3	<LOD	162.4519259
G02	653038.5	293033.9	52°28′35.48″N	001°43′28.96″E		18.4	<0.02	25.8	63.4	<0.14	23.6	47.8	161	<LOD	<LOD	<LOD	34.6	<LOD	118.4944605
G03	653285.85	292941.3	52°28′32.06″N	001°43′41.77″E		19.8	0.297	27.2	35	<0.14	25.8	37.4	124	<LOD	<LOD	<LOD	41.8	<LOD	91.4097875
G04	653542.93	292882.1	52°28′29.73″N	001°43′55.25″E		19.8	0.313	24.3	23.6	<0.14	24.1	33.2	100	<LOD	<LOD	<LOD	38.4	<LOD	74.58948174
G05	653619.93	292806	52°28′27.14″N	001°43′59.11″E		21.2	<0.02	23.4	21.3	<0.14	24	32.6	101	<LOD	<LOD	<LOD	41.8	<LOD	74.58039978
G06	653760.79	292834.2	52°28′27.81″N	001°44′06.65″E		24.2	0.255	27.3	21.3	<0.14	27.8	36.5	108	<LOD	<LOD	<LOD	44.8	<LOD	80.55085736
G07	654026.34	292762.7	52°28′25.08″N	001°44′20.47″E		18.6	0.311	24.7	21.7	<0.14	25.3	37.2	108	<LOD	<LOD	<LOD	27.2	<LOD	79.63215949
G08	654060.18	292676.3	52°28′22.21″N	001°44′22.03″E		20.6	0.258	25.4	18.6	<0.14	25.4	31.4	94	<LOD	<LOD	<LOD	45	<LOD	70.38430444
G09	654245.01	292706.7	52°28′22.90″N	001°44′31.90″E		18.7	0.236	20.3	13.9	<0.14	20.7	25.1	72.5	<LOD	<LOD	<LOD	44.5	<LOD	54.85451822
G10	654843.57	292696.6	52°28′21.54″N	001°45′03.49″E		17.5	0.294	14.8	12.7	<0.14	16.5	21.4	60.4	<LOD	<LOD	<LOD	32	<LOD	45.73505668
G11	655114.78	292628.4	52°28′18.89″N	001°45′17.69″E		19.5	<0.02	21.4	14.8	<0.14	22.3	29.9	85.1	<LOD	<LOD	<LOD	41.7	<LOD	63.42667279
G12	655186.48	292816.4	52°28′24.84″N	001°45′21.96″E		19.6	0.286	22.5	20.7	<0.14	23.7	32.3	93.9	<LOD	<LOD	<LOD	38.8	<LOD	70.15358554

Lake Lothing
Marine Sediment Vibrocore Sample Screen

Sample	Depth	Location				Contaminant	Arsenic	Cadmium	Chromium	Copper	Mercury	Nickel	Lead	Zinc	Organotins; (TBT, DBT, MBT)	PCB's, ICES 7	PCB's, 25 congeners	Boron	Selenium	Total Metal Load Vs AL1
						Action Level 1	20	0.4	40	40	0.3	20	50	130	0.1	0.01	0.02	N/A	N/A	100
		E	N	Lat	Long	Action Level 2	100	5	400	400	3	200	500	800	1	0.139	0.2	N/A	N/A	
VC2	1						4.22	0.098	3.31	4.19	0.14	4.38	7.83	16	<LOD	<LOD	<LOD	40.3	<LOD	12.57927244
VC2	2						3.84	0.063	2.58	3.22	0.14	3.47	2.65	11.6	<LOD	<LOD	<LOD	34.6	<LOD	8.627117403
VC2	3						37.9	0.553	24.9	29.3	0.14	35.9	31.1	104	<LOD	<LOD	<LOD	41.8	<LOD	79.99599662
VC2	3.5						15.3	1.18	0.9	12.1	0.14	21.5	13.5	61.7	<LOD	<LOD	<LOD	38.4	<LOD	42.53165671
VC3	1						19.7	0.241	22	25.6	0.14	23.4	31.7	95.8	<LOD	<LOD	<LOD	41.8	<LOD	71.8160635
VC3	2						3.42	0.086	5.45	2.9	0.14	3.3	4.27	18.7	<LOD	<LOD	<LOD	44.8	<LOD	13.30317582
VC3	3						22.4	1.01	0.9	8.11	0.14	18.3	10.9	47.5	<LOD	<LOD	<LOD	27.2	<LOD	33.73829767
VC3	3.5						1.75	0.038	2.91	2.9	0.14	2.78	4.52	9.05	<LOD	<LOD	<LOD	45	<LOD	7.374096943
VC4	1						3.4	0.139	12	10.8	0.14	12.9	10.2	31.6	<LOD	<LOD	<LOD	44.5	<LOD	25.02579075
VC4	2						1.35	0.036	2.89	2.29	0.14	3	3.54	8.25	<LOD	<LOD	<LOD	32	<LOD	6.597179432
VC4	3						2.74	0.053	4.51	5.46	0.14	6.32	9.64	15	<LOD	<LOD	<LOD	41.7	<LOD	12.87192709
VC4	3.8						0.936	0.02	1.1	1.4	0.14	1.1	3.31	4.24	<LOD	<LOD	<LOD	38.8	<LOD	3.66436256
VC5	1						21	0.241	24.7	23.3	0.14	25.8	36.3	105	<LOD	<LOD	<LOD			78.29462677
VC5	2						3.65	0.088	1.73	5.48	0.14	2.83	6.85	15.6	<LOD	<LOD	<LOD			11.91686909
VC5	2.7						11.4	0.342	0.9	7.98	0.14	6.13	8.54	48.1	<LOD	<LOD	<LOD			31.56367475
VC6	1						34.8	0.282	23	20.1	0.14	24.5	38.3	98.6	<LOD	<LOD	<LOD			75.39729191
VC6	2.2						2.21	0.13	1.65	2.14	0.14	3.04	2.49	8.13	<LOD	<LOD	<LOD			6.145635196
VC7	1						0.6	0.03	1.11	3.43	0.14	0.59	2.72	4.07	<LOD	<LOD	<LOD			3.720276493
VC7	1.8						0.832	0.067	1.69	1.4	0.14	1.1	5.36	4.78	<LOD	<LOD	<LOD			4.494434034
VC8	0.8						1.19	0.2	2.11	1.69	0.14	1.45	3.3	6.29	<LOD	<LOD	<LOD			5.07525347
VC8	1.2						0.6	0.025	1.23	1.4	0.14	1.35	1.95	3.87	<LOD	<LOD	<LOD			3.183093685
VC9	1						36.1	1.98	0.9	3.79	0.14	14.7	11.3	47.2	<LOD	<LOD	<LOD			33.78354505
VC9	1.4						0.703	0.032	1.65	1.4	0.14	1.16	2.34	6.75	<LOD	<LOD	<LOD			4.930779799
VC10	1						19	0.243	24.4	23	0.14	24.8	34.1	101	<LOD	<LOD	<LOD			75.24338073
VC10	2						1.67	0.052	1.68	1.45	0.14	2.37	2.97	8.26	<LOD	<LOD	<LOD			6.104048461
VC10	2.7						1.09	0.045	1.1	1.95	0.14	1.38	4.31	10.1	<LOD	<LOD	<LOD			7.26470871
VC11	1						19.9	0.277	25.2	27	0.14	25.7	38.8	117	<LOD	<LOD	<LOD			86.11084411
VC11	2						1.21	0.025	1.6	1.4	0.14	1.36	2.48	5.66	<LOD	<LOD	<LOD			4.407012746
VC11	2.4						1.54	0.03	1.76	2.69	0.14	1.75	4.25	7.5	<LOD	<LOD	<LOD			6.116832085
VC12	1						18.3	0.373	24.1	26.2	0.14	23	43.7	125	<LOD	<LOD	<LOD			90.91010224
VC12	2						1.08	0.051	1.62	1.99	0.14	1.88	2.5	5.35	<LOD	<LOD	<LOD			4.376715633
VC12	3						4.54	0.116	14	10.4	0.14	15.3	11.9	48.6	<LOD	<LOD	<LOD			35.40940118



1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

wsp.com