A47 Wansford to Sutton Dualling

Scheme Number: TR010039

Volume 9
9.2 Ground Investigation Report

The Infrastructure Planning (Examination Procedure) Rules 2010
Rule 3(2)(b)

Planning Act 2008

January 2022

Deadline 1

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

A47 Wansford to Sutton Development Consent Order 202[x]

GROUND INVESTIGATION REPORT

Rule Number:	Rule 3(2)(b)
Planning Inspectorate Scheme Reference	TR010039
Application Document Reference	TR010039/EXAM/9.2
BIM Document Reference	PCF Stage 3
Author:	A47 Wansford to Sutton Project Team, National Highways

Version	Date	Status of Version
Rev 0	January 2022	Deadline 1

Contents

1.	Introduction	1
1.1.	Scope and objectives of the report	1
1.2.	Proposed development	1
1.3.	Geotechnical category	2
1.4.	Other relevant information	2
2.	Existing information	3
2.1.	Site location and description	3
2.2.	Topographical maps	3
2.3.	Geological maps	3
2.4.	Aerial photographs	8
2.5.	Records of mines and mineral deposits	8
2.6.	Land use and soil survey information	8
2.7.	Archaeological and historical review	9
2.8.	Previous ground investigations	9
2.9.	Hydrogeology	10
2.10.	Hydrology and flooding	10
2.11.	Contaminated land	11
2.12.	Unexploded ordnance (UXO)	14
2.13.	Statutory undertakers	14
2.14.	Ground instability	15
3.	Field and laboratory studies	16
3.1.	Geomorphological/geological mapping and topographic survey	16
3.2.	Ground investigation – Soils Limited (2018)	16
3.3.	Description of fieldwork	16
3.4.	Gas and groundwater monitoring	17
3.5.	Drainage studies	18
3.6.	Geophysical surveys	18
3.7.	Test pile results	19
3.8.	Other fieldwork	19
3.9.	Laboratory Investigation	20
3.10.	AGS data	22
4.	Ground Summary	23
4.1.	Ground Conditions Summary	23
4.2.	Geological Longitudinal Section	23
4.3.	Summary of Test Results	23
4.4.	Methodology for Determining Global Material Properties	34
4.5.	Material Properties Site Wide (Global Parameters)	37
4.6.	CBR	46
4.7.	Material Re-use	47
4.8.	Groundwater and ground gas conditions	48
4.9.	BRE ground aggressivity global properties	49
5.	Geo-environmental assessment	50
5.1.	Introduction	50

5.2. Initial conceptual site model 50
5.3. Visual / Olfactory Evidence of Contamination 52
5.4. Chemical Analysis 52
5.5. Assessment of Risk to Human Health 52
5.6. Ground Gas Monitoring 53
5.7. Assessment of Risk to Controlled Waters 53
5.8. Ecological Risks: Flora and Fauna 57
5.9. Risks Evaluation: Post Assessment 57
6. Materials management 60
6.1. Introduction 60
6.2. Site-won materials re-use 60
6.3. Materials import 61
6.4. Waste assessment 61
7. Geotechnical risk register 64
8. Engineering assessment 70
8.1. Scope 70
8.2. Earthworks 70
8.3. Structures 78
8.4. Groundwater and drainage 80
8.5. Pavements subgrade 80
9. References 82

Appendices

Appendix A. Exploratory Hole Location Plan
Appendix B. Soils Limited Factual Report – September 2018
Appendix C. Geological Long Sections
Appendix D. Geotechnical Figures
Appendix E. Hierarchy of Screening Criteria for Generic Quantitative Risk Assessment
Appendix F. Generic Screening Sheets
Appendix G. Materials Management

Figures

Figure 1: Map of superficial deposits..... 4
Figure 2: Map of bedrock geology..... 5
Figure 3: Map showing areas considered at risk of valley bulging and cambering 6

Tables

Table 2.1: Historical ground investigations..... 9
Table 2.2: Summary of historical land uses..... 11
Table 2.2: Summary of ground stability..... 15

Table 3.1: Summary of geotechnics exploratory holes 16
Table 3.2: Summary of in-situ testing 17
Table 3.3: Summary of Wellpoint Installations 18
Table 3.4: Summary of Geotechnical Laboratory Testing 20
Table 3.5 Summary of Geotechnical Rock testing 20
Table 3.6 Summary of Geoenvironmental laboratory testing 21
Table 4.1: Stratigraphic Summary 23
Table 4.2: Summary of Topsoil Test Results 24
Table 4.3: Summary of Made Ground Test Results 25
Table 4.4: Summary of Alluvium Test Results 26
Table 4.5: Summary of River Terrace Deposit Test Results 27
Table 4.6: Summary of Rutland Formation Test Results 28
Table 4.7: Summary of Lincolnshire Limestone Formation Test Results 29
Table 4.8: Summary of Grantham Formation Test Results 31
Table 4.9: Summary of Lias Group Test Results 33
Table 4.10: Summary of Made Ground 37
Table 4.11: Summary of Alluvium Parameters 38
Table 4.12: Summary of River Terrace Deposits – Cohesive Parameters 38
Table 4.13: Summary of River Terrace Deposits – Granular Parameters 39
Table 4.14: Summary of Rutland Formation – Cohesive Parameters 39
Table 4.15: Summary of Rutland Formation – Granular Parameters 40
Table 4.16: Summary of Rutland Formation - Rock Parameters 40
Table 4.17: Summary of Lincolnshire Limestone Formation – Cohesive Parameters 41
Table 4.18: Summary of Lincolnshire Limestone Formation – Granular Parameters 42
Table 4.19: Summary of Lincolnshire Limestone Formation - Rock Parameters 42
Table 4.20: Summary of Grantham Formation – Cohesive Parameters 43
Table 4.21: Summary of Grantham Formation – Granular Parameters 44
Table 4.22: Summary of Grantham Formation - Rock Parameters 44
Table 4.23: Summary of Lias Group – Cohesive Parameters 45
Table 4.24: Summary of Lias Group - Rock Parameters 46
Table 4.25: Summary of Maximum Dry Density and Optimum Moisture Content 47
Table 4.26: Summary of Groundwater Strikes 48
Table 4.27: Summary of Infiltration Tests 49
Table 4.28: DS & ACEC Parameters 49
Table 5.5: Risk evaluation summary: 58
Table 6.1: Preliminary waste materials assessment summary 63
Table 7.1: Risk Evaluation Matrix and Rating 64
Table 7.2: Risk Rating Assessment Process 65
Table 7.3: Geotechnical Risk Register 66
Table 8.1: Sections used in cutting stability analysis 72
Table 8.2: Geotechnical design parameters (cuttings) 72
Table 8.3: 1V:3H cutting stability 73
Table 8.4: Sections used in embankment stability analysis 75
Table 8.5: Engineered fill parameters 75
Table 8.6: Embankment stability 76

Table 8.7: Summary of anticipated self-weight settlement 76
Table 8.8: Preliminary consolidation settlement 77

1. Introduction

1.1. Scope and objectives of the report

Sweco was commissioned by Galliford Try to prepare a Ground Investigation Report (GIR) for the A47 Wansford to Sutton scheme. The existing section of single carriageway of the A47 between Wansford and Sutton is to be upgraded to dual carriageway, and the existing junction with the A1 is to be upgraded by producing a freer-flowing network such that the carriageway and junction will be safer and allow more reliable journeys.

This GIR has been produced in accordance with the requirements of BS EN 1997-2:2007, Eurocode 7 – Geotechnical Design – Part 2: Ground Investigation and Testing[1] and CD 622 Rev 0[2]. The GIR is largely based on information obtained from the 2018 Ground Investigation (GI) undertaken by Soils Ltd on instruction by Interserve Construction Ltd, on behalf of the Client, Highways England. The GI was designed by Mott Macdonald – Sweco Joint Venture (MMSJV) also on behalf of the Client, Highways England.

The GIR report aims to address the following objectives:

- Summarise all existing geotechnical information and highlight any implications in a Geotechnical Risk Register
- Provide a summary of the 2018 ground investigation works
- Provide a summary of the ground conditions along the Scheme route
- Provide an evaluation of the ground conditions, including global characteristic parameters
- Assess potential risks from contamination and ground gas to human health and the wider environment

The findings of this report are based upon an engineering review of the available information, and professional judgement in its interpretation.

1.2. Proposed development

The Scheme involves alleviating traffic flow issues between Wansford and Sutton by upgrading to dual carriageway and by constructing a slip road between the A1 southbound and the A47 eastbound carriageways, to effectively bypass the junction. An alignment plan is presented within *Appendix A*.

Construction in support of the roadworks will include, but not limited to (correct at time of writing):

- A47 carriageway – conventional earthworks
- Underbridge serving Sacrewell Farm
- Widening of an existing underbridge spanning the former railway
- Widening of existing culverts
- A new slip road between the A1 southbound and A47 eastbound carriageway
- A new roundabout near Sutton, and removal of the existing roundabout
- Improvements to the existing roundabout at Wansford (east of the A1)
- Realignment of local roads

1.3. Geotechnical category

In accordance with BS EN 1997-1:2004, Eurocode 7 – Geotechnical design, Part 1[3], the scheme is classified as a Geotechnical Category 2 Project, which encompasses conventional types of structure and foundation with no exceptional risk, or difficult ground or loading conditions.

1.4. Other relevant information

The following documents and reference sources were considered during the preparation of this GIR:

- British Geological Services (BGS) online database and paper mapping series
- Highways England, Geotechnical Data Management System (HAGDMS)[4]
- MMSJV, A47 Improvements Programme – Wansford to Sutton Dualling Scheme, Addendum Preliminary Sources Study Report (PSSR), April 2018[5]
- Amey, Geotechnical Preliminary Sources Study Report A47 Wansford to Sutton, HAGDMS No. 29538, April 2017[6]

2. Existing information

An Addendum Preliminary Sources Study Report (PSSR) was prepared by MMSJV in April 2018[5] and should be read in conjunction with this report. The GIR summarises the information detailed within the PSSR in the following sub-sections. Details of the sources of reference material for all the existing information presented in this section are contained in the PSSR.

2.1. Site location and description

The site is located adjacent and contemporaneously to the existing A47 single carriageway between the A47/A1 junction, at Wansford and the existing A47/Castor/Upton roundabout, north of Sutton. The site boundary encompasses the existing A47 carriageway from approximately 450m west of A47/A1 junction at Wansford to approximately 750m east of the existing Sutton roundabout. The site boundary encompasses a buffer zone surrounding the carriageway, of variable width of up to 400m from the existing carriageway. The site boundary also includes the A47/A1 junction at Wansford and a section of the A1 between Sacrewell Lodge Farm in the north and the River Nene in the South.

The National Grid Reference TL 07660 99753 (507660 E 299753 N), lies within the boundary of the site at the centre of the existing Wansford roundabout, east of the A1. The River Nene lies broadly adjacent to the south of the existing A47 carriageway and flows eastwards towards Peterborough.

The existing route elevation gradually falls from approximately 30mAOD in the west, to a low point of 11mAOD at White Water Brook. From here, it then gradually climbs for c.300m, to approximately 20mAOD, where it remains for the remainder of the route. The proposed slip road at the western end of the route climbs gradually from 23mAOD over the crest of Black Swan Hill, joining the proposed eastbound carriageway at approximately 27mAOD.

The A1 is aligned broadly north to south and is located at the western end of the site, just east of Wansford. There are a number of local roads in the area, notably Peterborough Road which currently junctions the A47 at the existing roundabout towards the east of site.

A fuel-filling station and a pumping station are located immediately south of the existing A47, east of the access to Sacrewell Farm.

The proposed alignment is shown on drawings HE551494-GTY-HGT-000-DR-CE-30001 to 30006 inclusive, within *Appendix A*.

2.2. Topographical maps

No specific topographical survey was conducted as part of the PSSR. A topographic study undertaken as part of the PSSR, using the following:

- HAGDMS Report 29971, 133467309_1_1 Envirocheck Report - A47 Wansford to Sutton, September 2017[7]
- Google Maps[16]
- Digital Terrain Model (DTM) from HAGDMS[4]

2.3. Geological maps

Geological information was obtained from the BGS via the following maps and memoirs:

- England and Wales Sheet 157 Stamford Solid and Drift Edition, 1:50,000, BGS, 1978[8]
- Memoir for Sheet 158, Peterborough District, 1989[9]

- Classical areas of British geology Sheet 14 Peterborough, Solid and Drift Edition, 1:25,000, BGS, 1972[10]
- England and Wales Sheet TL09NE Solid and Drift Edition, 1:10,000, BGS, 1947[11]
- British Geological Survey, Geology of Britain online viewer[12]
- British Geological Survey, The BGS Lexicon of Named Rock Units[13]
- British Geological Survey, Borehole Scans Database[14]
- HAGDMS Report 29971, 133467309_1_1 Envirocheck Report - A47 Wansford to Sutton, September 2017[7]

2.3.1. Superficial geology

The proposed route is underlain by 2 main types of superficial deposit, and two areas of the route are shown to have no superficial deposits, west of the fuel-filling station on the existing A47 carriageway, and an area around Sutton Heath Road. Figure 1 shows the spatial distribution of superficial deposits in the area of the Scheme.

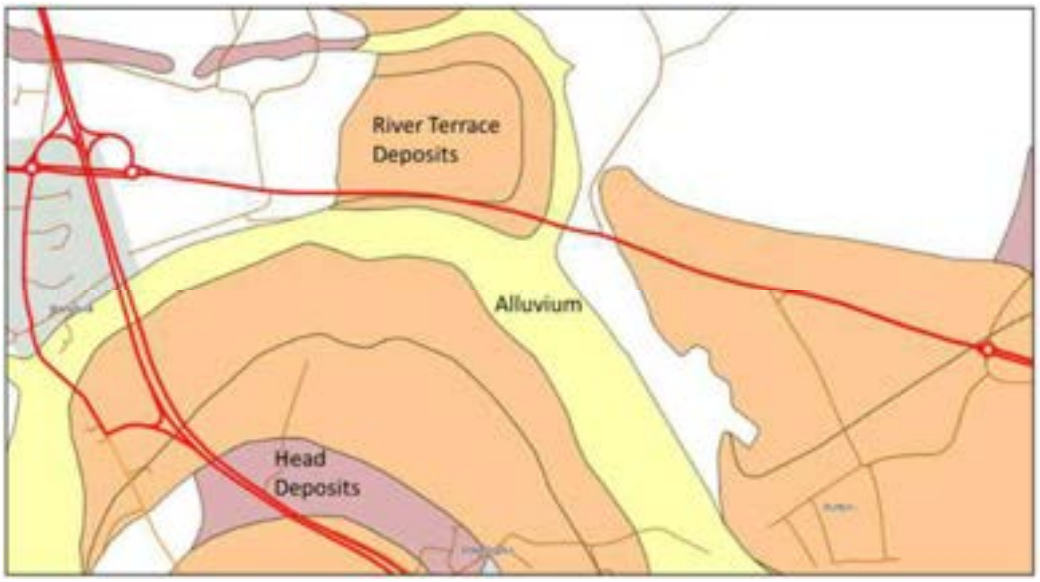


Figure 1: Map of superficial deposits. Red lines denote existing carriageways. Adapted from HAGDMS.

The majority of the superficial deposits along the proposed route are shown as River Terrace Deposits. Historic ground investigation logs show River Terrace Deposits to range in thickness between 1.6 and 5.9m.

A thin (c.50m wide) strip of Alluvium is shown to cross the proposed route in the base of the White Water Brook valley, west of Sutton Heath Road. Alluvium is also shown to be present along the alignment of the River Nene Valley, as a c.70-220m wide strip. Alluvium is shown in the historical ground investigation logs to represent thicknesses of between 0.1 and 1.6m.

Head deposits are shown in the area of the proposed slip road with the A1, orientated approximately east-west across the alignment of the proposed slip road, along the base of an un-named valley. The Head Deposits are described as generally poorly sorted and comprise clay, silt, sand, and gravel, with occasional inclusions of peat. Head Deposits encountered in the historic ground investigation logs is shown to represent thicknesses of between 0.4 and 1.4m. At the time of writing, development of the scheme alignment is such that it is now considered unlikely that Head Deposits will be encountered. However, the Head Deposits have been included for completeness.

2.3.2. Bedrock geology

The bedrock underlaying the proposed route is generally flat lying, gently dipping at shallow angles towards the south east. The recorded units in the area are the Rutland Formation, the Upper Lincolnshire Limestone, the Lower Lincolnshire Limestone, the Grantham Formation, and the Whitby Mudstone Formation. Figure 2 shows the spatial distribution of the bedrock geology in the area of the scheme.

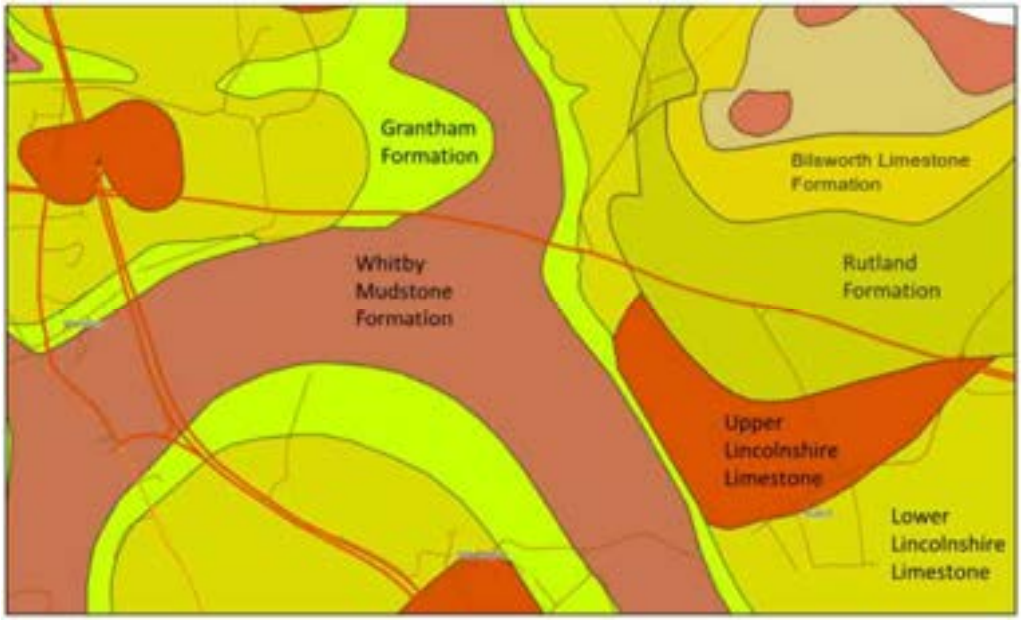


Figure 2: Map of bedrock geology. Red lines denote existing carriageways. Adapted from HAGDMS.

The oldest unit likely to be encountered is the Whitby Mudstone Formation, which is sedimentary bedrock, described by the BGS as comprising grey mudstones and shales with bands of phosphatic and limestone nodules. The Grantham formation overlies the Whitby Mudstone Formation, and is a sedimentary rock, likely to comprise white and grey leached silts and sands, and dark grey clays, often containing rootlets and lignitic debris.

Overlying the Grantham Formation are the Lower Lincolnshire Limestone and Upper Lincolnshire Limestone. The Lower Lincolnshire Limestone comprises flat bedded, oolitic limestone with marl partings, and the Upper Lincolnshire Limestone comprises coarse grained oolites, which are thought to have infilled channels in the older, lower limestone.

The youngest, uppermost bedrock lithology that is likely to be encountered under the proposed alignment is the Rutland Formation, which is a sedimentary rock composed of sandstones, siltstones, and fireclays, occasionally containing rootlets.

2.3.3. Fault geology

A fault is noted in the BGS Memoir[9] approximately 230m north of the main alignment at chainage Ch.1300. The fault is orientated approximately north east to south west, but is not shown to cross the proposed alignment of the A47 carriageway. The south western end of the fault is shown to be in close proximity (c.50m) to the northern end of the proposed Sutton Heath Road link to the new roundabout.

2.3.4. Sensitive geological areas

Landslide risk

An existing area of landslip is shown on the 1:50,000 scale BGS map sheet 157[8], between chainage Ch.300 and Ch.600. According to the PSSR, the landslip was first identified during construction works at the Wansford pumping station in 1972, when material at the toe of a slope was excavated, which caused mass movement of the landslide downslope towards the pumping station. Movement was also recorded upslope of the excavation, and cracking was noted in the agricultural land, approximately 20m north of the existing A47 carriageway. The events that occurred are detailed in a report by Chandler (1979)[15], and a summary is provided in the PSSR.

Chandler (1979)[15] concluded that the landslide induced by excavation of the toe utilised, in part, a pre-existing shear surface, likely formed during valley bulging, cambering, and brecciation of the Whitby Mudstone Formation caused by cryoturbation. Chandler also suggested that the pre-existing shear surface may extend further into the slope than the 1972 failure. The PSSR states that valley bulging, cambering, and brecciation occur in areas where competent cap rock is eroded to reveal underlying mudstone. Several such areas exist along the length of the proposed alignment, and therefore present an increased risk of slope failure. These are shown in Figure 3, which was sourced from the PSSR.

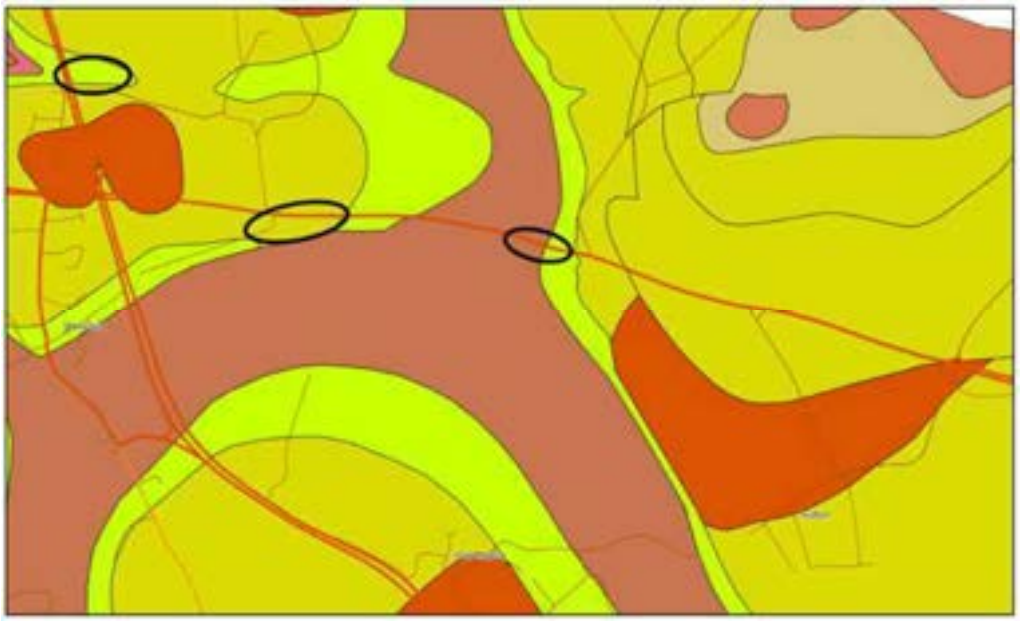


Figure 3: Map showing areas considered at risk of valley bulging and cambering (denoted by black lines). Red lines denote existing carriageways. Adapted from HAGDMS.

Measures to stabilise the landslide were deemed to be necessary in order to proceed with construction at the time. In the short term, a portion of the slope was stabilised using a dewatering system consisting of well points with their tips in the estuarine sands in a line parallel to and just up slope of the back face of the excavation.

As the pumping station site is liable to flooding, in the long term it was thought that drainage may reduce rather than increase stability. Weighting of the toe and installing a sheet pile wall through the shear surface to develop passive resistance were favoured as methods to stabilise the landslip.

Whilst driving the sheet pile wall, a slight crack formed in the A47 carriageway, and the sheet pile wall was seen to deflect and deform during construction. The sheet pile wall was left in place as a measure to stabilise the landslip in the long term, however during further excavation, cracks were noted up slope as far as the northern side of the A47 carriageway.

Movements to the east of the existing landslide were noticeably smaller, which could be due to a stockpile of fill which lay over the toe of the landslide.

The landslide detailed above was identified by a site walkover survey undertaken by MMSJV in 2018[5]. Additionally, an unidentified area of potential historical slope failure was observed between approximately Ch.700 and Ch.900, recorded as uneven, sloping ground with a depression behind the slope crest and a corresponding bulge at the toe. Further evidence of slope failure was observed during the MMSJV walkover survey, these are listed in the PSSR as the following:

- A cuspate depression in the field north of the existing A47 carriageway, northeast of the existing fuel filling station
- A row of wooden electricity pylons constructed along the possible landslip feature, some of which having rotated from vertical and now leaning down slope
- Potentially linear areas of seepage along the slope, defined by areas of coarse grass

Numerous boreholes were undertaken within regions of historic post glacial landslip to identify features indicative of landslip. The Whitby Mudstone (Lias Group) was identified as the most likely candidate for historic shear surfaces associated with post-glacial landslip and has been investigated and encountered at depth along the proposed alignment.

Evidence of possible existing shear surfaces has been identified in four exploratory holes (BH27, BH30, TP09A, TP15) during the 2018 ground investigation, where fissures have been noted as polished. The depth of these polished fissures within the borehole logs is unclear, as the description given in the logs applies to the whole deposit, with the description being reproduced on the subsequent page of the log. Therefore, polished fissures may have been encountered anywhere from c.5.5mBGL and 15mBGL at termination of the boreholes. In addition, polished fissures were also noted in trial pits TP09A and TP15 at 1.4mBGL and 2.3mBGL respectively. The exploratory holes where these features have been recorded are located between approximate chainages Ch.500 and Ch.1270. The polished surfaces described in BH27, BH30 and TP15 occurred within the Grantham Formation. The polished surfaces described in TP09A occurred within the Whitby Mudstone (Lias Group). BH27, BH30 and TP09A were undertaken within region identified as subject to historic post glacial landslip.

Based on the exploratory holes undertaken to date, the Whitby mudstone (Lias Group) is not anticipated to be present within the proposed cutting faces, however, it is likely to be present below some of the proposed embankments. Further investigation will be undertaken during Stage 5 ground investigation, given amended alignment post public consultation.

Dissolution risk

Limestone is susceptible to dissolution by acidic groundwater, which can lead to cavities, caves, and sub-surface streams, all features of a karst landscape. Where the Upper and Lower Lincolnshire Limestone Formations underlie the proposed alignment (see Figure 3), it is possible that sub-surface karst landscapes are present which would pose geotechnical hazards including the following:

- Near surface cavities
- Subsidence and sinkhole formation
- Uneven rockhead

Subsidence caused by collapse of cavities, or the erosion of sediment from cavities in Limestone is shown on the ground surface by either conical or circular depressions, known as sinkholes. Evidence of sinkholes were observed during the February 2018 MMSJV walkover survey[5] in three locations:

- Southwest of Sacrewell Farm, between Mill House and the existing A1 carriageway, a fenced-off depression was recorded and the sound of running water was noted. The location is noted as being in the area of the mapped boundary between the Lower Lincolnshire Limestone Formation and the Grantham Formation.
- Within the wooded area directly south of the Sutton Heath Road junction with the existing A47, a series of shallow depressions were recorded, which appeared natural in origin.
- A steep sided, 5-6m deep depression was noted approximately 100m west of the existing Sutton roundabout, just south of the existing A47 carriageway. This feature has previously been mapped as a worked gravel pit, so may in fact be a man-made feature.

Exploratory holes were undertaken to depth within the Lincolnshire Limestone along the alignment. Small zones of core loss were encountered and were locally described as dissolution features however no macro scale dissolution features were encountered. Assumed zones of core loss were limited in the main body of the Lincolnshire limestone. More significant assumed zones of core loss were encountered towards the base of the Lincolnshire Limestone Formation around the gradational contact with the Grantham Formation, however these zones of core loss are likely to be a result of difficulty adapting rock coring techniques upon encountering an underlying granular material. This will be investigated further during the Stage 5 ground Investigation.

2.4. Aerial photographs

The interactive digital aerial photography available from Google Maps[16] provides aerial photographs and the street view allows a review of the majority of the site.

2.5. Records of mines and mineral deposits

According to the PSSR, 3 BGS recorded mineral sites are located within 250m of the site boundary, these are:

- Sutton Gravel Pit, located approximately 100m west of the existing Sutton roundabout, between Ch.100 and Ch.150 of the proposed Peterborough Road tie in (NGR 509981, 299251). Formerly mined the River Terrace Deposits, now ceased. Identified during the 2018 MMSJV walkover, the pit was described as a steep-sided, 5-6m deep depression.
- Stibbington, located south of the River Nene (NGR 509326, 299370). Formerly mined the River Terrace Deposits, now ceased.
- Sutton Pits, located approximately 300m south of the proposed Sutton Roundabout (NGR 509270, 299155). Formerly mined the Upper Lincolnshire Limestone, now ceased.

HAGDMS report 29971[4] does not show any coal mining affected areas, man-made cavities, mining instability, natural cavities, non-coal mining areas, or potential mining areas within 250m of the site boundary.

A search of the Coal Authority Interactive Map Viewer[17] reveals no evidence of historic of current coal mining in and around the area of the Thickthorn Junction.

2.6. Land use and soil survey information

The principal land use within the site boundary is agricultural land, with occasional small wooded areas. The site boundary also encompasses the existing A47 and A1 carriageways, and a number of local roads. Two residential properties are located in the vicinity of the junction of the A47 and Sutton Heath Road. A disused railway line is also present in this area, aligned perpendicular to the A47.

A pumping station and a fuel-filling station are located south if the A47, at approximately Ch.500 and Ch.600, respectively, however these are not included within the site boundary. Additionally, 4 residential properties are located east, adjacent to the A1, c.500m north of Wansford, and are also not included within the site boundary.

The MAGIC online map viewer[18] shows a map of the soil types present in the area of site. The majority of the area is shown as comprising either 'free draining slightly acid loamy soils' or 'shallow lime-rich soils over chalk or limestone'. 'Loamy and clayey floodplain soils with naturally high groundwater' are shown to follow the alignment of the River Nene.

2.7. Archaeological and historical review

2.7.1. Archaeology

According to the PSSR, 4 recorded sites of antiquity are in close proximity to the proposed alignment, as follows:

- Ermine street, west of the site is a Roman road.
- The original route of the A47 is a Roman road.
- Roman buildings at approximately Ch.300, near the proposed Sacrewell Farm underbridge.
- Roman buildings approximately 375m north of the proposed A1 free flow slip road.

There is also a scheduled monument, north of the proposed route, between approximately Ch.940 and ch.1,100. According to the Amey PSSR[6], the scheduled monument includes Bronze age crop marks.

An intrusive archaeological survey is planned for 2020, but has not been completed at the time of writing this report.

2.7.2. Historical land use

A comprehensive account of historical land use of the site is included within the PSSR. According to the PSSR, the majority of the site and the surrounding area (up to 100m) has historically been recorded as agricultural land with small areas of woodland. A number of pits and quarries are shown on historical maps (discussed in Section 2.5), which are now shown as disused or as ponds. The settlement of Wansford is shown since 1885.

A number of roads and tracks are recorded from 1885 onwards, including a road linking Wansford to Peterborough, which forms part of the proposed A47 route. The Stamford to Wansford Railway line is shown on maps between 1885 and 1952, when it is recorded as disused.

Around 1900-1901, an old gravel pit is recorded at Ch.2350 and an old quarry is noted approximately 400m north west of the site in area of Thornlaugh.

To the west of the site, a new road along the route of the A1 is shown from 1952-1953. The route of the A47 is shown on the 1958 maps as the course of a Roman Road, and by 1964-1965 a new road is shown as under construction along the alignment of the current A47 carriageway, including the Junction with the A1 at Wansford. By 1969, changes to the junction are recorded.

Maps from 1970 show a pond in surrounding woodland adjacent the south east of the site, in the location of a former quarry, and 2 small ponds are recorded in woodland west of the former Wansford railway station.

The fuel filling station, and a filter tanks at the site of the current pumping station are shown for the first time on the 1970-1976 map, along with a new access track serving Sacrewell Farm. The current pumping station, along with a large embankment and a mast are first noted on the 1980-1983 map. By 1992 a new road is shown to join the current Sutton roundabout, towards the east of the proposed alignment.

2.8. Previous ground investigations

The BGS online map viewer[12] shows 7 exploratory holes on the proposed alignment. A summary of the relevant exploratory holes is given below in Table 2.1.

Table 2.1: Historical ground investigations

Investigation	Date	HAGDMS Report No.	Type of exploratory hole*	No. of relevant exploratory holes	Additional works
Castor and Ailsworth by-pass Exploration Associates Ltd	1984	Site Investigation (8213)	TP	3	N/A
Castor Parkway Soils Engineering Ltd	1976	N/A	CP	3	SPTs
Cottam-Wymondley Foundation Engineering Ltd	1967	N/A	CP	1	SPTs

*CP = Cable Percussion Borehole, TP = Trial Pit, SPT =Standard Penetration Test

2.9. Hydrogeology

The Environment Agency Superficial and Bedrock Aquifer Designation maps indicate the following:

- The Upper and Lower Lincolnshire Limestone bedrock is classified as a Principal Aquifer.
- Secondary A (Alluvium and River Terrace Deposits) and undifferentiated (Grantham Formation) aquifers are present along the Nene valley to the south of the A47.
- Secondary undifferentiated (Head) and B (Rutland Formation) aquifers are present towards the eastern extents of the Proposed Scheme.
- The Whitby Mudstone Formation is classified as unproductive strata.

A groundwater source protection zone (SPZ) 2 (outer protection zone) is located approximately 1km to the east of the A1 at Wittering and 1.2km north of the A47 at the Sutton Heath Road.

The British Geological Survey (BGS) records indicate several historical wells may be present within approximately 600m of the Proposed Scheme, although consultation with the Environment Agency in October 2018 suggested there to be no nearby licensed groundwater abstractions.

Consultation with the Environment Agency in June and October 2018 indicates that groundwater levels are expected to be close to ground level, especially in areas around Mill Stream and Wittering Brook. In the Sutton Heath Bog area, springs and seepages are associated with the boundary between the Lincolnshire Limestone aquifer and the underlying lower permeability Grantham Formation and/or Whitby Mudstone Formation. These springs and seepages ultimately feed into the Wittering Brook.

2.10. Hydrology and flooding

The River Nene is present immediately to the south of the Proposed Scheme and flows in an easterly direction. Six inland rivers traverse or adjoin the site, generally crossing from north to south, with the exception of the waterway flowing to Sacrewell Farm in the north west of the site, which flows from west to east.

There are various water features located within the vicinity of the Proposed Scheme, including a series of large off-line lakes and drainage ditches to the south of the River Nene, 29 small lakes and ponds in the neighbouring fields and ten drainage channels.

The land immediately surrounding the River Nene and Wittering Brook watercourses is located within Flood Zones 2 and 3 for fluvial flooding. Zone 2 floodplains estimate that the annual probability of flooding is between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers, whilst Zone 3 floodplains see the annual probability as 1 in 100 (1%) or greater.

The risk of surface water flooding is medium to high within the immediate vicinity of the River Nene and Wittering Brook (and their tributaries) and notably, upstream of the Wittering Brook A47 culvert. The existing A47 route is largely unaffected by surface water with the exception of the crossing of Wittering Brook which is expected to experience flooding during a 1 in 30 year flood, a 1 in 100 year flood and a 1 in 1000 year flood.

BGS records indicate that most of the site to the east of Ch.550 is susceptible to groundwater flooding of properties situated below ground level. In addition, several areas are susceptible to groundwater flooding at surface, generally coincident with the location of watercourses.

2.11. Contaminated land

The PSSR reviewed historical maps and environmental datasheets provided within the Envirocheck report[7] for potential sources of contamination both on and within the vicinity of the scheme. Table 2.2 below provides a summary of this information which is reproduced from this report.

Table 2.2: Summary of historical land uses

Year of Publication	Scale	Features on or within 100m of the scheme	Features >500m from the scheme
1885	1:2,500 and 1:10,560	• The majority of the site and surrounds are given over to agricultural use. • A small stream with associated embankment and track cross the route of the proposed free flow slip road in the north of the site. • The Old North road is shown running north south immediately adjacent to the west side of the site. • A road linking Wansford and Peterborough is shown running east/west within the south of the site, named Peterborough road. To the eastern side of the site, this road forms the route of the proposed road. • Several mile stones are noted along the Peterborough road. • The River Nene and associated flood plain are noted to the south of the site, within 100m at the closest point. • In the western half of the scheme the areas adjacent to the River Nene are noted as “Liable to Floods”. • A Weir with associated stanchion is shown on the River Nene approximately 100m south of the site. • The Stamford and Wansford Railway crosses the proposed route at close to its midpoint. A Rail station with associated buildings named “Wansford Road Station” is shown 50m to north of the site. • A Towing path is noted running along the north bank of the River Nene in the east of the site. The river is within the footprint of the proposed route in the vicinity of the rail crossing. • Two streams are noted in the vicinity of the scheme to the immediate west of the railway crossing. Only one is shown as crossing the proposed site area. • Flaxton Ford is named on the River Nene at the approximate centre point of the route. • Sutton Toll is noted to the east of the rail crossing approximately 25m north of the site. • A small area of mixed woodland is noted within the site boundary immediately east of the rail crossing.	• Multiple small roads and tracks cross the proposed route and a local area. • Approximately 400m south west of the site the settlement of Wansford is shown, including St Mary’s Church and Wansford Bridge. • Thornlaugh Corn Mill with associated Mill Pond is shown approximately 125m to the north of the site. • Approximately 300m north of the site isolated buildings are shown to the north of Thornlaugh Mill. • Isolated buildings are noted together with a marked Mile post approximately 200m west of the site along the Old North road. • Approximately 300m west of the site an area of woodland named “The Plantation “is shown. • Approximately 500m south east of the site the settlement of Sutton is shown, including St Michael’ Church and Wansford Bridge. • Sutton pits are noted approximately 250m of the south east of the site, these appear to be sand and gravel pits. • Ermine Street, an old Roman route is shown 250m to the east of the site with a north west, south east trend. • A large area to the north east of the site is named Sutton Heath and noted as Rough Pasture with two pits at approximately 250m and 400m north of the site. • Two small ponds are noted within the pasture area. • Upton Lodge buildings are present 250m to the north east along Ermine street, noted as the route of a Roman Road. • Approximately 600m north west of the site the settlement of Thornlaugh is shown, including St Andrew’s Church, a Rectory, School and Smithy.
1886	1:2,500	No significant changes noted	• Southern side of the River Nene is not shown on the map.

Year of Publication	Scale	Features on or within 100m of the scheme	Features >500m from the scheme
1887	1:2,500 and 1:10,560	• The north side of the River Nene is not shown on the 1:2,500 maps.	• The settlement of Wansford is shown as extended to the south of the River Nene, approximately 500m south of the site including a site of antiquities named “Roman Houses”. • The settlement of Stibbington is shown 750m to • The land to the south of the River Nene is shown as agricultural land.
1889	1:2,500	• Area north of the site is not shown on the map	• Area immediately south of the River Nene is noted as Liable to Flood.
1900	1:2,500	• The buildings formerly shown as Thornlaugh Corn Mill are shown as Silk Fishery. Associated Fish Ponds are shown approximately 100m to the north of the site. • A Sluice is shown on White Water Brook immediately adjoining the north of the site. • Sheep and Cattle pens are noted alongside the Wansford Road Station.	• The isolated buildings shown north of Thornlaugh Hall are named as Sacrewell Farm. • Approximately 300m north west of site a small pond is shown. • The two small ponds in the rough pasture area are shown draining to the south into White Water Brook.
1900 - 1901	1:2,500	• An old gravel pit is noted immediately adjoining eastern extent of the site at Ch 2350.	• No significant changes noted
1901	1:2,500 and 1:10,560	• A foot bridge shown at location of the weir across the River Nene. • A footpath is shown crossing the west of the site from Silk Fishery to the west of Wansford. • An old Quarry is noted 400m north west of the site in the vicinity of Thornlaugh. • Areas north of the site are only partially shown on the 1:2,500 map.	• Area to the west of the site, in the vicinity of the Mile post, is named Black Swan Hill. • The Sutton Pits are noted as containing a crane. They are shown as rough pasture in places. • Two small areas of woodland named “Top Field Spinney” and “Hell Corner” are noted to the north of the site at 500m and 750m.
1902	1:2,50 and 1:10,560	• The north side of the River Nene is not shown on the 1:2,500 map.	• No significant changes noted
1928	1:10,560	• The area of the site is not shown on the map.	• No significant changes noted
1952	1:2,500 and 1:10,560	• Areas north of the site are only partially shown on the 1:2,500 map.	• Land immediately to the south of the River Nene comprises several new bodies of water. • A Public House is noted approximately 150m west of the site to the north of Wansford.
1952 -1953	1:10,000	• To the west of the site a new road is shown along the footprint of the current A1. • The small area of woodland within the site is extended to adjoin the railway. • An isolated building is noted alongside the road and within the footprint of the proposed route approximately 150m to the east of the rail line.	• A Tow path is mapped running along the southern bank of the River Nene. • The Railway is no longer continuous to the north, and noted as disused.
1958	1:2,500 and 1:10,000	• A site of “Roman buildings” is noted to the immediate south of the site in the vicinity of the planned underpass. • The route of the A47 as shown is noted as the course of a Roman Road.	• No significant changes noted
1964-1965	1:10,000	• A new road is noted as being under construction in the current footprint of the A47, with a junction with the A1 noted.	• No significant changes noted

Year of Publication	Scale	Features on or within 100m of the scheme	Features >500m from the scheme
		• A telephone call box is noted approximately 100m to the south west of the site.	
1965	1:2,500	• No significant changes noted	• No significant changes noted
1969	1:10,000	• The extreme north of the proposed slip road route is not shown on map. • Changes are shown to the A1/A47 junction.	• No significant changes noted
1970	1:2,500 and 1:10,000	• Only extreme north of the proposed slip road route is shown on the map. • A building with enclosing fence line is noted east of the rail line, named Deep Springs. • A Pylon line is noted as crossing the site at Ch 2550. • A new pond with surrounding woodland is shown immediately adjoining the south east of the site in location of a former quarry. • Two drainage lines feeding a pond, one coming directly south, one from the west. The drains cross under the A47 from the north side in separate locations. • Two small ponds are noted in an area of woodland to the west of the former Wansford Rail station.	• Sutton Pits are no longer shown as Quarries, instead area is shown as Coniferous and non-Coniferous woodland. • Approximately 250m south west of the site a new building named Willowhayne House is noted along The Drift road. • A building shown 175m north of the railway crossing formerly associated with the Wansford Road Station is named Heath House. • Small areas of Marsh are shown adjoining the dismantled railway.
1970 - 1979	1:10,000	• No significant changes noted	• No significant changes noted
1970-1976	1:2,500	• New developments are shown alongside the south boundary of site comprising a Filling station Ch 500 and Filter tank Ch 300. • A new access road is shown for the Sacrewell Farm and Mill buildings.	• Old Mill pond is shown as marsh rather than open water
1970-1990	1:2,500	• Only the area south of 300,000 Northing is shown on the map. • Area of old Mill/Fishery labelled as Sacrewell Farm.	• No significant changes noted
1975-1976	1:2,500	• No significant changes noted	• A small area of residential development is shown immediately to west of the site across the A1. • Telephone call post is noted along the route of the A1 north of the site.
1976	1:2,500	• Weir and footbridge are no longer noted along River Nene. The stanchion is still noted. • A public convenience is noted along route of old road cut by the new road.	• Development of Wansford beyond original boundaries. • A flood gauging station is noted on the north bank of the Nene.
1980	1:2,500	• No significant changes noted	• Quarry 400m north west of site is shown as disused.
1980-1983	1:10,000	• Pumping station is noted approximately 25m to the south of the site, with large embankments also shown in the vicinity. • A Mast is noted approximately 25m south of the site in the vicinity of the Pumping Station. • Workings are noted 25m to the south of the site, no area is denoted.	• Further development of the settlement of Wansford to the west of the A1. • Glasshouses noted approximately 175m west of the site named Wanhill Nurseries. • A subway is noted 200m west of the site, to the west of the A1 and 300m to the south of the site under the A1. • Bungalow noted 500m south of the site, on the south side of the River Nene.

Year of Publication	Scale	Features on or within 100m of the scheme	Features >500m from the scheme
1980- 1984	1:10,000	• A New track is noted running from Top Field Spinney south towards the site area.	• Railway shown as Dismantled Railway • Quarries shown 250m and 400m north of the railway crossing are no longer shown. •
1991	1:10,000	• Most of site area not shown on map	• To the eastern extent of the proposed route a track is shown following the footprint of the present day A47.
1992	1:2,500	• A new road alignment is shown joining the roundabout at the eastern end of the route. • A strip of non-coniferous woodland is noted along the north side of the route of the A47.	• To the eastern extent of the proposed route a new dual carriageway is shown following the footprint of the present day A47.
1994	1:2,500	• Sluice is shown adjacent to the pumping station along the north bank of the River Nene.	• No significant changes noted
1996	1:2,500 and 1:10,000	• Only the area north of 300,000 Northing is shown on the 1:2,500 map. • Only the extreme eastern extent of the route is shown on the 1:10,000 map. • New pond is shown to west of A1 approximately 25m from the planned slip road.	• No significant changes noted
1999	Aerial Photograph	• Site area is shown as agricultural land. • Both filling station and pumping station are shown adjacent to the site boundary. • New pond to west of A1 is visible as partially filled. • Mill Pond visible as open water. • The area named Deep Springs is visible as buildings with an enclosed garden, inferred to be a residential dwelling.	• Area immediately to the south of the site is pasture adjoining the river Nene. The A1 road runs north south on the western boundary of the site. • The area south of the River Nene is a body of water.
1999-2000	1:10,000	• Disused workings are shown 25m to the south of the site.	• Pump house is shown approximately 200m south west of the site. • A Pavilion is noted approximately 350m south west of the site.
2006	1:10,000	• Sacrewell Farm named Sacrewell Farm and Country Centre. • New vehicle tracks are noted in the entryway to Sacrewell Farm	• No significant changes noted
2017	1:2,500 and 1:10,000	No significant changes noted	• A Roman Building site is shown approximately 375m to the north east of the free flow slip road.

2.12. Unexploded ordnance (UXO)

According to the PSSR, a preliminary UXO Risk Assessment was conducted by 6 Alpha Associates[5] for the scheme. This reported a low probability of encountering UXO on site. In accordance with CIRIA C681[19] no further action is required to address the UXO risk.

2.13. Statutory undertakers

A search of Statutory Undertakers was undertaken as part of the PSSR. The results are shown on the drawing HE551494-AMY-HGN-WS_STG2-DR-HE-004, included within *Appendix A* of the PSSR (available as a separate document).

2.14. Ground instability

The PSSR references the Envirocheck report[7] with regards to potential ground instability within the site area. The potential for ground instability is summarised in Table 2.2. Further details on potential ground instability is detailed within the PSSR.

Table 2.2: Summary of ground stability

Criteria	Classification
Potential for Collapsible Ground	Very low
Potential for Compressible Ground	Moderate where Alluvium are mapped along the White Water Brook Valley. Negligible elsewhere
Potential for Landslide	Moderate over area of historical landslip in the area of pumping station and fuel filling station. Low risk south of the site, along norther bank of River Nene, west of the pumping station. East of pumping station between Ch.700 and Ch.900 identified as area of potential historical landslide during 2018 walkover by the MMSJV. Very low elsewhere
Potential for Ground Dissolution	Low associated with limestone to the west of the site and railway cutting at White Water Brook Valley. Very low or less elsewhere
Potential for Running Sand	Very low
Potential for Shrinking or Swelling Clay	Low where Alluvium is mapped, very low elsewhere

3. Field and laboratory studies

3.1. Geomorphological/geological mapping and topographic survey

No specific geomorphological/geological mapping or topographical surveys were conducted as part of this investigation.

3.2. Ground investigation – Soils Limited (2018)

As part of the PCF Stage 3 Assessment, the Mott Macdonald Sweco Joint Venture (MMSJV) designed a detailed GI pertinent to the preferred option for the Scheme on behalf of Highways England. The Principal Contractor was Interserve Construction Ltd (ICL), and the ground investigation works were subcontracted to a specialist ground investigation contractor, Soils Ltd.

The GI fieldwork was undertaken between August and November 2018. The works were supervised by MMSJV. A Ground Investigation Factual Report presenting the results of the GI was provided by Soils Limited. A copy of the Factual Report is included in *Appendix B*.

The overall objective of the GI was to provide detailed geotechnical and environmental information on the ground conditions to inform the development of the design. The design process considered investigation techniques utilised to determine the most appropriate intrusive investigation methods for the anticipated ground conditions. The principal aim of the works was to provide sufficient information on the underlying soils, rock and groundwater regime to facilitate design development of the proposed Scheme. In addition, the investigation was designed with the aim to establish the nature and extent of any potential sources of contamination, and implement testing and monitoring at these sites. The GI works were planned and undertaken in accordance with the principles of BS 5930:2015[20], BS EN ISO 22476-3:2005+A1:2011[21], BS EN 1997-1:2004+A1:2013[3], BS EN 1997-2-2007[1], BS EN ISO 14688-1:2002+A1:2013[22], BS EN ISO 14688-2:2004+A1:2013[23], BS 10175:2011+A1:2013[24], and BS EN ISO 22475-1:2006[25].

3.3. Description of fieldwork

The fieldworks were carried out by Soils Ltd between 29 August and 29 November 2018. The number and maximum depth for each type of exploratory location are summarised below in Table 3.1. The locations of the exploratory holes are presented on drawings HE551494-GTY-HGT-000-DR-CE-30001 to 30006 inclusive, within *Appendix A*.

Table 3.1: Summary of geotechnics exploratory holes

Exploratory hole type	Total number of holes	Maximum depth (mBGL)
Cable Percussive boreholes (BH)	15	15
Cable Percussive boreholes with Rotary Core follow on (BH+RC)	5	25.95
Rotary Cored bored, commenced with dynamic sampling (RC)	24	25.75
Windowless Sampled boreholes (WS)	2	1.7
Machine excavated Trial Pits (TP)	30	4.8
Cone Penetration Tests (CPT)	5	10.01

The exploratory hole logs are presented in *Appendix A* of the Factual Report (refer to *Appendix B*).

A schedule of in-situ testing was designed by MMSJV for the GI fieldworks. The type and number of in-situ tests which were undertaken are summarised in Table 3.2.

Table 3.2: Summary of in-situ testing

In-situ test	Purpose	Total number of tests
Standard Penetration Test (SPT)	Determine the relative density of soils	271
Photo Ionisation Detector (PID) test	Measure for volatile organic compounds	202
Dynamic Cone Penetration Test (DCP)	Assess density of the soil, and establish a correlated California Bearing Ratio (CBR)	12
Soakaway Test	Determine the soil infiltration characteristics	5

The results of the in-situ tests are presented in *Appendix A* of the Factual Report (refer to *Appendix B*).

3.4. Gas and groundwater monitoring

Gas and groundwater monitoring wellpoints were installed in 19 boreholes to provide gas concentrations and groundwater levels. Groundwater levels were monitored during the investigation as wellpoints were installed, and post fieldwork monitoring commenced in November 2018 until January 2019. A summary of the wellpoints is summarised in Table 3.3.

Table 3.3: Summary of Wellpoint Installations

Wellpoint	Elevation (maOD)	Response Zone (mBGL)	Response Zone Formation
BH01A	19.38	1 – 2.7	Grantham Formation
BH03	28.59	1.5 - 12	Upper Lincolnshire Limestone, Grantham Formation & Lias Group
BH06	29.59	1.5 - 6	Lower Lincolnshire Limestone & Grantham Formation
BH07	29.45	1.5 – 10.5	Upper Lincolnshire Limestone, Grantham Formation & Lias Group
BH09	18.38	3.5 – 9	Lower Lincolnshire Limestone, Grantham Formation & Lias Group
BH11	21.09	1.5 – 7.5	Lower Lincolnshire Limestone, Grantham Formation & Lias Group
BH13	27.54	1 – 6.69	Lower Lincolnshire Limestone & Grantham Formation
BH16	27.61	8.5 – 20	Lias Group
BH18	26.32	1.5 – 10.5	Lower Lincolnshire Limestone & Rutland Formation
BH20	22.32	1.5 – 7.5	Lower Lincolnshire Limestone & Grantham Formation
BH24	12.32	6.5 – 15	Lias Group
BH26	15.66	3.3 – 15	Lias Group
BH27	14.07	5 – 15	Whitby Mudstone Formation & Lias Group
BH29	9.87	1 – 3.1	Lower Lincolnshire Limestone
BH33	18.88	6.4 – 12.4	Northampton Sand Formation[1]
BH34	24.02	14.5 – 25.5	Lias Group
BH36	19.54	0.6 – 2.8	River Terrace Deposits
BH37A	19.32	2.5 – 5	Rutland Formation & Northampton Sand Formation[1]
BH39	16.93	2 – 5.5	River Terrace Deposits

[1]Logged as Northampton Sand Formation but interpreted by Sweco as Grantham Formation after review of BGS mapping and material descriptions.

The results of the gas and groundwater monitoring results are presented within *Appendix D* of the Factual Report.

3.5. Drainage studies

Infiltration tests were undertaken in five trial pits in accordance with the principles of BRE DG365: Soakaway Design: 2016[26]. The raw data from the infiltration tests is presented within *Appendix A.4* of the Factual Report.

3.6. Geophysical surveys

No geophysical surveys were undertaken as part of this investigation.

3.7. Test pile results

Not undertaken as part of this investigation.

3.8. Other fieldwork

No additional fieldwork was undertaken as part of this investigation.

3.9. Laboratory Investigation

A series of geotechnical and environmental laboratory tests were scheduled, on selected samples recovered from the exploratory locations. The completed tests are summarised below in Table 3.4, Table 3.5 and Table 3.6.

Table 3.4: Summary of Geotechnical Laboratory Testing

Type of test	No of Tests Undertaken	Testing Standard
Moisture Content	173	BS1377: Part 4: 1990 Clause 5
Particle Density	8	BS 1377: Part 2: 1990 Clause 8.2
Atterberg Limits (Plasticity Testing)	129	BS 1377: Part 2: 1990 Clause 4 & 5
Particle Size Distribution – Sieve Analysis	85	BS1377: Part 2: 1990: Clause 9.2
Particle Size Distribution – Sedimentation	40	BS1377: Part 2: 1990: Clause 9.4
Organic Mater Content	14	BS1377: Part 3:1990: Clause 3
Loss on Ignition	1	BS1377: Part 3:1990: Clause 3.4
Shear Box (60mm Quick Shear)	4	BS1377: Part 7: 1990 Clause 4
One Dimensional Consolidation Testing	11	BS 1377: Part 7: 1990: Clause 9
4.5kg Rammer Method Compaction[1]	3	BS 1377: Part 4: 1990: Clause 6
Vibrating Hammer Compaction	2	BS1377: Part 4: 1990 Clause 3
Moisture Condition Value	11	BS1377: Part 4: 1990: Clause 5.5
Quick Undrained Triaxial	34 (4 failed)	BS1377: Part 7: 1990: Clause 8
Consolidated Undrained Triaxial	9 (2 failed)	BS1377: Part 8: 1990: Clause 7
BRE Special Digest 1 Suite	68	BRE SD1
Soundness of Magnesium Sulphate	2	BS EN 1397-2
California Bearing Ratio	6	BS 1377: Part 4: 1990 Clause 7
Laboratory Swelling Test	3	BS 1377: Part 5: 1990: Clause 4.3

[1]2.5kg method requires removal of material greater than 20mm therefore 4.5kg method was more suitable for those samples owing to a high proportion of >20mm clasts.

Table 3.5 Summary of Geotechnical Rock testing

Type of test	No of Tests Undertaken	Testing Standard
Point Load Testing	40	ISRM Testing Method
Unconfined Compressive Strength	9 (3 failed)	ISRM Testing Method
Aggregate Abrasion value	3	BS EN 1097-8

The results of the geotechnical test results are presented within *Appendix B* of the Factual Report.

Table 3.6 Summary of Geoenvironmental laboratory testing

Type of test	No of Tests Undertaken	Testing Standard
Metals and inorganics[1]	110	UKAS/MCERTS where applicable
Speciated PAHs, phenols, BTEX/MTBE[2]	110	UKAS/MCERTS where applicable
TPH CWG[3]	110	UKAS/MCERTS where applicable
Asbestos ID	110	UKAS/MCERTS where applicable
Asbestos Quantification	0	UKAS/MCERTS where applicable
Leachate		
Leachate Suite F	43	UKAS/MCERTS where applicable
Water		
Groundwater Suite F	14	UKAS/MCERTS where applicable

[1] Metals (As, Cd, Cr III, Cr IV, Cu, Pb, Hg, Ni, B, Zn, V), pH, total sulphate, sulphide, chloride, nitrate, ammoniacal nitrogen as NH4, natural moisture content, organic matter, total organic carbon, total, free and complex cyanide.
[2] Polycyclic aromatic hydrocarbons (PAHs) USEPA16, total monohydric phenols, benzene, toluene, ethylbenzene, xylenes and methyl tert-butyl ether.
[3] Total petroleum hydrocarbons (TPH) CWG.

The results of the environmental test results are presented within *Appendix C* of the Factual Report.

3.10. AGS data

On completion of the works, an AGS 4.0 data file containing ground investigation data was provided by Soils Ltd. Minor discrepancies were noted between the reported number of tests within the factual report compared to those reported within the AGS file. In addition, the following information was not included within the AGS file, and Sweco have been unable to obtain it within AGS format:

- Groundwater and ground gas monitoring results
- Infiltration test results
- Dynamic Cone Penetrometer (DCP) results

The available data has been interrogated using Holebase SI Professional, version 1.34.1.108.

4. Ground Summary

This Section provides a summary of the ground conditions based on the findings of the available information outlined in Sections 2 and 3. The geological nomenclature assigned to strata types in this ground summary may vary from those provided in the exploratory hole logs in the Soils Limited factual report (17076/FGIR) due to amendments made to the AGS data based on our own interpretation of the exploratory hole logs.

4.1. Ground Conditions Summary

The Ground Investigation encountered a variety of strata sequences within the Scheme area which are summarised in stratigraphic order in Table 4.1. The abbreviations displayed in Table 4.1 are utilised within the AGS data and throughout this report to refer to specific strata types within the text, graphs and geological long sections included in this report.

Table 4.1: Stratigraphic Summary

Strata	Cohesive	Granular	Rock	Depth to top of Strata (mBGL)
Topsoil (TS)	cTS	gTS	-	Existing Ground Level
Made Ground (MG)	CMG*	GMG*	-	Existing Ground Level
Head (H)	cH	-	-	0.6
Alluvium (A)	CA*	GA*	-	0.1 - 0.3
River Terrace Deposits (RTD)	cRTD	gRTD	-	Existing Ground Level – 1.6
Rutland Formation (RF)	cRF	gRF	RFr	0.3 – 6.0
Lincolnshire Limestone Formation (LL)	cLL	gLL	LLr	Existing Ground Level – 3.0
Grantham Formation (GF)	cGF	gGF	GFr	0.7 – 10.6
Lias Group/Whitby Mudstone Formation (LG)	cLG	-	LGr	1.4 – 16.93

* Fully capitalised abbreviations differ from the others as they are pre-sets available in Holebase Professional.

4.2. Geological Longitudinal Section

A series of geological long section drawings showing the interpreted distribution of superficial deposits and bedrock lithologies along each plan and profile of the proposed development, are included in *Appendix C*.

4.3. Summary of Test Results

The interpreted geological strata outlined in Section 4.1 are expanded upon below. Furthermore, results from relevant in situ and laboratory tests undertaken within each interpreted stratum is presented in tables in the following sub-sections.

4.3.1. Topsoil

Topsoil was encountered extensively across the Scheme from existing ground level. Topsoil may be granular or cohesive. Granular Topsoil (gTS) has been generally described as brown clayey gravelly fine to coarse SAND where gravel clasts were typically angular to sub-round limestone, mudstone and flint. Cohesive Topsoil (cTS) is generally described as brown variably sandy and gravelly SILT or CLAY where gravel is angular to sub-angular flint and limestone. Roots and rootlets were frequently noted in both gTS and cTS. Deposits ranged in thickness from 0.1m (TP02) to 1.2 m (BH25, BH37, BH39) with an average thickness of 0.4 m.

A summary of results of in situ and laboratory tests undertaken on Topsoil are presented in Table 4.2.

Table 4.2: Summary of Topsoil Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	cTS	5	6.8	45	35
Particle Size Distribution	gTS	1	-	-	-
DCP CBR (%)	gTS/cTS	7	2	70	33.3

4.3.2. Made Ground

Deposits of made ground were found across the site from existing ground level. Made ground deposits were generally encountered adjacent to the existing A47 and are therefore anticipated to be associated with the construction of the existing carriageways. Topsoil has also been considered to represent made ground where it has been encountered overlying deposits identified as made ground. Both predominantly granular, and cohesive made ground was encountered.

Granular made ground (GMG) deposits were found to be variable in nature, but were generally described as light to dark grey or brown clayey/silty gravelly SAND or occasionally GRAVEL. Extraneous materials include asphalt, brick, concrete and rootlets. Asphalt fragments were typically encountered in association with the existing A47 alignment and junctions as well as with the access track for the Epingham pumping station. An intact layer of asphalt was encountered in borehole BH21A between 1.7m and 2.0mBGL adjacent to the access road leading past the Epingham pumping station. A mild hydrocarbon odour was noted within the GMG in BH21A between 1.10m and 2.00mBGL.

Cohesive made ground (CMG) deposits were variable in nature but were generally described as brown to dark brown or grey sandy gravelly CLAY occasionally SILT. Extraneous materials include brick, asphalt, plastic, coal and concrete. A mild hydrocarbon odour was noted within the GMG in BH21A between ground level and 0.60mBGL.

Deposits ranged in thickness from 0.05m (TP07) to 3.0m (BH09) with an average of 1.0m. The maximum depth was recorded in BH09 at 3.0m.

A summary of results of in situ and laboratory tests undertaken on Made Ground deposits are presented in Table 4.3.

Table 4.3: Summary of Made Ground Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	CMG	1	14	14	-
	GMG	3	11	24	15
Plastic Limit (%)	CMG/GMG	3	14	20	17
Liquid Limit (%)	CMG/GMG	3	27	33	30
Plasticity Index (%)	CMG/GMG	3	13	13	13
Organic Content (%)	CMG	1	1.3	-	-
Particle Size Distribution	GMG	2	-	-	-
Bulk Density (Mg/m^3) [1]	GMG	1	2.22	-	-
Dry Density (Mg/m^3) [1]	GMG	1	1.97	-	-
Optimum Moisture Content (%)	GMG	1	13	-	-
Maximum Dry Density (Mg/m^3)	GMG	1	1.98	-	-
Lab CBR (%)	GMG	1	12	-	-
DCP CBR (%)	CMG/GMG	3	3	244	42.7
SPT N Value (uncorrected)	CMG	1	12	-	-
	GMG	4	8	50	27

[1] Test results obtained from Lab CBR testing.

4.3.3. Head

Head deposits were encountered in BH02 beneath a layer of topsoil between 0.6m and 1.2mBGL adjacent to the A1 / Great North Road on approach to the A47 intersection. Head deposits were encountered as cohesive material (cH) described as firm grey silty CLAY. No test results are available for the Head Deposits. Given the development of the Scheme, including removal of some elements of the original proposals, it is now considered unlikely that Head Deposits will be encountered.

4.3.4. Alluvium

Alluvium was encountered in TP11, TP12 and BH30 on the north bank of the River Nene. Alluvium was encountered as both granular and cohesive material.

Granular Alluvium (GA) deposits were encountered as brown gravelly SAND with low cobble content and multicoloured sandy GRAVEL. Gravel clasts were typically angular to rounded, fine to coarse flint, sandstone, mudstone, limestone and ironstone. A single Particle Size Distribution (PSD) test (Figure 1, *Appendix D*) was undertaken on a sample of GA, the results corroborate the field descriptions provided in the factual report.

Cohesive Alluvium (CA) deposits were encountered as soft to firm, greyish brown gravelly sandy locally silty CLAY. Gravel clasts were sub-angular and sub-rounded, fine to coarse sandstone, mudstone and limestone. 2 PSDs (Figure 1, *Appendix D*) were undertaken on samples of CA, the results corroborate the field descriptions provided in the factual report. The Atterberg Limits test results show that CA deposits are typically of low to high plasticity clay. A single result plotted as high plasticity silt.

Deposits were encountered between 0.3 and 1.2mBGL in BH30, 0.3 and 2.3mBGL in TP11 and 0.1 and 2.1mBGL in TP12.

A summary of results of laboratory tests undertaken on Alluvium is presented in Table 4.4.

Table 4.4: Summary of Alluvium Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	CA/GA	5	6.8	45	35
Plastic Limit (%)	CA	4	13	32	26
Liquid Limit (%)	CA	4	27	67	54
Plasticity Index (%)	CA	4	14	38	28
Particle Size Distribution	CA/GA	3	Refer to Figure 1, *Appendix D*.		

4.3.5. River Terrace Deposits

River Terrace Deposits (RTD) were generally encountered beneath a layer of topsoil and/or made ground between the BP garage (A47 Nene, Peterborough, PE8 6LB) and the eastern limit of the Scheme. River Terrace Deposits were encountered as interbedded granular and cohesive material.

Granular River Terrace Deposits (gRTD) were typically encountered as light to dark brown and orangish brown variably silty or clayey gravelly SAND or sandy GRAVEL. Gravel clasts were typically angular to rounded, fine to coarse flint, sandstone, mudstone, limestone and ironstone. Twenty-two Particle Size Distribution tests (Figure 2, *Appendix D*) were undertaken on samples of gRTD, the results corroborate the field descriptions provided in the factual report. SPT N values indicate that gRTD deposits range from loose to very dense.

Cohesive River Terrace Deposits (cRTD) were typically encountered as soft to firm, brown and orangish brown gravelly sandy locally silty CLAY occasionally clayey SILT. Gravel clasts were sub-angular and sub-rounded, fine to coarse flint, sandstone and limestone. Four Particle Size Distribution tests (Figure 3, *Appendix D*) were undertaken on samples of cRTD, the results corroborate the field descriptions provided in the factual report. The Atterberg Limits test results showed that cRTD deposits are typically of low to intermediate plasticity clay with one test returning a non-plastic result. There is no clear relationship between plasticity index and depth with results being largely scattered across the range of values. SPT N values indicate that cRTD deposits range from soft to stiff.

Deposits ranged in thickness from 0.4m (BH33) to 5.6m (BH40) with an average of 2.6m. The maximum depth was recorded in BH40 at 5.9mBGL.

A summary of results of in situ and laboratory tests undertaken on River Terrace Deposits are presented in Table 4.5.

Table 4.5: Summary of River Terrace Deposit Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	cRTD	7	10	21	15
	gRTD	8	3.4	20	11.8
Plastic Limit (%)	cRTD	6	11	20	16
	gRTD	3 / 1 Non-Plastic	16	21	18
Liquid Limit (%)	cRTD	6	21	44	33
	gRTD	3 / 1 Non-Plastic	33	41	36
Plasticity Index	cRTD	6	7	27	18
	gRTD	3 / 1 Non-Plastic	12	23	18
Particle Size Distribution	cRTD/gRTD	26	Refer to Figure 2 / Figure 3, *Appendix D*		
Bulk Density, γ (Mg/m^3) [1]	gRTD	5	1.66	2.29	1.96
Dry Density (Mg/m^3) [1]	gRTD	4	1.51	2.05	1.77
Optimum Moisture Content (%)	gRTD	4	9	12	10.4
Maximum Dry Density (Mg/m^3)	gRTD	4	-	2.05	-
Lab CBR (%)	gRTD	5	10	37	18.4
DCP CBR (%)	gRTD/cRTD	7	4	104	-
SPT N Value (uncorrected)	cRTD	5	7	21	15
	gRTD	19	8	50 (refusal)	29

[1] Test results obtained from Lab CBR testing

4.3.6. Rutland Formation

The Rutland Formation (RF) was encountered within the Scheme from east of Sutton Heath Road (approximate chainage Ch.1350m) to the eastern extent of the Scheme underlying superficial deposits. The RF comprises interbedded rock, granular and cohesive soil.

Rutland Formation rock (RFr) was typically encountered as extremely weak to very weak, light brown or yellowish brown, frequently iron stained, frequently sandy LIMESTONE.

Granular Rutland Formation (gRF) was typically encountered as very dense orangish brown clayey, silty, frequently gravelly, fine to coarse SAND. Gravel clasts consisted of sub-angular and sub-rounded, fine to coarse sandstone and limestone. A single Particle Size Distribution test (Figure 4, *Appendix D*) was undertaken on a sample of gRF, the results corroborate the field descriptions provided in the factual report. SPT N values indicate that gRF deposits are very dense.

Cohesive Rutland Formation (cRF) was typically encountered as firm to very stiff, light grey and orangish brown sandy locally gravelly silty CLAY. Gravel clasts consisted of sub-angular and sub-rounded, fine to coarse mudstone and ironstone. Two Particle Size Distribution tests (Figure 4, *Appendix D*) were undertaken on samples of cRF, the results corroborate the field descriptions provided in the factual report. The Atterberg Limits test results show that deposits are typically of low plasticity clay with one result indicating intermediate plasticity silt and two tests returning non-plastic results. SPT N correlation (after Stroud, 1989)[36] with undrained shear strength (c_u) indicates that cRF deposits range from very stiff to hard.

The vertical extent of the Rutland Formation was not proven by rotary drilling methods. Rutland Formation deposits were encountered at depths between 0.3mBGL (TP30) and 8.1mBGL (BH38). A maximum (unproven) thickness of 3.6m was encountered in BH38 from 4.5m to 8.1mBGL.

A summary of results of in situ and laboratory tests undertaken on Rutland Formation deposits are presented in Table 4.6.

Table 4.6: Summary of Rutland Formation Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	cRF	4	10	24	18
	gRF	1	8.6	-	-
Plastic Limit (%)	cRF	3 / 1 Non-Plastic	13	29	21
	gRF	1 Non-Plastic	-	-	-
Liquid Limit (%)	cRF	3 / 1 Non-Plastic	28	47	37
	gRF	1 Non-Plastic	-	-	-
Plasticity Index	cRF	3 / 1 Non-Plastic	13	18	15
	gRF	1 Non-Plastic	-	-	-
Particle Size Distribution	cRF/gRF/RFr	3	Figure 4, *Appendix D*		
SPT N Value (uncorrected)	cRF	4	29	51	44
	gRF	7	50 (refusal)	59	-
	RFr	4	50 (refusal)	50 (refusal)	-

4.3.7. Lincolnshire Limestone Formation

The Lincolnshire Limestone Formation (LL) includes the Upper Lincolnshire Limestone Member (ULL) and the Lower Lincolnshire Limestone Member (LLL). Within the Scheme the ULL is mapped as being present in the vicinity of the A1/ A47 intersection. The LLL is mapped as being present between the BP garage and the western extent of the Scheme and in the vicinity of where Sutton Heath Road intersects the A47. For the purposes of classification and assigning engineering parameters the LL has been considered as a whole including the ULL and LLL members. Deposits of LL were predominantly encountered as rock with interbeds of granular and cohesive soil from ground level or beneath superficial or made ground deposits.

Lincolnshire Limestone Formation rock (LLr) was typically encountered as very weak to medium strong, yellowish brown, light grey and orangish brown, weathered sandy LIMESTONE. Calcite cement and iron staining were commonly found on joint and fracture surfaces. Dissolution features, including voids, were noted within the LL in BH03, BH03A and BH13.

The rock quality designation (RQD) for the LLr varied between 0% and 37% indicating very poor to poor rock quality. The average RQD was 1.8% indicating very poor rock quality (Deere & Deere, 1988)[27].

Granular Lincolnshire Limestone Formation (gLL) was typically encountered as medium to very dense yellowish brown, orangish brown, light brown and dark brown clayey, gravelly, fine to coarse SAND with low to medium cobble content of angular and sub-angular limestone. Gravel clasts consist of angular and sub-angular, fine to coarse Limestone. Eight Particle Size Distribution tests (Figure 5) were undertaken on samples of gLL, the results corroborate the field descriptions provided in the factual report. SPT N values indicate that gLL deposits range from loose to very dense.

Cohesive Lincolnshire Limestone Formation (cLL) was typically encountered as firm to very stiff locally soft, yellowish brown, orangish brown, light brown and dark brown sandy gravelly locally silty CLAY. Gravel clasts consisted of angular and sub-angular, fine to coarse limestone. A single Particle Size Distribution test (Figure 6) was undertaken on a sample of cLL, the results corroborate the field descriptions provided in the factual report. The Atterberg Limits test results show that the cLL deposits are typically of low to intermediate plasticity clay with one test indicating intermediate plasticity silt and another returning a non-plastic result. SPT N correlation (after Stroud, 1989)[36] with undrained shear strength (c_u), indicate that cLL deposits range from stiff to hard.

Lincolnshire Limestone deposits ranged in thickness from 0.6m (TP26) to 11.7m (BH32) with an average of 4.7m. The maximum depth was recorded in BH32 at 12.3mBGL.

Zones of what has been described as reworked Lincolnshire Limestone were encountered in BH12, BH13 and TP04 between ground level and 0.5mBGL.

A summary of results of in situ and laboratory tests undertaken on Lincolnshire Limestone Formation deposits are presented in Table 4.7.

Table 4.7: Summary of Lincolnshire Limestone Formation Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	cLL	4	11	30	21
	gLL	3	8.8	22	14.3
	LLr	1	18	-	-
Plastic Limit (%)	cLL	2 / 1 Non-Plastic	9	20	-
	gLL	3	13	26	18
	LLr	1	16	-	-
Liquid Limit (%)	cLL	2 / 1 Non-Plastic	31	44	-
	gLL	3	25	40	31
	LLr	1	42	-	-
Plasticity Index	cLL	2 / 1 Non-Plastic	22	24	18.7
	gLL	3	12	14	13
	LLr	1	26	-	-
Particle Size Distribution	cLL/gLL	9	Figure 5 / Figure 6, *Appendix D*		
SPT N Value (uncorrected)	cLL	4	23	50 (refusal)	39
	gLL	24	7	68	32
	LLr	20	5	58	41
Shear Box Peak Shear Stress (kPa)	gLL	1	138.9	-	-
Shear Box Peak Angle of Friction (°)	gLL	1	29.8	-	-
Bulk Density (Mg/m^3)	gLL	1	1.75	-	-
Dry Density (Mg/m^3)	gLL	1	1.46	-	-
Point Load Index, Is50 (Mg/m^2)	LLr	31	0	4.7	1.2
Uniaxial Compressive Strength (Mg/m^2)	LLr	3	5.11	9.92	7.78
RQD (%)	cLL/gLL/LLr	65	0	37	1.8
DCP CBR (%)	cLL/gLL/LLr	3	4	181	-

4.3.8. Grantham Formation

The Grantham Formation (GF) was encountered underlying the LL from the BP garage to the western extent of the Scheme and underlying made ground or superficial deposits in the centre of the Scheme between the BP garage and Sutton Heath Road (approximate chainage Ch.1350m). Deposits of GF were predominantly encountered as interbedded granular and cohesive soil with occasional thin rock strata.

Where material has been logged as Northampton Sand Formation this has been interpreted by Sweco to represent Grantham Formation and therefore any geotechnical test results for this material has been combined with those received for Grantham Formation.

Grantham Formation rock (GFr) was typically encountered as extremely weak to weak, grey, yellowish brown, orangish brown, reddish brown sandy MUDSTONE, fine grained LIMSESTONE and fine-grained ferruginous SANDSTONE. Iron staining was commonly found on joint and fracture surfaces.

The rock quality designation (RQD) for the GFr varied between 0% and 50% indicating very poor to poor rock quality. The mean RQD was 1.4% indicating very poor rock quality (Deere & Deere, 1988)[27]. Point load testing wasn't undertaken on samples of GFr as this unit was only encountered as thin bands less of less than 1m in thickness. GFr was not thought to be representative of the rock/soil mass as a whole.

Granular Grantham Formation (gGF) was typically encountered as dense to very dense, occasionally loose, yellowish brown, orangish brown, reddish brown, brown and grey occasionally clayey, occasionally silty, occasionally gravelly, fine to coarse SAND or occasionally clayey or silty, fine to coarse sandy GRAVEL. Gravel is angular and sub-angular, fine to coarse, Limestone, Ironstone, ferruginous sandstone and mudstone. Nineteen Particle Size Distribution tests (Figure 7) were undertaken on samples of gGF, the results corroborate the field descriptions provided in the factual report. SPT N values indicate that the density of the gGF deposits range from loose to very dense.

Cohesive Grantham Formation (cGF) was typically encountered as firm to very stiff, locally soft, orangish brown, light to dark grey fine to coarse sandy locally gravelly locally silty CLAY. Gravel clasts consisted of sub-angular and sub-rounded, fine to coarse limestone, sandstone, mudstone, siltstone and ironstone. Silt lenses, lignite and pyrite are common. Nine Particle Size Distribution tests (Figure 8) were undertaken on samples of cGF, the results corroborate the field descriptions provided in the factual report. The Atterberg Limits results show that the cGF deposits are typically of low to high plasticity clay with one test indicating extremely high plasticity clay and four tests indicating low plasticity silt. There is no clear relationship between plasticity index and depth with results being largely scattered across the range of values. SPT N correlation (after Stroud, 1989)[36] with undrained shear strength (c_u), indicate that cGF deposits range from very soft to hard.

Grantham Formation deposits ranged in thickness from 0.5m (BH01) to 7.58m (BH33) with an average of 3.8m. The maximum depth was recorded in BH32 at 16.9mBGL. The BGS Lexicon[13] of named rock units states that GF thickness is typically 2m to 5m thick but may be up to 15m thick in channels.

A summary of results of in situ and laboratory tests undertaken on Grantham Formation deposits are presented in Table 4.8.

Table 4.8: Summary of Grantham Formation Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	cGF	49	7.6	50	22.3
	gGF	3	18	24	21
Plastic Limit (%)	cGF	41	9	35	20.8
Liquid Limit (%)	cGF	41	27	100	44.6
Plasticity Index	cGF	41	5	65	23.7
Organic Content (%)	cGF/gGF/GFr	9	0.1	2.5	1.2
Particle Size Distribution	cGF/gGF	28	Figure 7 / Figure 8, *Appendix D*		
Particle Density (kg/m^3)[1]	cGF	2	2.59	2.65	-
Bulk Density (Mg/m^3)	cGF	11	1.68	2.36	1.96
Dry Density (Mg/m^3)	cGF	11	1.49	2.05	1.7
Coefficient of Volume Compressibility, m_v (m^2/MN)	cGF	2	Figure 34, *Appendix D*		
Shear Box Peak Shear Stress (kPa)	gGF	3	116.4	175.5	138.3
Shear Box Peak Angle of Friction (°)	gGF	3	30.3	31.6	30.8
Shear Strength (Undrained) (kPa)	cGF	7	27	450	135
SPT N Value (uncorrected)	cGF	37	3	50 (refusal)	18
	gGF	36	8	50 (refusal)	27
	GFr	1	50 (refusal)	-	-
Uniaxial Compressive Strength (Mg/m^2)	GFr	1	7.71	-	-
RQD (%)	cGF/gGF/GFr	75	0	50	1.4

[1] Test results include single value from oedometer test.

4.3.9. Lias Group / Whitby Mudstone Formation

The Lias Group is the parent unit of the Whitby Mudstone Formation (BGS Lexicon)[13], with deposits of the latter encountered across the scheme as the most basal unit, underlying all other strata. Lias Group deposits at relatively shallow depth, underlying made ground or superficial deposits, were typically encountered within the flood plain of the Nene River. Deposits of LG were predominantly encountered as cohesive soil with occasional rock strata.

Lias Group rock (LGr) was typically encountered as extremely weak to moderately strong grey, dark grey occasionally orange brown, commonly fossiliferous MUDSTONE. Iron staining was commonly found on joint and fracture surfaces. Jointing in the LGr was recorded as partly open in BH16 at 10.19mBGL.

The rock quality designation (RQD) for the LGr varied between 0% and 10% indicating very poor rock quality. The average RQD was 0.1% indicating very poor rock quality (Deere & Deere, 1988)[27].Cohesive Lias Group (cLG) was typically encountered as firm to very stiff, indistinctly or thinly laminated, grey to dark grey and bluish grey, locally sandy, locally silty, fossiliferous CLAY tending to extremely weak mudstone. Eleven Particle Size Distribution tests (Figure 9, *Appendix D*) were undertaken on samples of cLG, the results corroborate the field descriptions provided in the factual report. The Atterberg Limits results show that the cLG deposits are typically of low to high plasticity clay with one test indicating very high plasticity clay and one test indicating high plasticity silt. There is no clear relationship between plasticity index and depth with results being largely scattered across the range of values. SPT N correlation (after Stroud, 1989)[36] with undrained shear strength (c_u), indicate that cLG deposits range from soft to hard.

Fissures were noted within the cLG in two boreholes; BH27 and BH30. The cLG was encountered between 5.5mBGL and 15mBGL at termination of the boreholes. at 5.6Mbgl and 10mBGL. In both occurrences, the fissures were recorded as very closely spaced and polished. However, the description given in the logs applies to the deposits as a whole rather than referencing specific depths at which these features were encountered. In addition, polished fissures were also noted in trial pits TP09A and TP15 at 1.4mBGL and 2.3mBGL respectively.

The vertical extent of the LG was not proven by rotary drilling methods. The observed thickness of LG deposits encountered ranged from 1.35m (BH19) to 14.59m (BH14A). The maximum (unproven) depth was recorded in BH32 at 25.94mBGL. The BGS Lexicon[13] of named rock units states that the Whitby Mudstone Formation may be up to 120m thick.

A summary of results of in situ and laboratory tests undertaken on Lias Group deposits are presented in Table 4.9.

Table 4.9: Summary of Lias Group Test Results

Properties	Strata	Number of Tests	Minimum Value	Maximum Value	Mean Value
Moisture Content (%)	cLG	83	10	30	21.1
Plastic Limit (%)	cLG	62	2.0	31	23.8
Liquid Limit (%)	cLG	62	40	72	56.7
Plasticity Index	cLG	62	21	60	33
Particle Size Distribution	cLG	11	Figure 9, *Appendix D*		
Measured Swelling Pressure (kPa)	cLG	3	10	60	40
Particle Density (kg/m^3)[1]	cLG	10	2.63	2.66	2.65
Bulk Density (Mg/m^3)	cLG	33	1.84	2.44	2.1
Dry Density (Mg/m^3)	cLG	33	1.46	2.04	1.7
SPT N Value (uncorrected)	cLG	81	4	67	35
Coefficient of Volume Compressibility, m_v (m^2/MN)	cLG	8	Figure 34, *Appendix D*		
Shear Strength (Undrained) (kPa)	cLG	25	42	630	128.5
Point Load Index, Is50 (Mg/m^2)	LGr	2	0.2	1.1	-
Uniaxial Compressive Strength (Mg/m^2)	LGr	2	7.3	9.87	-
RQD (%)	cLG/LGr	107	0	10	0.1

[1] Test results include values from oedometer and swelling tests.

4.4. Methodology for Determining Global Material Properties

The derived values were determined for each geotechnical parameter in accordance with BS EN 1997-1 & 2 by correlation with values measured directly from available in situ and laboratory testing, or by correlation with values derived empirically and/or indirectly from the available testing. Where data was limited or lacking a discernible trend, a range of values has been given. Where it was not possible to derive values directly or indirectly, published guideline values were consulted to establish appropriate values for the material property.

Global characteristic values were preferentially determined by 'cautious estimate' of derived values from the available ground data. Where it was not possible to determine characteristic values from directly or indirectly derived assessment, characteristic values were determined by cautious estimate of published guideline values. In some cases, engineering judgment and experience has been used to assign characteristic values.

The rationale is as follows:

- The global characteristic Value, X_k was typically determined from a representative lower bound or higher bound values or calculated engineering assessment derived from test results;
- In instances where the above values for a material may be seen as unrepresentative or where values are not available, based on engineering judgment and experience, published guideline values were consulted to establish appropriate cautious characteristic values for the particular material.

Due to nature of the ground investigation data available and the variability of encountered materials, the site wide assessment has adopted a cautious approach to estimating material parameters. This approach develops the risk that some parameters may have been overestimated or underestimated to provide a suitably robust conservative margin of safety for use in site wide design. However, a designer may conclude that a location specific assessment of parameters is more appropriate for detailed design.

The following sections provide a basis for the interpretative parameters provided in Section 4.5. Where applicable, relevant Charts and Plots to support interpretation are provided in *Appendix D*.

4.4.1. Material Descriptions

Material descriptions were determined from the available BGS mapping, exploratory hole logs, in-situ testing, laboratory test results and geotechnical/geological experience.

4.4.2. Unit Weight

Bulk density testing was carried out across the site. Consequently, characteristic soil values were determined by utilising direct laboratory bulk density testing and reviewed against published guideline values.

Characteristic values of unit weight for bedrock were obtained by direct assessment of measured values from laboratory testing and cautious estimate from published guideline values.

4.4.3. Atterberg Limits

Atterberg limit tests were undertaken to provide Liquid Limit, Plastic Limit and Plasticity Index values. Plasticity indices are also used in the correlation for a range of design parameters as seen in subsequent subsections.

4.4.4. Undrained Shear Strength

Direct measurement of undrained shear strength was carried out through targeted laboratory triaxial testing of suitable cohesive materials.

Where appropriate, undrained shear strength values for cohesive soils were also derived indirectly from SPT N-values by application of a factor (f_1) based on the plasticity index of the material. This factor was determined using Stroud's relationship (Figure 1.5, Tomlinson, Seventh Edition)[28].

4.4.5. Drained Shear Strength

For granular soils, characteristic values for the effective angles of shearing resistance were determined empirically using SPT N-values and by direct measurement using shear box tests. Where SPT test or shear box test data was not available, the effective angles of shearing resistance were determined based on estimates from published guideline values and experience.

Values for the effective angles of shearing resistance of natural cohesive soils were determined empirically for each material type using laboratory plasticity index values.

4.4.6. Deformation Modulus

The undrained deformation modulus for cohesive soils was determined by cautious estimate of values derived by application of correlation factors (Section 4.1 of CIRIA Report 103)[29] to the derived undrained shear strength values; and by correlation with available SPT N-values (CIRIA Report 143, Figure 38)[30]. However, based on published values for various soil types, upper bound limits are set for test results considered so that values exceeding these limits for a particular soil type were excluded from the assessment. The correlations were applied cautiously and the values from the two methods were compared. The CIRIA Report 103 relationship is shown below:

- Eu = (in general range 100 to 600) x c_u

A correlation factor of 150 was used for very low/low strength soils, 200 was used for medium strength soils and at least 400 was used for high to very high strength soils depending on the presence of fine and coarse materials.

Results of both methods were compared with published guideline values and over-estimated derived values were discounted. An appropriate characteristic value was then adopted based on the mean value or lower bound estimate and application of engineering judgment and experience.

Values for the drained deformation modulus for cohesive soils were determined using the Skempton and Bjerrum (1957)[31] relationship between the drained Deformation modulus and modulus volume compressibility:

- E'=1/m_v

The drained deformation modulus (E') for granular soils was derived from the SPT N-value using the following lower-bound relationship proposed by Stroud (1989)[32]:

- E' = 0.9 x N.

The drained deformation modulus (E') for weak rocks was derived from the SPT N-value using the following relationship proposed by Stroud (1989)[32]:

- E'/N = 0.5 – 2.0 (MPa).

4.4.7. California Bearing Ratio

The available DCP and laboratory test results are supplemented with correlation between plasticity indices and subgrade in accordance with CS 229 Revision 0 (2020)[33] and IAN73/06 Revision 1 (2009)[34], and as well CBR values conservatively derived from undrained cohesion for cohesive materials using the following approximate relationship:

- CBR = Cu / 23, where c_u is the undrained cohesion in kPa.

CBR values for granular materials were estimated based on published guidance in accordance with IAN73/06 Revision 1 (2009)[34].

Laboratory and derived CBR values that where considered to be abnormal or unrepresentative were discounted. Cautious estimates of characteristic CBR values were subsequently made based on the available laboratory data, derived data, published guideline values, engineering judgement and experience.

Due to the wide range of CBR values derived Lab tests and correlation with in-situ tests, global parameters have not been assigned. It is recommended that CBR values are derived on a localised basis from the closest available exploratory hole. California Bearing Ratio profiles derived from individual DCP probes are displayed in the Soils Limited Factual report (Soils Limited Factual Report *Appendix A.2* (17076/FGIR).

4.4.8. Compaction Properties

The dry density/moisture content relationship test results were obtained from direct laboratory testing and correlated with published guideline values, engineering judgment and experience.

4.4.9. Swelling Properties

Clay swelling pressure test results were obtained from direct laboratory testing and correlated with published values, engineering judgement and experience.

4.4.10. Coefficient of Volume Compressibility

Consolidation properties are used to determine the anticipated settlement of both fine and granular materials. Global characteristic values are produced based on both laboratory testing and accepted correlations.

Where appropriate, modulus of volume compressibility consolidation properties was derived indirectly from SPT N-values and plasticity index by application of a factor. This factor was determined using Stroud's relationship between modulus of volume compressibility, plasticity index and SPT N-Value (Figure 1.5, Tomlinson, Seventh Edition)[28].

4.4.11. Uniaxial Compressive Strength

Where SPTs have refused at the transition to bedrock (N>50), N values have been extrapolated in order to aid classification of rock strength in accordance with Clayton (1995)[30]. These extrapolated values have been converted to an equivalent unconfined compressive strength (UCS) using the following correlation from CIRIA 181, 1999[35]:

- $\sigma_c = 2c_u$

4.4.12. CPT

A total of 5 CPT's were undertaken during the Soils Limited ground investigation. A number of parameters can be derived from the friction sleeve resistance and cone resistance values generated by the CPT. These include; relative density, undrained shear strength, overconsolidation ratio, soil sensitivity, SPT 'N_{60}', peak friction angle for granular and cohesive soils, coefficient of volume change (m_v), and Young's modulus (E'). Profiles of these parameters against depth are included in the Lankelma CPT report (P-107008-1R00CP).

The CPT derived parameters have been used to verify the global parameters and parameter ranges given in Section 4.5.

4.4.13. BRE Ground Aggressivity Properties

Concrete Aggressivity testing was carried out within the different material types for the Scheme. Characteristic values were determined using the method outlined in the BRE Special Digest 1: 2005 The derived characteristic values were used to determine the appropriate ACEC Class in accordance with section C5 and Tables C1 and C2 of the BRE Special Digest 1: 2005[38].

4.5. Material Properties Site Wide (Global Parameters)

This section provides an evaluation of the ground conditions and material properties of materials encountered underlying the Scheme and should be read in conjunction with the interpreted geology drawings, summary tables and material properties plots, included within the appendices to this report respectively.

Where appropriate, global characteristic geotechnical parameters values are suggested. However, it should be noted that all geotechnical parameters should be re-assessed locally by the Designer during detailed design.

4.5.1. Topsoil

Topsoil is anticipated to be stripped prior to construction, stockpiled during construction and reinstated on completion of the works. Global geotechnical parameters have not been determined for topsoil as it is not considered a structural material.

4.5.2. Made Ground

Made ground deposits typically exhibit considerable lateral and vertical variation in strength and composition. A limited amount of in-situ and laboratory data was undertaken on made ground deposits, detailed in Section 4.3. The range of properties are presented below in Table 4.10. Due to the inherent variability if made ground characteristic design parameters have not been selected.

Due to the material heterogeneity of the made ground, it is not considered to provide a suitable founding stratum.

Table 4.10: Summary of Made Ground

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	11	24	-	-
Unit Weight (kN/m^3)	-	-	-	-	-
Plasticity Index (%)	Atterberg Limits Test	13	13	-	-
SPT N	SPT test	12	-	-	-
California Bearing Ratio (CBR) (%)	Lab CBR	12%	-	-	-
	DCP	3%	244%	Soils Limited Factual Report *Appendix A.2* (17076/FGIR)	

4.5.3. Alluvium

Limited in-situ and laboratory testing is available for this material and as such, global geotechnical parameters have not been provided for alluvium. It is recommended that parameters are derived on a local basis during detailed design. Additional targeted ground investigation is recommended.

Limited in-situ and laboratory testing is available for this material. However, based on the available information, the material parameter ranges presented in Table 4.11 are considered appropriate.

Alluvium was generally encountered at the margin of the Scheme where less exploratory holes were undertaken and therefore, we were unable to gain a full understanding of the distribution of the granular and cohesive elements within the stratum and their representative parameters. As such, the parameters presented in Table 4.11 are considered appropriate as a relatively cautious global assessment for both the cohesive and granular constituents of Alluvium. Where insufficient information is present, a more detailed assessment on a location by location basis is likely to be necessary.

Table 4.11: Summary of Alluvium Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content Test	6.8	45	Figure 29, *Appendix D*	-
Unit Weight (kN/m^3)	Published values[36]	-	-	-	17 - 19
Plasticity Index (%)	Atterberg Limits Test	14	38	Figure 10, *Appendix D*	14 - 38

4.5.4. River Terrace Deposits

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.12 are inferred for cohesive River Terrace deposits.

Table 4.12: Summary of River Terrace Deposits – Cohesive Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	10	21	Figure 30 *Appendix D*	-
Plasticity Index (%)	Atterberg Limits test	7	27	Figure 11, *Appendix D*	27
Unit Weight (kN/m^3)	Engineering judgement	-	-	-	18 - 19
SPT N	SPT test	7	21	Figure 16, *Appendix D*	-
Undrained Shear Strength, c_u (kPa)	SPT correlation (Stroud, 1975)[28]	32	95	Figure 21, *Appendix D*	30 - 50
Coefficient of Volume Compressibility, m_v (m^2/MN)	SPT correlation (Stroud, 1975)[28]	0.1	0.3	-	0.3
Undrained Deformation Modulus, E_u (MPa)	c_u correlation (CIRIA Report 103)[29]	6.4	19	-	6 - 10
Drained Deformation Modulus, E' (MPa)	m_v correlation (Skempton and Bjerrum, 1957)[31]	3.3	10	-	3 - 6
Drained Friction Angle, φ' (º) [1]	Engineering judgement	25	35	-	25 - 28
Effective cohesion, c'	Engineering judgement	-	-	-	0
California Bearing Ratio (CBR) (%)	DCP	27	61	Soils Limited Factual Report *Appendix A.2* (17076/FGIR)	>4
	c_u correlation	1.4	4.1	-	

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.13 are inferred for granular River Terrace deposits.

Table 4.13: Summary of River Terrace Deposits – Granular Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	3.4	20	Figure 31, *Appendix D*	-
Unit Weight (kN/m^3)	Bulk density test	16.28	22.47	-	16 - 19
SPT N	SPT test	8	50	Figure 16, *Appendix D*	-
Drained Friction Angle, φ' (º)	SPT correlation (Peck, 1974)	30	41		28 - 34
Drained Deformation Modulus, E' (MPa)	SPT correlation (Stroud, 1989)[32]	7.2	45	-	7 - 40
California Bearing Ratio (CBR) (%)	Lab CBR	10	37	-	>4
	DCP	4	104	Soils Limited Factual Report *Appendix A.2* (17076/FGIR)	

4.5.5. Rutland Formation

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.14 are inferred for cohesive Rutland Formation.

Table 4.14: Summary of Rutland Formation – Cohesive Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	10	24	Figure 31, *Appendix D*	-
Plasticity Index (%)	Atterberg Limits test	13	18	Figure 12, *Appendix D*	13 - 18
Unit Weight (kN/m^3)	Engineering judgement	-	-	-	19
SPT N	SPT test	29	51	Figure 17, *Appendix D*	-
Undrained Shear Strength, c_u (kPa)	Material description and SPT correlation (Stroud, 1975)[28]	131	230	Figure 22, *Appendix D*	–100 - 200
Coefficient of Volume Compressibility, m_v (m^2/MN)	SPT correlation (Stroud, 1975)[28]	0.04	0.07	-	0.04 – 0.1
Undrained Deformation Modulus, Eu (MPa)	cu correlation (CIRIA Report 103)[29]	52.4	92	-	50 - 90
Drained Deformation Modulus, E' (MPa)	mv correlation (Skempton and Bjerrum, 1957)[31]	14.3	25	-	14 - 25
Drained Friction Angle, φ' (º)[1]	Published values and Engineering judgement	31 (Clayey sands, sandy-clay mix - compacted)	-	-	26 - 30
Effective cohesion, c'	Engineering judgement				0
California Bearing Ratio (CBR) (%)	c_u correlation	5.7%	10%	-	–>4

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.15 are inferred for granular Rutland Formation.

Table 4.15: Summary of Rutland Formation – Granular Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	8.6	-	Figure 31, *Appendix D*	-
Unit Weight (kN/m^3)	Engineering judgement	-	-	-	19 - 21
SPT N	SPT test	50 (refusal)	59 (refusal)	Figure 17, *Appendix D*	-
Drained Friction Angle, φ' (º)[1]	Engineering Judgement	-	-	-	35
Drained Deformation Modulus, E' (MPa)	SPT correlation (Stroud, 1989)[32]	45	53.1	-	45 – 50
California Bearing Ratio (CBR) (%)	Engineering judgement and material description	-	-	-	>6

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.16 are inferred for Rutland Formation rock.

Table 4.16: Summary of Rutland Formation - Rock Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Unit Weight (kN/m^3)	Published values[36]	-	-		22
SPT N	SPT N test	50 (refusal)	50 (refusal)	Figure 17, *Appendix D*	-
Extrapolated SPT N refusal	SPT N test	200	500	-	-
Drained Deformation Modulus, E' (MPa)	SPT correlation Stroud (1989) 32	100	250	-	100 - 250
UCS (MPa)	Extrapolated SPT N correlation Clayton (1995)[30]	1.8	4.5	Figure 26, *Appendix D*	2 – 4.0

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

4.5.6. Lincolnshire Limestone Formation

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.17 are inferred for cohesive Lincolnshire Limestone Formation.

Table 4.17: Summary of Lincolnshire Limestone Formation – Cohesive Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	11	30	Figure 32, *Appendix D*	-
Plasticity Index (%)	Atterberg Limits test	12	26	Figure 13, *Appendix D*	-
Unit Weight (kN/m^3)	Engineering Judgement	-	-	-	19
SPT N	SPT test	23	50	Figure 18, *Appendix D*	-
Undrained Shear Strength, c_u (kPa)	SPT correlation (Stroud, 1975)[28]	104	225	Figure 23, *Appendix D*	100 - 200
Coefficient of Volume Compressibility, m_v (m^2/MN)	SPT correlation (Stroud, 1975)[28]	0.04	0.09	-	0.05 – 0.1
Undrained Deformation Modulus, Eu (MPa)	cu correlation (CIRIA Report 103)[29]	41.6	90	-	40 - 90
Drained Deformation Modulus, E' (MPa)	mv correlation (Skempton and Bjerrum, 1957)[31]	11.1	25	-	10 - 25
Drained Friction Angle, φ' (º)[1]	Published values	31 (Clayey sands, sandy-clay mix - compacted)	-	-	26 - 28
Effective cohesion, c'	Engineering judgement				0
California Bearing Ratio (CBR) (%)	DCP	4	92	Soils Limited Factual Report *Appendix A.2* (17076/FGIR)	–>4
	c_u correlation	4.5	9.8	-	

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.18 are inferred for granular Lincolnshire Limestone Formation.

Table 4.18: Summary of Lincolnshire Limestone Formation – Granular Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	8.8	22	Figure 32, *Appendix D*	-
Unit Weight (kN/m^3)	Bulk density and Engineering Judgement	17.17	-	-	19
SPT N	SPT test	7	68 (refusal)	Figure 18, *Appendix D*	-
Drained Friction Angle, φ' (º)	Shear Box	29.8	-	-	30
	SPT correlation (Peck, 1974)[28]	30	42	-	
Drained Deformation Modulus, E' (MPa)	SPT correlation Stroud, (1989)[32]	6.3	61.2	--	6 – 60
California Bearing Ratio (CBR) (%)	DCP	17	69	-	–>10

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.19 are inferred for Lincolnshire Limestone Formation Rock.

Table 4.19: Summary of Lincolnshire Limestone Formation - Rock Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	18	-	-	-
Unit Weight (kN/m^3)	Engineering Judgement	-	-	-	22
SPT N	SPT test	5	58 (refusal)	Figure 18, *Appendix D*	-
Extrapolated SPT 'N'	SPT test	63	750	-	-
Drained Deformation Modulus, E' (MPa)	SPT correlation Stroud, (1989)[32]	31.5	375	-	30 - 375
UCS (MPa)	Point load	2.3	108.1	Figure 27, *Appendix D*	5 - 10
	Direct UCS	5.11	9.92		
	Extrapolated SPT N correlation Clayton (1995)[30]	0.56	6.75		

4.5.7. Grantham Formation

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.20 are inferred for cohesive Grantham Formation.

Table 4.20: Summary of Grantham Formation – Cohesive Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	7.6	50	Figure 33, *Appendix D*	-
Plasticity Index (%)	Atterberg Limits test	5	65	Figure 14, *Appendix D*	-
Unit Weight (kN/m^3)	Bulk density test	16.48	23.15	-	19
SPT N	SPT test	3	50 (refusal)	Figure 19, *Appendix D*	-
Undrained Shear Strength, c_u (kPa)	SPT correlation (Stroud, 1975)[28]	14	225	Figure 24, *Appendix D*	Between 0 and 2mBGL c_u = 30 Below 2mBGL c_u = 30 + 11.6(z-2) where z = depth BGL
	Triaxial Test	27	450		
Coefficient of Volume Compressibility, m_v (m^2/MN)	Oedometer test at δ'v = 100kN/m^2	0.2	-	Figure 34, *Appendix D*	0.2
	SPT correlation (Stroud, 1975)[28]	0.04	0.74	-	
Undrained Deformation Modulus, Eu (MPa)	c_u correlation (CIRIA Report 103)[29]	5.6	180	-	6 - 50
Drained Deformation Modulus, E' (MPa)	mv correlation (Skempton and Bjerrum, 1957)[31]	1.35	25	-	3 - 10
Drained Friction Angle, φ' (º) [1]	Published values	31 (Clayey sands, sandy-clay mix - compacted)	-	-	26 - 28
Effective cohesion, c'	Engineering judgement				0
California Bearing Ratio (CBR) (%)	c_u correlation	0.6	19.6	-	<2.5 – 15

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.21 are inferred for granular Grantham Formation.

Table 4.21: Summary of Grantham Formation – Granular Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	18	24	Figure 33, *Appendix D*	-
Unit Weight (kN/m^3)	Bulk density test	-	-	-	16 - 19
SPT N	SPT test	8	50 (refusal)	Figure 19, *Appendix D*	-
Drained Friction Angle, φ' (º)	Shear Box	30.3	31.6	-	30
	SPT correlation (Peck, 1974)[28]	30	42	-	
Drained Deformation Modulus, E' (MPa)	SPT correlation Stroud, (1989)[32]	7.2	45	-	8 - 20
California Bearing Ratio (CBR) (%)	Engineering judgement and material description	-	-	-	>6

Rock strata were encountered within the GF however insufficient material was recovered to perform geotechnical tests and inform characteristic parameters. Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.22 are inferred for Grantham Formation Rock.

Table 4.22: Summary of Grantham Formation - Rock Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Unit Weight (kN/m^3)	Published value	-	-	-	22
SPT N	SPT test	50 (refusal)	-	Figure 19, *Appendix D*	-
Extrapolated SPT N	SPT test	300	-	-	-
Drained Deformation Modulus, E' (MPa)	SPT correlation Stroud, (1989)[32]	150	-	-	-100 - 150
UCS (MPa)	Extrapolated SPT N correlation Clayton (1995)[30]	2.7	-	-	>2-

4.5.8. Lias Group/Whitby Mudstone Formation

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.23 are inferred for cohesive Lias Group.

Table 4.23: Summary of Lias Group – Cohesive Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Moisture Content (%)	Moisture Content test	10	30	Figure 33, *Appendix D*	-
Plasticity Index (%)	Atterberg Limits test	21	60	Figure 15, *Appendix D*	33
Unit Weight (kN/m^3)	Bulk density	18.05	23.94	-	21
SPT N	SPT test	4	67	Figure 20, *Appendix D*	-
Undrained Shear Strength, c_u (kPa)	SPT correlation (Stroud, 1975)[28]	18	302	Figure 25, *Appendix D*	Between 0 and 4mBGL c_u = 50 Below 4mBGL c_u = 50 + 8(z-4) where z = depth BGL [2]
	Triaxial Test	42	630		
Coefficient of Volume Compressibility, m_v (m^2/MN) [4]	Oedometer test at δ'v = 100kN/m^2	0.15	0.7	Figure 34, *Appendix D*	0.1 - 0.2
	SPT correlation (Stroud, 1975)[28]	0.03	0.56	-	
Drained Friction Angle, φ' (º) [1]	Published values	19 (high plasticity clay)	28 (low plasticity clay)	-	23 - 25
Undrained Deformation Modulus, Eu (MPa)[4]	c_u correlation (CIRIA Report 103)[29]	-	-	-	20
Drained Deformation Modulus, E' (MPa) [4]	m_v correlation (Skempton and Bjerrum, 1957)[31]	1.8	33.3	-	5 - 20
Swelling Pressure (kPa)	Swelling Pressure test	10	60	-	-
California Bearing Ratio (CBR) (%)[3]	c_u correlation	0.8	27.4	-	2.5 - 15

[1] Where no laboratory testing results were available the site wide characteristic value was provided based on literature and engineering judgment.

[2] An increase in undrained shear strength with depth was discernible across the site within the cLG. It is likely that in some locations a similar trend with depth may be apparent for the stiffness and compressibility of the stratum.

Based on the results detailed in Section 4.3, the following material parameter ranges presented in Table 4.24 are inferred for Lias Group rock.

Table 4.24: Summary of Lias Group - Rock Parameters

Properties	Method	Minimum Value	Maximum Value	Figure Number	Characteristic Value X_k'
Unit Weight (kN/m^3)	Published value	-	-	-	22
SPT N	SPT test	50 (refusal)	-	-	-
Extrapolated SPT N	SPT test	200	-	-	-
Drained Deformation Modulus, E' (MPa)	SPT correlation Stroud, (1989)[32]	100	-	-	-
UCS (MPa)	Point load test	4.6	25.3	Figure 28, *Appendix D*	4 - 10
	Direct UCS test	7.3	9.87		
	Extrapolated SPT N correlation Clayton (1995)[30]	1.8	-		

4.6. CBR

As detailed in Section 4, 12No. in-situ Dynamic Cone Penetrometer (DCP) and 6 laboratory CBR tests were undertaken in locations where the proposed highway alignment is approximately at grade to provide an initial assessment of the sub-grade condition. The results obtained are summarised in Section 4, Tables 4.2 to 4.23, under the sub-section for the specific strata that the test was undertaken in. DCP readings obtained at shallow depth (<0.5m) have been excluded given the likely requirement for shallow excavations (topsoil strip and road box construction) in these areas. Pavement design details have not been confirmed at the time of writing.

Interim Advice Note (IAN) 73/0649 (Draft HD 25) and CD 225 2020)[37] states that the sub-grade surface modulus used for pavement foundation design must be based on the lower of the short-term CBR and predicted long-term equilibrium value. Based on the DCP's undertaken, preliminary design CBR values in all locations were in excess of the 2.5% minimum value stipulated in IAN 73/06. Additionally, CBR values in excess of 25% were noted in locations where the sub-grade comprised cLL, gRTD and cRTD.

Estimated long-term equilibrium CBR values for cohesive sub-grades are provided in Table 5.1 of IAN 73/06. For lower plasticity strata such as CA, cRTD, cRF and cLL, assuming a characteristic plasticity index of 20% - this provides an equilibrium CBR of 4% which is taken as the lower bound preliminary Design CBR. For higher plasticity strata such as cGF and cLG, assuming a characteristic plasticity index of 40% - this provides an equilibrium CBR of 2.5% which is taken as the lower bound preliminary Design CBR.

Estimated long-term equilibrium CBR values for granular sub-grades are provided Table 5.1 of IAN 73/06; poorly graded sand provides an equilibrium CBR of 20% which is taken as the lower bound preliminary Design CBR.

The conditions prevailing at the time of construction will affect the CBR of the sub-grade and its strength. Similar to the design of cut slopes, the likely speed of degradation upon exposure of the various strata encountered should be considered in the sub-grade design, with appropriate mitigation measures adopted during construction.

Research has shown the importance of the equilibrium moisture content of the sub-grade. The relationship between soil suction and the moisture content shows that soils which become wet during construction will retain water and will therefore be weaker under the pavement in the equilibrium condition, than a pavement foundation which has remained dry. This is particularly relevant for soils of low to intermediate plasticity.

Further CBR testing should be taken across the scheme during construction to verify the Design CBR. In areas where the undrained shear strength is less than 50kN/m^2 it is likely that material will need to be excavated and

replaced with a suitable granular fill to achieve a minimum CBR of 2.5%. Full details of the pavement design including thicknesses of capping and/or sub-base will be provided during detailed design and documented in subsequent reporting.

4.7. Material Re-use

Site won materials are likely to be either RTD's or LL. Made ground or topsoil materials are not anticipated to be retained on the scheme.

A total of 2 laboratory compaction tests (4.5kg rammer method) and 2 laboratory compaction tests (vibro hammer) were undertaken on samples of cRTD and gRTD recovered during the Soils Limited GI, providing values of optimum moisture content (OMC %) and maximum dry density (MDD).

A single laboratory compaction test (4.5kg rammer method) was undertaken on a sample of made ground.

A summary of laboratory Maximum Dry Density and Optimum Moisture Content tests is provided in Table 4.25.

Table 4.25: Summary of Maximum Dry Density and Optimum Moisture Content.

Exploratory Hole	Strata	Test Type	Top of sample (mBGL)	Base of sample (mBGL)	Initial Moisture Content (%)	Optimum Moisture Content (%)	Max, Dry Density (mgm^3)
TP16	gRTD	Vibro Hammer	0.8	1.2	7	10.2	1.51
TP17	gRTD	4.5 kg	0.2	0.5	8.4	12	2.05
TP18	gRTD	4.5 kg	0.6	1.0	3.1	9	1.84
TP19	GMG	4.5 kg	1.0	1.5	9.9	13	1.98
TP20	gRTD	Vibro Hammer	1	-	5	10.4	1.53

General earthworks materials are initially classified by virtue of grading, in accordance with the SHW, into Class 1 or Class 2 material. Class 1 material has less than 15% fines (such as material finer than or passing a 63µm mesh) and Class 2 has more than 15% material passing the 63µm sieve. Further sub classes of types 1 and 2 are again defined primarily based on grading. Acceptability criteria are set to ensure adequate material strength and the achievement of minimum degrees of relative compaction to limit any subsequent volume changes.

Based on the available grading results RTD's are likely to be suitable as Class 1A/1B/1C or Class 2A/2B. Similarly, the LL deposits are likely to be suitable as Class 1A/1B/1C or Class 2A/2B.

Outstanding volumes of RTD and LL not meeting Class 1 or 2 requirements, are likely to be suitable as acceptable Class 4 (landscape fills) with less stringent compaction requirements. Where RTD and LL are found to be too wet, air drying, granular drainage layers and/or blending with drier materials may allow wetter materials to be more widely used on low height and/or non-sensitive landscape areas.

Seasonal variations in moisture content may lead to construction issues such as trafficability and the risk of instability caused by porewater pressure generation during compaction. Earthworks undertaken in the winter months, are therefore likely to be problematical with significant rest period down times likely to be needed. Protection layers will also be required to minimise the risk of softening of previously compacted engineered fills.

Given the limited dataset, more confidence is required. It is therefore recommended that further GI and subsequent compaction testing is undertaken. An alternative may be using the more rapid MCV test for site controls during the construction phase. Testing should therefore comprise MCV/moisture content relationships

and it is suggested that an early compaction trial is carried out on site to allow for a review of acceptability criteria, assessment of the suitability of the MCV, and refinement to the compaction methodology.

4.8. Groundwater and ground gas conditions

Groundwater was encountered (strikes and seepages) within 21 exploratory holes during drilling. Table 4.26 below provides a summary of the groundwater strikes. Full details of the groundwater strikes and seepages are provided in the factual ground investigation data, included in *Appendix B*.

Table 4.26 Summary of Groundwater Strikes

Material	Number of Strikes	Groundwater Strike Min Height		Groundwater Strike Max Height		Comments
		mBGL	mAOD	mBGL	mAOD	
Alluvium	2	2.1	7.36	2.1	7.5	Seepages
River Terrace Deposits	1	2.2	16.24			Seepage
Lower Lincolnshire Limestone	10	10.5	5.44	2.15	20.68	Range of flow rates reported - likely to be associated with fracturing within the limestone
Grantham Formation	4	6.4	15.92	1.2	17.16	Generally very slow seepages, with exception of fast inflow in BH14 at 10mBGL, rising to 6.8mBGL after 20 minutes
Northampton Sand Formation[1]	1	9.95	8.93			Fast inflow with significant rise to 10.88maOD
Whitby Mudstone Formation	1	5.6	6.66			Slight seepage
Lias Group	3	22.5	5.43	13.4	10.62	Generally very slow seepages, with exception of fast inflow in BH20 at 12.75mBGL, rising to 7.65mBGL after 20 minutes

[1]Logged as Northampton Sand Formation but interpreted by Sweco as Grantham Formation after review of BGS mapping and material descriptions.

Nineteen boreholes were fitted with nominal 50mm diameter perforated standpipes, which monitored the groundwater after the excavation of the exploratory holes had been completed. The measurements from these monitored standpipes indicate groundwater where detected to typically vary between 7.7mAOD (BH29) and 23.5mAOD (BH06) and between 0.56mBGL (BH01A) and 8.6mBGL (BH16), with no discernible difference in groundwater levels between geological horizons.

Groundwater levels are generally closest to ground level in proximity to the River Nene, although the borehole recording the shallowest recorded groundwater levels is located to the north of the A1 Junction. In the area around the proposed underpass for access to Sacrewell Farm, groundwater levels range between 2.5 and 6.8mBGL in the Lower Lincolnshire Limestone and Grantham Formation, and between 6.35 and 8.6mBGL in the Lias Group.

The results of the infiltration tests are presented in Table 4.27, below. This suggests that the River Terrace Deposits have a hydraulic conductivity in the region of 3×10^{-2} to 1×10^{-1}m/s. As groundwater flow within the Lincolnshire Limestone Formation is likely to be almost entirely via fracture flow, the hydraulic conductivity is highly dependent on the presence, orientation and interconnectivity of fracturing. The infiltration test results are, however, within the likely range of hydraulic conductivity for a fractured limestone.

Table 4.27 Summary of Infiltration Tests

Trial Pit	Depth (mBGL)	Response zone Formation	Minimum Infiltration Rate (m/s)
TP14	1.44	Weathered Lower Lincolnshire Limestone Formation	1.92×10^{-5}
TP27	1.5	Weathered Upper Lincolnshire Limestone Formation	8.96×10^{-5}
TP28	1.5	Weathered Lower Lincolnshire Limestone Formation	4.27×10^{-5}
TP29	1.46	River Terrace Deposits	2.82×10^{-2}
TP30	1.46	River Terrace Deposits	1.16×10^{-1}

Ground gas monitoring was undertaken monthly following the completion of the intrusive ground investigation. Results are presented in the Factual Report contained within *Appendix B.*

4.9. BRE ground aggressivity global properties

BRE SD1 samples were tested to assign the Aggressive Chemical Environment for Concrete (ACEC) classification and the Design Sulphate Class (DS) in accordance with the method outlined in the BRE Special Digest 1: Concrete in Aggressive Ground (2005)[38]. The stated DS and ACEC class relate to both the made ground and natural superficial deposits in the site area.

The overall testing for the design class and aggressive concrete environment class for each stratum encountered is detailed in Table 4.28 below.

Whilst the lab test data indicates suitable DS and ACEC classes of DS-1 and ACEC-1 for the Lias Group respectively. The Lias Group is identified as having high sulphates (Hobbs *et al*., 2012)[39], the exploratory hole logs frequently note the presence of pyrite and glassy anhydrite. It is therefore recommended that the DS and ACEC classes are modified such that a minimum of DS-3 and AC-3 are adopted for design respectively.

Table 4.28 DS & ACEC Parameters

Material	Number of Tests	pH		Sulphate Content for 2:1 Water: Soil extract (mg/l)		Representative BRE Special Digest 1 Class	
		Min	Max	Min	Max	DS	ACEC
Made Ground – Granular	1	6.67		30		DS-1	AC-1
River Terrace Deposits – Cohesive	1	6.88		30		DS-1	AC-1
Rutland Formation – Cohesive	1	7.02		40		DS-1	AC-1
Grantham Formation – Cohesive	8	6.39	8.15	10	40	DS-1	AC-1
Lias Group – Cohesive	23	6.88	8.29	30	50	DS-1[1]	AC-1[1]

[1]Minimum classification of DS-3, AC-3 to be adopted for the Lias Group scheme wide, based upon published data, and the identification of pyrite throughout the ground investigation

5. Geo-environmental assessment

5.1. Introduction

The desk-based information within the Addendum Preliminary Sources Study Report (PSSR) has been used to develop a preliminary Conceptual Site Model (CSM) which forms the basis to investigate potential contaminant linkages for the proposed scheme via a source-pathway-receptor model. For a source of contamination (or hazard) to present a risk to a receptor (such as construction workers, groundwater), there must be a viable exposure pathway.

A risk evaluation has been undertaken by Sweco (See Section 5.9) by considering the source-pathway-receptor relationship in terms of both the probability (likelihood) that a source-pathway-receptor linkage will occur and the potential consequences of occurrence.

This source-pathway-receptor model is considered best practice methodology to evaluate environmental risk arising from potential land contamination, according to Department of Environment[16], Food and Rural Affairs (DEFRA) and EA guidance documentation[17].

This assessment is limited to the locations sampled during the Soils Limited 2019 ground investigation and there is potential for unassessed materials to be present at un-sampled depths and between sampling points. The Soils Limited 2019 ground investigation was also based on a route of the proposed scheme that was subsequently changed to the current route which is located to the north of the existing A47, east of the monument. This means that data from the east of the monument may not represent ground conditions beneath the new route of the proposed scheme although, given the absence of significant historical land use, it is possible that the ground conditions beneath the new route of the proposed scheme are similar to those encountered during the ground investigation.

5.2. Initial conceptual site model

Based on the review of publicly available information completed as part of the PSSR, a CSM has been developed based on the source-pathway-receptor model for the proposed works which is discussed below.

In the context of this study, hazards relate to sources, or potential sources of contamination capable of causing harm. The following sources have been identified from the PSSR:

- **Source 1**: Large areas of the scheme are currently used as agricultural field and agricultural pesticides and sewage sludge may have been historically released to the ground, with the additional possibility of fuel spillages from farm machinery.

- **Source 2**: Petrol filling station located at approximately Ch.600 which could be a potential source of hydrocarbons (e.g. via fuel and/or oil leaks).

- **Source 3:** An electricity substation and a mast are located approximately 80m south of the scheme. An additional mast is located approximately 80m north of the scheme. Both are at approximately

Ch.300. Potential for historic leakages/spillages to contain hydrocarbons (including polychlorinated biphenyls; PCBs).

- **Source 4**: Wansford Sewage pumping station is located on the west side of the A1 at Ch.100 of the freeflow slip road. Made ground associated with previous construction activities on the scheme are a potential source of contamination.

- **Source 5**: Made ground associated with the existing A47 carriageway and associated sideroads including vehicle fuels, brake and exhaust products.

- **Source 6**: Disused railway line crossing the site could be a potential source of hydrocarbons (e.g. via fuel and/or oil leaks).

Receptors are the entity which may be at risk of adverse effects from the hazard and include:

Human Health

- Construction workers and future site occupiers/users and

- Users/occupiers of adjacent land areas (adjacent agricultural fields, petrol filling station, pumping station) and off-site residents to the west of the proposed scheme.

Surface Waters

- Six inland rivers transverse or adjoin the site, generally crossing from north to south, with the exception of the waterway flowing to Sacrewell Farm in the north west of the site, which flows from west to east.

Groundwater

- Areas of the site are underlain by superficial Alluvium and River Terrace Deposits which are designated as a Secondary A Aquifer by the Environment Agency (EA), with Head Deposits noted at one location (designated as unproductive strata). Solid geology beneath the site comprises the Rutland Formation (classified as a Secondary B Aquifer) which is underlain by the Upper and Lower Lincolnshire Limestone Formations (classified as a Principal Aquifer). The Grantham Formation which underlies the Limestone is classified as a Secondary Undifferentiated Aquifer, whilst the underlying Lias Group / Whitby Mudstone Formation is designated Unproductive Strata.

Ecological

- Flora and fauna (including livestock).

Risks to buildings and structures have been addressed in the geotechnical risk register. For a hazard to present a risk to a receptor they must be linked by an exposure pathway.

Potential plausible pathways identified include:

- Direct contact with or ingestion of contaminated soils and dusts (including asbestos fibres) by humans;

- Direct contact with or ingestion of contaminated shallow groundwater by humans;

- Inhalation of ground gas/vapours by humans;

- Leaching/dissolution and migration of contaminants through permeable strata in the unsaturated zone towards the saturated zone;

- Migration of contaminants in the saturated zone towards surface water. Surface run-off towards surface waters, including via local drainage systems and

- Uptake by plant roots, ingestion/inhalation of contaminated soil/dust by animals.

5.3. Visual / Olfactory Evidence of Contamination

Visual or olfactory evidence of contamination noted during the investigation comprises the following:

- BH05 – bitumen gravels and cobbles recorded in made ground from 0.15m to 1.7mBGL;
- BH09 – asphalt gravels recorded in made ground from 1.2m to 3.0mBGL;
- BH22 – tarmacadam fragments recorded in made ground from ground level to 1.0mBGL;
- BH21A – mild hydrocarbon odour recorded in made ground from ground level to 0.60m and 1.10m to 2.00mBGL and
- TP24 – tarmacadam gravel recorded in made ground from 0.15m to 0.3mBGL.

Full details are provided within the Soils Limited exploratory hole logs (factual report is available as a separate document Doc No. 17076/FGIR).

5.4. Chemical Analysis

A total of 162 environmental samples were scheduled for chemical analysis during the investigation. A total of nine samples were lost in transit between the site and the laboratory, therefore these samples were not tested. As such, 153 samples were analysed. This included 110 Suite E soil tests and 43 Suite E leachate tests. No Waste Acceptance Criteria (WAC) tests were scheduled. Samples were selected for chemical analysis to assess potential contamination risks to both human health and controlled water receptors. Analysis comprised a suite of contaminants established from review of the potential sources which were identified in the PSSR which had the potential to be present both within and in close proximity to the site. Samples were selected to characterise the chemical nature of soils with respect to potential human health, infrastructure and environment risks. Chemical analysis results from soil samples have also been considered in the context of the proposed bulk earthworks and their suitability for reuse.

5.5. Assessment of Risk to Human Health

5.5.1. Human Health Screening Criteria

The chemical analysis results have been compared with generic assessment criteria (GAC) protective of a commercial end-use. These are considered the most appropriate assessment criteria to assess risks to construction workers, future site occupiers/users and users/occupiers of adjacent land areas (including off-site residents to the west of the proposed scheme). Where the available GACs are determined based on soil organic matter (SOM) content, a SOM content of 1 % has been used based on the recorded SOM results during the investigation. This enables the assessment of human health risk from land contamination to be in line with UK Government published guidance.

5.5.2. Human Health Risks

Human health risks: generic screening

A Generic Quantitative Risk Assessment (GQRA) has been undertaken using the GAC for commercial land. This assessment has identified exceedances of the screening criteria for benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene in made ground within BH21A at 1.80 - 1.90mBGL, where a mild hydrocarbon odour was observed. Given the contaminant concentrations recorded are within an order of magnitude of the relevant screening criteria, these concentrations are not considered to be potentially significant in terms of potential risks to human health and do not require further assessment.

Risks, although likely to be low, may exist from the potential presence of unidentified or untested contamination outside of investigation locations. These should be mitigated as detailed in the Construction Phase Plan (CPP) and Environmental Management Plan (EMP). Should unexpected contamination be identified, works shall cease and appropriate advice from the appointed environmental specialist should be sought.

The CPP and EMP shall outline measures to mitigate impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of personal protective equipment (PPE) during the works.

Human health risks: asbestos

Asbestos was not detected in any of the 110 soil samples which were screened for the presence of asbestos and therefore the risk from asbestos is considered to be very low and is discounted from further assessment.

Although not identified in the laboratory analysis or within the exploratory holes, should potential ACMs be identified works shall cease and appropriate advice from the appointed environmental specialist should be sought, as detailed in the CPP and EMP.

5.6. Ground Gas Monitoring

5.6.1. Summary of Ground Gas Monitoring

A summary of ground gas monitoring is included in section 4.6 of this report.

Gas monitoring recorded the following concentrations:

- The maximum carbon dioxide concentration recorded in each monitoring well ranged from 0.1% to 4.8% volume by volume (v/v) which is above the short-term Occupational Exposure Limit of 1.5% v/v and the long-term Occupational Exposure Limit of 0.5%v/v respectively, according to EH40/2005 Workplace exposure limits (fourth edition, 2020)[40].
- Concentrations of methane were not detected above the Lower Explosive Limit of 5% v/v and were generally recorded below the method detection limit (0.1% v/v).
- Oxygen levels were recorded at or around the expected atmospheric concentration in the majority of locations with some reductions when other ground gas was present. Notable depleted oxygen levels were recorded in BH01 (0.2%), BH16 (6.7%) and BH24 (4.5%).
- Concentrations of hydrogen sulphide detected were below the short-term Occupational Exposure Limit of 10 ppm and the long-term time weighted average limit of 5ppm, according to EH40/2005 Workplace exposure limits (2018), with the majority of readings below the method detection limit of 0.1 ppm.
- Carbon monoxide was occasionally detected with the majority of readings below the method detection limit (0.1 ppm) which is below the short-term Occupational Exposure Limit of 100 ppm and the long-term Occupational Exposure Limit of 20 ppm.

Based on the results from the post ground investigation gas monitoring within the Soils Limited 2019 ground investigation report, no ground gas hazards have been identified associated with the permanent scheme.

5.7. Assessment of Risk to Controlled Waters

Potential impacts to groundwater quality are assessed through comparison to the UK Drinking Water Standards (DWS). These are documented in the Water Supply (Water Quality) Regulations 2016[41]. Where appropriate DWS is not available, the World Health Organisation (WHO) guidelines for drinking water quality (2011)[42] have been used.

Potential impacts to surface water quality are assessed through comparison to the Environmental Quality Standard (EQS) guideline values published in Parts 1, 2 and 3 of Schedule 3 of the Water Framework Directive (WFD) (Standards and Classification) Directions (England and Wales) 2015[43].

Sweco's generic controlled waters screening hierarchy is included within *Appendix E*.

5.7.1. Controlled Waters Screening Criteria

Due to the close proximity of surface waters (River Nene located 150m south of the site, tributary of Whitewater Brook at Ch.70, Whitewater Brook at Ch.1200 and two field drains at Ch.2100 and Ch.2340 respectively) and the presence of potentially sensitive aquifers beneath the site within the superficial Alluvium and River Terrace Deposits (both Secondary A Aquifers), underlying Upper and Lower Lincolnshire Limestone Formations (Principal Aquifers) and Grantham Formations (Secondary Undifferentiated Aquifer), the soil leachate and groundwater chemical analysis results have been screened to assess the potential risks to controlled waters posed by soils beneath the site.

Potential impacts to surface water quality are assessed through comparison to the Environmental Quality Standard (EQS) guideline values published in parts 1, 2 and 3 of Schedule 3 of The Water Framework Directive (WFD) (Standards and Classification) Directions (England and Wales) 2015.

Potential impacts to groundwater quality are assessed through comparison to the UK Drinking Water Standards (DWS). These are documented in The Water Supply (Water Quality) Regulations 2016. Where appropriate DWS is not available, the World Health Organisation (WHO) guidelines for drinking water quality (2011) have been used.

Where exceedance of a standard is referred to as marginal in the following sections, this is based on concentrations which are within one order of magnitude of the relevant screening criteria.

5.7.2. Soil Leachability Screening

Risk to Surface Waters

The reported laboratory analytical concentrations were compared against WFD and EQS screening values.

The GQRA screened leachate data is provided within *Appendix F* and a summary of soil leachability concentrations exceeding the screening criteria are presented within Table 5.1. Where the laboratory limit of detection exceeds the screening criteria these are not considered to require further assessment and are excluded from the table.

Table 5.1: Generic screening of leachability analysis results exceedances (compared to WFD/EQS criteria)

Contaminant	Screening Value (mg/L)	No. of analysis	Concentration Range (mg/L)		No. of Samples Exceeding	Location and Depth of Maximum Exceedance
			Min	Max		
Ammoniacal Nitrogen as NH4	0.26	42	0.276	0.526	8	BH11 at 0.1mBGL
Copper	0.001	42	0.005	0.014	22	BH30 at 0.20mBGL and TP22 at 0.20mBGL
Iron	1	42	1.02	4.07	2	BH29 at 0.50mBGL
Mercury	0.00007	42	0.00005	0.00117	1	TP25 at 0.50mBGL
Nickel	0.004	42	0.005	0.01	1	BH30 at 0.20mBGL

Elevated leachable concentrations of copper above the screening criteria were identified at four locations (BH25 at 0.5mBGL, BH30 at 0.2mBGL, TP22 at 0.2mBGL and TP25 at 0.5mBGL) within made ground.

Marginal exceedances of the screening criteria were identified for copper, ammoniacal nitrogen as NH4, mercury (one location only) and nickel (one location only) within made ground, whilst marginal exceedances of ammoniacal nitrogen as NH4, iron, nickel and copper were identified within made ground/topsoil and within the underlying River Terrace Deposits (one location) and Upper and Lower Lincolnshire Limestone Formation (two locations). Further assessment of these marginal exceedances is not considered necessary.

Risk to Groundwater

The reported laboratory analytical concentrations were compared to DWS screening values. The GQRA screened leachate data is provided within *Appendix F* and a summary of soil leachability concentrations exceeding the criteria is presented within Table 5.2. Where the laboratory limit of detection exceeds the screening criteria these are not considered to require further assessment and are excluded from the table.

Table 5.2: Generic screening of leachability analysis results exceedances (compared to DWS criteria).

Contaminant	Screening Value (mg/L)	No. of analysis	Concentration Range (mg/L)		No. of Samples Exceeding	Location and Depth of Maximum Exceedance
			Min	Max		
Ammoniacal Nitrogen as NH4	0.5	42	0.505	0.526	2	BH11 at 0.1mBGL
Iron	0.2	42	0.005	4.07	9	BH29 at 0.50mBGL
Mercury	0.001	42	0.00117	0.00117	1	TP25 at 0.50mBGL

An isolated elevated leachable concentration of iron above the screening criteria was identified within BH29 at 0.5mBGL within topsoil.

Marginal exceedances of the screening criteria were identified for ammoniacal nitrogen as NH4, iron and mercury within made ground/topsoil and within the underlying River Terrace Deposits (one location) and Upper and Lower Lincolnshire Limestone Formation (one location). Further assessment of these marginal exceedances is not considered necessary.

5.7.3. Groundwater Screening

Groundwater monitoring wells were installed within 19 of the boreholes advanced during the investigation and two rounds of groundwater monitoring was undertaken. Water samples from five monitoring wells could not however be retrieved due to insufficient water volumes being available. All but two of the groundwater monitoring wells were screened across the natural bedrock with two screened across superficial deposits. GQRA screened groundwater data is included in *Appendix F*.

Risk to Surface Waters

The reported laboratory concentrations were compared against WFD and EQS screening values.

Marginal exceedances of the screening criteria were identified for ammoniacal nitrogen as NH4 and ammonium within three boreholes (BH24, BH26 and BH34), whilst a marginal exceedance of boron was identified within BH24 only. Further assessment of these marginal exceedances is not considered necessary.

A summary of groundwater concentrations exceeding the criteria are summarised in Table 5.3. Where the laboratory limit of detection exceeds the screening criteria these are not considered to require further assessment and are excluded from the table.

Table 5.3: Generic screening of groundwater analysis results exceedances (compared to WFD/EQS criteria).

Contaminant	Screening Value (mg/L)	No. of analysis	Concentration Range (mg/L)		No. of Samples Exceeding	Location of Maximum Exceedance
			Min	Max		
Ammoniacal Nitrogen as NH4 and Ammonium	0.26	14	0.386	1.1	3	BH26
Boron	2	14	3.37	3.37	1	BH24

Risk to Groundwater

The reported laboratory concentrations were compared against DWS screening values.

Marginal exceedances of the screening criteria were identified for ammoniacal nitrogen as NH4 and ammonium within two boreholes (BH24 and BH26), whilst marginal exceedances of boron were identified within four boreholes (BH24, BH26, BH27 and BH34). Further assessment of these marginal exceedances is not considered necessary.

A summary of groundwater concentrations exceeding the criteria are summarised in Table 5.4. Where the laboratory limit of detection exceeds the screening criteria these are not considered to require further assessment and are excluded from the table.

Table 5.4: Generic screening of groundwater analysis results exceedances (compared to DWS criteria).

Contaminant	Screening Value (mg/L)	No. of analysis	Concentration Range (mg/L)		No. of Samples Exceeding	Location and Depth of Maximum Exceedance
			Min	Max		
Ammoniacal Nitrogen as NH4 and Ammonium	0.5	14	1.06	1.1	2	BH26
Boron	1	14	1.02	3.37	4	BH24

5.7.4. Controlled Waters Risk Assessment Summary

Elevated leachable concentrations of copper were identified in soils above the screening criteria considered protective of surface water receptors at four locations (BH25 at 0.5mBGL, BH30 at 0.2mBGL, TP22 at 0.2mBGL and TP25 at 0.5mBGL) within made ground and topsoil, whilst an isolated elevated concentration of iron above the screening criteria protective of groundwater receptors was identified within BH29 at 0.5mBGL in topsoil.

Given only marginal exceedances of the relevant screening criteria were identified within groundwater samples from across the site, this suggests that the elevated leachable concentrations of copper and iron are not impacting groundwater and do not require further assessment. Based on the information obtained it is therefore considered that there is not an unacceptable risk to controlled waters.

Protection of controlled waters must be maintained throughout site works. Protection measures may include but are not limited to:

- Appropriate environmental risk assessments;
- Suitable stockpile management (located on hardstanding, covered and bunded where applicable);
- Control and appropriate management of groundwater from dewatering activities;
- Provision of suitable spill kits;
- Plant refuelling and storage of chemicals and fuels on drip trays away from watercourses, ditches and drains and;
- Drain or ditch protection (sandbags, booms, boards etc).

5.8. Ecological Risks: Flora and Fauna

Whilst there are no screening criteria protective of flora and fauna, in consideration of the human health risk assessment and absence of visual or olfactory evidence of shallow contamination during the fieldworks, the potential for impact to flora and fauna is considered to be very low.

The CPP and EMP shall outline measures to mitigate impacts to flora and fauna.

Excavated surface soil materials used during re-instatement/landscaping are required to be suitable for the proposed planting scheme, in accordance with the British Standard for Topsoil BS3882:2007.

5.9. Risks Evaluation: Post Assessment

A risk evaluation associated with land quality at the proposed scheme has been undertaken, as presented in Table 5.5, by considering the source-pathway-receptor relationships identified in Section 5.2 in terms of both the probability (likelihood) that a source-receptor linkage will occur and the potential consequences of the occurrence.

Assumptions:

- The risk evaluation is limited to the construction and maintenance of the proposed scheme, with temporary occupation of the proposed scheme in the operational phase;
- The assessment assumes risk posed to the identified receptors will be mitigated during construction as detailed in the principal contractor's CPP and EMP. Potential mitigation measures to be included within the CPP and EMP shall include (but are not limited to) those measures summarised in Table 5-5 and
- The assessment is undertaken on the basis of the information currently available.

Table 5.5: Risk evaluation summary:

Potential sources	Potential pathways/likelihood of hazard-receptor linkage	Potential receptors/consequence of hazard-receptor linkage	Risk level (pre-mitigation)	Mitigation measures	Risk level (post mitigation)
Source 1: Large areas of the scheme are currently used as agricultural field and agricultural pesticides and sewage sludge may have been historically released to the ground, with the additional possibility of fuel spillages from farm machinery. **Source 2**: Petrol filling station located at approximately Ch.600 of the proposed scheme which could be a potential source of hydrocarbons (e.g. via fuel and/or oil leaks). **Source 3**: An electricity substation and a mast are located approximately 80m south of the scheme. An additional mast is located approximately 80m north of the scheme. Both are at approximately Ch 300. Potential for historic leakages/spillages to contain hydrocarbons (including PCBs). **Source 4**: Wansford Sewage pumping station is located on the west side of the A1 at Ch100 of the freeflow slip road. Made ground associated	Direct contact with, inhalation or ingestion of contaminated soils, dusts and shallow groundwater, inhalation of ground gases/vapours: **Low Likelihood**	On-site Human Receptors Construction workers and future site occupiers/users: **Medium**	Moderate/Low	The CPP and EMP shall outline measures to mitigate impacts to human health. Mitigation measures shall include (but are not limited to) the use of appropriate health and safety measures prior to the commencement of works, application of appropriate work methodologies and by the use of personal protective equipment (PPE) during the works. Thought should be given to the method of access and egress from open excavations. Gas monitoring should be undertaken within any open excavations during construction prior to man entry in accordance with industry best practice/confined space protocols with operatives undertaking continuous gas monitoring using personal gas monitors. The contractor is to prepare works methodology and risk assessments prior to works commencement as detailed within the EMP/CPP. Although not identified during the investigation, the CPP and EMP shall outline measures to mitigate impacts to human health from asbestos free fibres or ACMs in accordance with the Control of Asbestos Regulations (CAR) 2012 to ensure potential ACMs and free fibres within excavated or exposed soil are identified, handled and managed appropriately. Should potential ACMs be identified, works shall cease and appropriate advice from the environmental advisor appointed by the principal contractor should be sought, as detailed in the CPP and EMP.	Low
	Direct contact with, inhalation or ingestion of contaminated soils, dusts and shallow groundwater, inhalation of ground gases/vapours: **Low Likelihood**	Off-site Human Receptors Users/occupiers of adjacent land areas; agricultural fields, petrol filling station, pumping station and off-site residents to the west of the proposed scheme: **Medium**	Moderate/Low		Low
	Leaching/dissolution and migration of contaminants through permeable strata in the unsaturated zone towards the saturated zone: **Low Likelihood**	Groundwater Alluvium and RTD (Secondary A Aquifers with intermediate vulnerability), underlain by Upper and Lower Lincolnshire Limestone Formations (Principal Aquifers with high vulnerability): **Medium**	Moderate/Low	The EMP and CPP shall outline measures to mitigate short term (construction stage) pollution impacts to surface water and groundwater. Mitigation measures shall include (but are not limited to) adherence to all relevant environmental legislation and best practice, appropriate site management, such as management of temporary material stockpiles (on hardstanding and away from potential conduits to groundwater and surface waters) and surface water drainage.	Low

with previous construction activities on the scheme are a potential source of contamination. **Source 5**: Made ground associated with the existing A47 carriageway and associated sideroads including vehicle fuels, brake and exhaust products. **Source 6**: Disused railway line crossing the site could be a potential source of hydrocarbons (e.g. via fuel and/or oil leaks).	Migration of contaminants in the saturated zone towards surface water. Surface run-off towards surface waters, including via local drainage systems: **Low Likelihood**	Surface Water River Nene and associated tributaries: **Medium**	Moderate/Low	Should dewatering be required during construction, the contractor will liaise with the respective water company prior to commencement of works to agree the maximum daily volume and flow rate, chemical analysis suite and frequency of testing that is permitted under an authorised discharge consent. It is anticipated that the discharge consent will be provided within the principal contractor's EMP.	Low
	Uptake by plant roots, ingestion/inhalation of contaminated soil/dust by animals: **Low Likelihood**	Flora and Fauna: **Mild**	Low	The CPP and EMP shall outline measures to mitigate impacts to flora and fauna.	Very low

6. Materials management

6.1. Introduction

A materials management assessment has been undertaken by a Sweco waste management specialist in accordance with the current waste regulatory framework based on results of the 2018 Soils Ltd GI. A copy of the Factual Report (dated February 2019) is included in *Appendix B*. The assessment assumes sampled materials are generally representative of ground conditions across the proposed scheme.

6.2. Site-won materials re-use

6.2.1. Mechanisms for re-use

The construction works will generate excavation arisings. Under current waste legislation, these excavated materials will be considered to constitute waste unless it can be demonstrated that there is no requirement, or intention to discard, and; could remain a waste until demonstrated they cease to be such.

Re-using soil arisings is a more sustainable approach to disposal, reducing haulage requirements and minimising disposal costs. An environmental permit, environmental exemption, or management in accordance with the *CL:AIRE Definition of Waste Code of Practice (DoW CoP 2008), Version 2 (2011)*[44] may be required to enable re-use of excavated materials in accordance with the current waste regulatory framework.

Uncontaminated natural soils and stones, where excavated and re-used on the proposed scheme (for the purposes of construction in its natural state) may be excluded from the scope of the Waste Framework Directive 2008/98/EC and may be suitable for re-use without an environmental permit, or environmental exemption. Although uncontaminated natural soils and stones may not require management in accordance with the DoW CoP, the best practice principals there within should be followed.

Where re-use is proposed, this should be confirmed with the Environment Agency local waste officer and the local authority.

In excavating, storing and using topsoil or sub-soils, established good practice as detailed in DEFRA's *Construction Code of Practice for the Sustainable use of Soils on Construction Sites, September 2009*[45] should be followed.

6.2.2. Re-use suitability assessment

General

A review of the ground conditions, field observations, soil chemical analysis reported within the Soils Ltd February 2019 Factual Report has been undertaken.

The principal aim of the assessment was to establish whether or not the materials are likely to pose potential risk to human health and the wider environment if re-used in accordance with the current waste regulatory framework.

Risks, although likely to be low, may exist from the potential presence of previously unidentified contamination and asbestos outside of investigation locations. These risks should be mitigated as detailed in the EMP and should include the requirement for a watching brief for the presence of visual and olfactory evidence of contamination during placement (as detailed in the EMP). Should unexpected contamination be identified, works shall cease and appropriate advice from the environmental advisor appointed by the principal contractor sought.

Materials exhibiting significant visual and/or olfactory evidence of potential contamination (such as strong hydrocarbon odours or oily sheens) shall be segregated and stockpiled as detailed in the EMP.

The ability to re-use materials is also subject to confirmation of the material's geotechnical suitability.

Human health suitability

With the exception of a mild hydrocarbon odour recorded during the excavation of made ground at BH21A (between ground level to 0.6mBGL and 1.1mBGL to 2.0mBGL), potentially associated with asphalt gravels, no further visual or olfactory evidence of contamination was recorded.

Limited, low level failures of the generic screening criteria indicates that the materials tested for proposed re-use suitability during future construction works are unlikely to pose a significant long-term risk to human health and are considered suitable for re-use. This assumes the works are undertaken in accordance with the regulatory requirements detailed in Section 6.2.1 and in an appropriate manner, with potential residual risks to human health mitigated as detailed in the EMP.

Controlled waters suitability

Tier 1 screening of soil leachability testing identified low level exceedances of the criteria protective of both surface water and groundwater. These failures are not considered to pose a significant risk to controlled waters and may be suitable for re-use on the proposed scheme.

This assumes the works are undertaken in accordance with the regulatory requirements detailed in Section 6.2.1 and in an appropriate manner, with potential residual risks to controlled waters mitigated as detailed in the EMP.

6.3. Materials import

Should it be requirement to import suitable earthworks materials to enable construction, materials could be either a product (e.g. quarried fill) or a waste (e.g. surplus soils/rock from other developments). In the latter case, it may be possible to use the CL:AIRE DoW CoP to enable the direct transfer and use of clean naturally occurring soil and mineral materials from one site to another development site for use. This may negate the need for regulation of the import under waste legislation (i.e. the receiving development site may not require an Environmental Permit or Waste Exemption). Again, this option should be confirmed with the regulators.

These provisions under the DoW CoP (Direct Transfer) do not apply to manufactured soils. In addition, import materials arising as a result of mineral extraction activities, such as quarried aggregates, are regulated under the Mining Waste Directive 2006.

6.4. Waste assessment

6.4.1. The legal requirement

Excavated materials will be generated during construction, a proportion of which may not be retained on the Proposed Scheme. It is a legal requirement to assess any material potentially to be disposed of as a waste.

In general, representative sampling and waste assessments are undertaken prior to construction to enable up-front assessment of the likely disposal classification when the initial data-set is deemed sufficiently comprehensive and representative of materials across the relevant site to allow disposal (subject to agreement with the receiving disposal site).

In certain instances, there is the potential for additional assessment to be required where materials encountered are inconsistent with the initial assessment, for example at un-sampled depths, between sampling points or under/within buildings/structures or chemical data to allow assessment is absent or limited. In addition, the receiving disposal facility may require further assessment.

Where it is suspected (or required) that materials may require further assessment, the principal contractor is advised to cease works and seek appropriate advice from the environmental advisor appointed by the principal contractor to ensure compliance with the current waste regulatory framework or the requirements of the receiving disposal facility.

6.4.2. Waste materials assessment

Overview

A waste assessment on the available ground investigation data (reported in the February 2019 Soils Ltd Factual Report) was undertaken by a Sweco waste management specialist to enable up-front assessment of the likely disposal classification of potential waste materials in accordance with current waste legislation. The assessment assumes materials sampled and analysed are generally representative of the materials across the Project Scheme.

Waste assessment

Following selection of the potential List of Waste (LoW) codes, a hazardous properties assessment (*Environment Agency, Technical Guidance WM3, Waste Classification, Guidance on the Classification and Assessment of Waste (Version 1.1: May 2018)* [46]) was undertaken using the industry recognised HazWasteOnline™ screening tool; a web-based software tool for classifying waste following latest Environment Agency guidance and European regulations. Outputs of the hazardous properties assessment are included within *Appendix G*.

Appropriate disposal routes should be identified by the waste producer and/or their principal contractor, however they are likely to be as detailed in Table 6.1.

Table 6.1 should be read in conjunction with the following notes:

A. Environment Agency Technical Guidance WM3 - Hazardous Properties Assessment.
B. The “Landfill Classification” is primarily based on an assessment of suitability for disposal of wastes to landfill sites, where unsuitable for re-use or recycling/recovery. In accordance with the waste hierarchy, consider re-use of waste materials where applicable, only if supported by an approved Materials Management Plan (MMP) or appropriate environmental permit or exemption.
C. LoW: List of Waste Code.
D. If found, any asbestos fragments should be appropriately removed in accordance with the principal contractor’s EMP and disposed of separately (as LoW Code 17-06-05*), or bulk material including fragments treated as mixed hazardous waste.
E. When considering recycling/recovery of waste materials, on approaching disposal sites, this waste classification assessment should be provided to them in advance of any agreed disposal as it will inform whether the material can be accepted under the terms of their permit, regardless of the fact that this assessment is also suitable for landfill disposal purposes. Written confirmation should be obtained from the disposal site that they have seen this assessment and are legally able to accept the materials as classified under the conditions of their permit.
F. It is considered likely that a non-hazardous classification under WM3 would be appropriate in respect of the untested materials. This is due to its physical nature, lack of evidence of contamination identified during the investigation and non-hazardous classification of the Project Scheme wide overlying strata.

Table 6.1: Preliminary waste materials assessment summary

Material	Location (see section 4 for details)	Representative samples	WM3[A] classification	Landfill classification [B] (LoW[C] code)	Assessment commentary
Topsoil materials Variable mix of gravelly CLAYS, SANDS and SILTS. Gravels include limestone, flint and mudstone. Roots and rootlets recorded throughout.	Widespread	49 samples	Non-hazardous	Non-hazardous landfill (17-05-04)	Landfill disposal commentary Topsoil is specifically excluded from disposal to an inert landfill. Accordingly, these topsoil materials if requiring disposal to landfill must be disposed of to a landfill licensed to accept non-hazardous waste. Although not identified in the laboratory analysis or within the exploratory holes, excavated material should be inspected for visible fragments of ACMs as a precaution [D]. Non-landfill disposal commentary [E] Other disposal facilities should be advised that these potential wastes have been classified under WM3 as non-hazardous and can be accepted under LoW code 17-05-04.
Asphalt rich materials Asphalt rich gravels with mild hydrocarbon odour.	BH21A	BH21A: 1.8mBGL to 1.9mBGL	**Hazardous**	**Requires landfill classification assessment (17-03-01*)**	Landfill Disposal Commentary The Asphalt rich gravels have been classified as Hazardous waste (WM3). These materials should be segregated and tested (waste acceptance criteria (WAC) where applicable) following excavation to inform landfill disposal options. Through delineation (sampling and assessment) and segregation, it may be possible to reduce the volumes of asphalt rich materials requiring disposal as Hazardous waste. Non-Landfill Disposal Commentary [E] Other disposal facilities should be advised that these potential wastes have been classified under WM3 as hazardous and can be accepted under LoW code 17-03-01*.
Asphalt hardstanding Asphalt hardstanding.	TP07	None	No assessment of asphalt hardstanding undertaken to date. There is the potential that the asphalt could include coal tar as a binder, which could render the material hazardous for disposal. Where excavated, this material should be assessed at the point of recovery to identify disposal or re-use requirements, at which point either the hazardous (17-03-01*) or non-hazardous (17-03-02) LoW code would apply. Asphalt is not considered to be an inert waste, and therefore if non-hazardous (non coal tar binder) it would require re-use or disposal as non-hazardous waste. Should the asphalt be identified as coal tar based, then disposal to a suitable hazardous facility will be required. Alternatively, although treatment is feasible, even when treated (normally by using a binding agent such as cold bitumen foam mix), coal tar based asphalt materials are still considered to be hazardous waste and their subsequent use in construction requires an environmental permit.			
Concrete	TP24	None	Non-hazardous	Inert landfill (17-01-01)	Landfill disposal commentary European Council Decision 2003/33/EC identifies wastes acceptable without testing at landfills for inert waste. These identified waste types include concrete, and therefore unless contaminated (including by poor segregation from other materials) or of non-standard manufacture, concrete is likely (subject to the specific landfill permit) to be acceptable at a landfill for inert waste without further testing. Non-landfill disposal commentary [E] Other disposal facilities should be advised that these potential wastes have been classified under WM3 as non-hazardous and can be accepted under LoW code 17-01-01.
General made ground Type A Variable mix of gravelly CLAYS and SANDS. Gravels include sandstone, limestone, flint, brick, concrete, plastic, asphalt and bitumen. Rarely coal and ash (TP09, TP09A and TP19). Mild hydrocarbon noted in BH21A from ground level to 1.1mBGL potentially associated with asphalt gravels.	11 locations	9 samples	Non-hazardous	Non-hazardous landfill (17-05-04)	Landfill disposal commentary In lieu of WAC testing for the made ground assessed to date, these materials must be disposed of to a landfill licensed to accept non-hazardous waste. WAC testing at the time of disposal may enable a proportion of these materials to be disposed of to a landfill licenced to accept inert waste. Although not identified in the laboratory analysis or within the exploratory holes, excavated materials should be inspected for visible fragments of ACMs as a precaution [D]. Non-landfill disposal commentary [E] Other disposal facilities should be advised that these potential wastes have been classified under WM3 as non-hazardous and can be accepted under LoW code 17-05-04.
General made ground Type B Variable mix of SANDS, SILTS, GRAVELS and CLAYS. Gravels include limestone, flint, brick and concrete. Frequent rootlets.	15 locations	8 samples	Non-hazardous	Non-hazardous landfill (17-05-04)	Landfill disposal commentary In lieu of WAC testing for the made ground assessed to date, these materials must be disposed of to a landfill licensed to accept non-hazardous waste. WAC testing at the time of disposal may enable a proportion of these materials to be disposed of to a landfill licenced to accept inert waste. Although not identified in the laboratory analysis or within the exploratory holes, excavated materials should be inspected for visible fragments of ACMs as a precaution [D]. Non-landfill disposal commentary [E] Other disposal facilities should be advised that these potential wastes have been classified under WM3 as non-hazardous and can be accepted under LoW code 17-05-04.
Grantham Formation Strata includes wood and plant material rich constituents.	27 locations	BH01A: 1.0mBGL	Non-hazardous	Non-hazardous landfill (17-05-04)	Landfill disposal commentary *Grantham Formation* European Council Decision 2003/33/EC identifies wastes acceptable without WAC testing at landfills for inert waste. These include soils and stones (other than topsoil and peat and excluding soil and stones from contaminated sites). These organic rich materials requiring disposal to landfill as part of this project are unlikely to be accepted as inert waste and must be considered Non-Hazardous Waste unless the constituent organic rich parts are appropriately segregated and disposed of separately. *Head Deposits, River Terrace Deposits, Alluvium, Whitby Mudstone Formation/Lias Group, Lower and Upper Lincolnshire Limestone, Northampton Sand Formation, Rutland Formation* In accordance with European Council Decision 2003/33/EC which identifies wastes acceptable without WAC testing at landfills for inert waste, these wastes requiring disposal may be acceptable at a landfill for inert waste without further testing. This should be reviewed with any receiving landfill, in line with their specific permit requirements. If deemed unsuitable for disposal as inert waste by the landfill, further WAC analysis may be required at a frequency to be agreed with the receiving landfill to confirm landfill suitability. Organic rich materials and peat (where encountered) cannot be disposed of as waste at an inert landfill. Accordingly, organic rich materials requiring disposal to landfill as part of this project must be considered Non-Hazardous Waste unless the constituent organic rich parts are appropriately segregated and disposed of separately. Non-landfill disposal commentary [E] Other disposal facilities should be advised that these potential wastes have been classified under WM3 as non-hazardous and can be accepted under LoW Code 17-05-04.
Head Deposits	BH02	BH02: 1.0mBGL	Non-hazardous	Inert landfill (17-05-04)	
River Terrace Deposits	27 locations	16 samples	Non-hazardous	Inert landfill (17-05-04)	
Alluvium	BH30, TP11 and TP12	BH30: 0.5mBGL TP11: 0.5mBGL TP12: 0.5mBGL	Non-hazardous	Inert landfill (17-05-04)	
Whitby Mudstone Formation / Lias Group Rare relict roots.	36 locations	BH28: 1.0mBGL	Non-hazardous	Inert landfill (17-05-04)	
Lower and Upper Lincolnshire Limestone	47 locations	21 samples	Non-hazardous	Inert landfill (17-05-04)	
Rutland Formation	13 locations	None	Non-hazardous [F]	Inert landfill (17-05-04)	

7. Geotechnical risk register

In accordance with DMRB Managing Geotechnical Risk CD 622, a Geotechnical Risk Register has been established for the project to identify potential hazards, the probability of the hazard occurring, its impact and risk rating. At this stage, potential hazards affecting the identified route and design and construction stages of the A47 Wansford to Sutton scheme have been identified and updated from the PSSR stage considering the additional information obtained from the 2018 (PCF Stage 3) GI.

The Geotechnical Risk Register reflects the current level of understanding of the geotechnical and geo-environmental aspects of the Scheme and will be subject to revision as scheme development progresses to detailed design stage, after further GI has been undertaken. The Geotechnical Risk Register aims to identify any potential hazards at an early stage with the provision that additional hazards can be added as new information becomes available in later stages, as the project progresses.

The Risk Rating is defined by the following relationship:

Risk Rating = Probability x Impact

The Geotechnical Risk Register uses the criteria in Table 7.1 to score the probability and impact of a hazard, the product of which determines the risk rating. The risk rating assessment process is detailed in Table 7.2.

Table 7.1: Risk Evaluation Matrix and Rating

Risk matrix							
Impact	Catastrophic	5	5	10	15	20	25
	Major	4	4	8	12	16	20
	Serious	3	3	6	9	12	15
	Minor	2	2	4	6	8	10
	Negligible	1	1	2	3	4	5
Probability			1 Extremely Unlikely	2 Very Unlikely	3 Unlikely	4 Likely	5 Very Likely

Risk rating			
1 – 4		Low Risk	Trivial, but no action required. Monitoring only
5 – 8		Low to Medium Risk	Tolerable, but must consider more cost-effective solutions or improvements at no additional cost
9 – 12		Medium Risk	Substantial and work must not start until risk has been reduced. Risk controls require corrective actions and preventative measures
13 – 25		High Risk	Intolerable and work must not start on the project until risk has been reduced. If risk cannot be reduced, project should not proceed

Table 7.2: Risk Rating Assessment Process

Definitions of probability			Definitions of impact		
Probability		Definition	Impact (time or cost)		Definition
Very Likely	5	Certain to occur	Very High	5	>20% increase in duration or cost
Likely	4	Likely to occur	High	4	5% - 20% increase in duration or cost
Unlikely	3	Unlikely to occur	Medium	3	2% - 5% increase in duration or cost
Very Unlikely	2	Very unlikely to occur	Low	2	0.5% - 2% increase in duration or cost
Extremely Unlikely	1	Remote occurrence	Very Low	1	<0.5% increase in duration or cost

The scoring system outlined in Table 7.1 and Table 7.2 is adopted in the Geotechnical Risk Register for the Scheme, presented in Table 7.3. A residual risk is deemed acceptable where there is a low rating. Where the rating is low to medium an appropriate mitigation, typically GI, has been proposed to further assess the risk to allow appropriate measures to be included within the design.

Table 7.3: Geotechnical Risk Register

Number	Hazard identified and location	Stages of hazard implications on the Scheme	Consequence	Without control measures			Control measures	With control measures			Residual risk acceptable (yes/no)
				P	I	R		P	I	R	
1	Limited existing GI information east of Ch.1500 where ongoing design changes were not captured during the GI. Limited available GI typically 80 to 100m south of proposed alignment.	· Design · Construction	· Unknown ground conditions · Programme delays and increase of costs	5	4	20	· Identify areas where more information is required · Employ appropriately conservative design measures · Procure/undertake further intrusive GI as early as possible, ideally during Stage 3 or prior to commencing Stage 5 detailed design in order to confirm ground conditions	2	3	6	Yes – provided control measures are implemented
2	Localised weak/compressible soils anticipated, including Alluvium in vicinity of the River Nene and the White Water Brook, Made Ground along the existing A47 And infilled gravel pit(s)	· Design · Construction · Operation	· Slope instability/ ground movement adjacent to excavations during construction · Excessive settlement, slope instability and potential extrusion underneath embankments · Programme delays and increase of costs associated with remedial measures · Danger to workers and end users	4	5	20	· Design to adopt appropriate parameters and analyses undertaken to determine likely impacts · Undertake further intrusive GI prior toconstruction phase to confirm ground conditions and better understand risks · Excavations to be battered or shored · Alert Contractor · Contractor to develop a suitable work method · Ground conditions to be monitored during construction works and assessed against the design conditions	2	4	8	Yes – provided control measures are implemented
3	Localised reworked Lias Clay/Whitby Mudstone clays casued by valley bulging/cambering and potential for existing shear surfaces.	· Design · Construction · Operation	· Material strength parameters lower than global parameters · Deep seated slope instability of embankments · Programme delay and increased costs associated with design of suitable special getechnical measures to ensure embankment side slope stability, for example use of shear keys under toe of embankment for example. · Programme delays and increase of costs associated with remedial measures	4	4	16	· Identify areas where more information is required · Employ appropriately conservative design measures, if deemed appropriate · Undertake targeted further intrusive GI during Stage 5 detailed design phase to confirm localised ground conditions in areas where valley bulging/cambering has occured, in conjunction with earthwork locations.	2	3	6	Yes – provided control measures are implemented
4	Made Ground of uncertain extents and nature along the length of the scheme and possible infilled gravel pit(s)	· Design · Construction · Operation	· Uncertain geotechnical and geochemical characteristics, Made Ground is inherently heterogeneous · Differential settlement · Potential obstructions · Possible contamination and potential risks to human health and the environment · Potentially limited options for re-use · Restrictions on storage and disposal · Programme delays and increase of costs	4	4	16	· Undertake further intrusive GI during construction phase to delineate and further assess extents and nature of Made Ground · Design to consider measures to avoid foundation solutions which require excavation for/construction of foundations bearing directly on Made Ground · Design to account for ground improvement, where required · Alert Contractor · Contractor to develop a suitable work method	2	4	8	Yes – provided control measures are implemented
5	Dissolution features within limestone bedrock, site wide. Limited GI in areas of possible dissolution identifed during walk-over surveys, targeting dissolution features	· Design · Construction · Operation	· Programme delays and increase of costs associated with remedial measures · Extent of dissolution unknown	4	4	16	· Appropriate site supervision/monitoring during construction for structures and/or earthworks constructed within extents of limestone bedrock · Appropriate design measures based on best practice guidance to consider the potential for dissolution features to be present · Alert Contractor · Contractor to develop a suitable work method including for backfilling solution features and mitigating loss of concrete during foundation construction · Undertake further intrusive GI during Stage 5 detailed design phase to confirm ground conditions in areas with possible dissolution features, in conjunction with earthwork locations.	2	4	8	Yes – provided control measures are implemented

Number	Hazard identified and location	Stages of hazard implications on the Scheme	Consequence	Without control measures			Control measures	With control measures			Residual risk acceptable (yes/no)
				P	I	R		P	I	R	
6	Existing landslip at Wansford Pumping Station	· Design · Construction · Operation	· Danger to workers and end users · Slope instability · Programme delays and increase of costs associated with remedial measures · Potential future remedial works	4	4	16	· Design to ensure that proposed works do not destabilise existing landslip. · Implement design measures to stabilise existing landslip, if required · Appropriate monitoring of slope stabilty undertaken throughout construction · Alert Contractor · Contractor to develop a suitable work method to avoid destabilising existing landslip during construction works	2	3	6	Yes – provided control measures are implemented
7	Impact of increased traffic loads and construction activities on existing adjacent structures and/or earthworks	· Design · Construction · Operation	· Failure / excessive settlement of existing structures and/or earthworks · Programme delays and increase of costs associated with remedial measures · Danger to workers and end users	4	4	16	· Appropriate monitoring of existing structures during construction · Appropriate design measures based on best practice guidance to consider the impact of designs on adjacent existing structures and/or earthworks (e.g. increased loading, differential settlement, etc.) · Alert Contractor · Contractor to develop a suitable work method to protect existing adjacent structures and/or earthworks during construction works	2	3	6	Yes – provided control measures are implemented
8	Groundwater levels within proposed cuttings forming Sacrewell Farm Underbridge	· Design · Construction · Operation	· Instability of excavations, requirement for substantial dewatering within cuttings and more intensive earthworks drainage · Earthworks instability · Programme delays and increase of costs · Danger to workers	4	4	16	· Design to account for appropriate groundwater levels based on available GI information · Appropriate site supervision during construction, including the design and installation of appropriate slope drainage to mitigate slope instability · Alert Contractor · Contractor to develop a suitable work method for controlling groundwater during construction works · Additional, depth specific GI information required to ensure that the design accounts for groundwater conditions.	2	3	6	Yes – provided control measures are implemented
9	Dip orientation of bedding planes within intact Lincolshire Limestone Formation within cuttings	· Design · Construction	· Cutting slope instability along bedding planes if dipping into the cut slopes · Dip direction currenlty unknown	4	4	16	· Alert Contractor · Visual inspection of intact Lincolshire Limestone during excavation of cuttings to ensure bedding orientation is not detrimental cuttign stabilty. · Slope stability re-asssed if detrimental bedding orientation identifoed during visual inspection	3	2	6	Yes – provided control measures are implemented
10	Lack of GI information for existing embankments across the Scheme	· Design · Construction	· Unknown ground conditions · Overly conservative design where existing embankments to be modified. · Programme delays and increase of costs	5	3	15	· Undertake further intrusive GI during PCF Stage 5 detailed design phase, targetting existing embankment fills.	2	2	4	Yes – provided control measures are implemented
11	Open gravel pit between Ch.100 and Ch.150 of the existing A47 to Peterborough Road tie-in	· Design · Construction	· Programme delays and increase of costs associated with backfilling deep pit	5	3	15	· Design to consider appropriate backfill material · Alert Contractor · Contractor to develop a suitable work method including for backfilling open pit(s)	3	2	6	Yes – provided control measures are implemented
12	Existing services site wide	· Construction	· Striking of power cables during construction works, leading to electrocution / explosion · Danger to workers · Programme delays, increase of costs	3	5	15	· Alert Contractor and provide available services information · Contractor to review all available information and develop suitable work method · Comply with relevant utilities company policies · Maintain appropriate stand-off distance from utilities during construction where possible	2	3	6	Yes – provided control measures are implemented
13	Ecological findings – wooded areas, areas where bats, nesting birds, reptiles and water voles potentially present	· Construction	· Programme delays and increase of costs · Legal implications if ecologically sensitive areas damaged or disturbed	5	3	15	· Specialist consultations · Alert Contractor · Contractor to develop a suitable work method	2	3	6	Yes – provided control measures are implemented
14	Pyrite encounterd scheme wide in the Lias Group.	· Design · Construction · Operation	· Sulphate attack on buried concrete if formation level within Lias Group · Programme delays and increase of costs	4	3	12	· Adopt minimum concrete classification of DS3, AC3 for Lias Group scheme wide. · Further testing to be undertaken during PCF Stage 5 ground investigation to confirm concrete classifcation.	3	2	6	Yes – provided control measures are implemented

Number	Hazard identified and location	Stages of hazard implications on the Scheme	Consequence	Without control measures			Control measures	With control measures			Residual risk acceptable (yes/no)
				P	I	R		P	I	R	
15	Pollution of watercourses and groundwater, site wide	· Design · Construction · Operation	· Programme delays and increase of construction costs · Contaminants entering water abstraction boreholes (if present within scheme footprint) · Contaminants/silt entering watercourses/sensitive aquifers · Legal implications of pollution/negative ecological impact	3	4	12	· Liaise with relevant statutory bodies · Careful consideration of design/stages of construction works to minimise impact to watercourses/groundwater · Contractor to develop suitable work methods, including appropriate measures for temporary drainage and discharge of groundwater from excavations where appropriate	2	3	6	Yes – provided control measures are implemented
16	Failure of new or existing embankments	· Design · Construction · Operation	· Programme delays and increase of costs · Slope instability · Potential future remedial works · Danger to workers and end users	3	4	12	· Design to ensure that proposed works do not destabilise existing embankments. · Implement design measures to stabilise existing embankments, if required · Alert Contractor · Contractor to develop a suitable work method to avoid destabilising existing embankments during construction works	2	3	6	Yes – provided control measures are implemented
17	Designated sites / archaeological features (Scheduled Monument)	· Construction	· Programme delays and increase of costs · Legal implications if damaged	4	3	12	· Specialist consultations · Alert Contractor · Contractor to develop a suitable work method	2	3	6	Yes – provided control measures are implemented
18	Expansion of pyritic material within the Lias Group	· Design · Construction · Operation	· Ground heave caused by oxidation of pyrite in Lias Group, if excavated. · Programme delays and increase of costs	3	3	9	· If Lias Group encountered in cuttings, Contractor to develop a suitable work method to protect Lias Group and prevent oxidisation, such as that mentioned in Section 8.2.5. · If excavated Lias Group material to be used as fill, Contractor to develop a suitable work method to avoid oxidisation of excavated material, such as that mentioned in Section 8.2.5.	2	2	4	Yes – provided control measures are implemented
19	Contaminated soil or groundwater risks to human health, site wide	· Design · Construction · Operation	· Health and Safety of construction workers/neighbouring land occupiers and end users · Programme delays and increase of costs · Legal implications if environmental legislation breached	3	3	9	· Design to include consideration of potential for unexpected contamination · Undertake further intrusive GI during construction phase to delineate and further assess extents and nature of Made Ground (if required) · Alert Contractor	2	3	6	Yes – provided control measures are implemented
20	Materials management – hazardous waste identified at one location (BH21A) within made ground	· Design · Construction	· Programme delays and increase of costs due to disposal of hazardous waste	3	3	9	· Undertake further intrusive GI during construction phase to delineate and further assess extents and nature of Made Ground · Made ground materials should be segregated and tested (WAC) where applicable following excavation to inform landfill disposal options · Design to consider measures to avoid foundation solutions which require excavation for/construction of foundations bearing directly on Made Ground · Design to account for ground improvement, where required · Alert Contractor · Contractor to develop a suitable work method	2	3	6	Yes – provided control measures are implemented
21	Materials management – limited proportion of site-won fill suitable for re-use on site	· Design · Construction	· Programme delays and increase of costs due to treatment, storage or disposal of unsuitable site-won fill material · Programme delays and increase of costs due to importing of suitable fill material	3	3	9	· Design to include consideration of likely proportions of material suitable for re-use as part of earthworks (balance) assessment · Develop bespoke earthworks specification to maximise proportions of site-won fill which can be re-used, treated or stored on site	2	3	6	Yes – provided control measures are implemented

Number	Hazard identified and location	Stages of hazard implications on the Scheme	Consequence	Without control measures			Control measures	With control measures			Residual risk acceptable (yes/no)
				P	I	R		P	I	R	
22	Suitability of certain piling techniques (e.g. CFA) with obstructions (site wide), potential for dissolution features (site wide) and contamination risks (creating contamination pathways site wide and potential risks associated with ground gas local to areas of extensive Made Ground)	· Design · Construction · Operation	· Health and Safety of workers · Risks to end users and the environment · Programme delays and increase of costs due to alternative design and/or piling technique being required · Legal implications if environmental legislation breached	3	3	9	· Undertake further intrusive GI during construction phase to delineate and further assess extents and nature of Made Ground · Measures to reduce cross-contamination during piling (e.g. sleeved piles) to be considered by Contractor where appropriate · Alert Contractor · Contractor to develop suitable work methods and consider most appropriate piling technique via liaison with specialist piling contractors	2	3	6	Yes – provided control measures are implemented
23	Encountering Archaeological remains during excavation works	· Design · Construction	· Programme delays and increase of costs to allow archaeological dig	2	3	6	· Undertake appropriate GI including GPR and trial trenching where anomolies encountered during GPR survey.	2	1	2	Yes – provided control measures are implemented
24	Environmental constraints – damage to local site, SSSI, Sutton Heath and Scheduled Monument,	· Design · Construction	· Programme delays and increase in costs. Potential fines.	2	3	6	· Undertake appropriate ecological surveys prior to construction.	1	1	1	Yes – provided control measures are implemented
25	Route alignment along top of erosional slope of Nene Valley. Steep slopes across carriageway. Portions of alignment situated on side long ground – potential slope instability.	· Design · Construction	· Programme delays and increase in costs · Health and safety concerns for site operatives during consruction and road users post construction.	2	3	6	· Investigation into stability of existing slopes including undertaking a wakover to identify any signs of distress/instability. · Targetd GI and associated testing to confirm slope material parameters and undertake stability analyses to during detailed design.	1	3	3	Yes – provided control measures are implemented

8. Engineering assessment

8.1. Scope

This section presents a preliminary engineering assessment relevant to the main geotechnical challenges across the site, with particular focus on the following:

- Feasibility of design slope angles in relation to stability of cuttings and embankments
- Suitability for reuse of excavated material
- Foundations for new structures
- Groundwater and drainage
- Pavement subgrade

The engineering assessment described herein was undertaken in June 2020 and is based on the latest scheme layout at this time of development of the GIR and the geological long sections. Any subsequent amendments to the A47 Wansford to Sutton Scheme, including, but not limited to, structures or roads, will not have been captured within this assessment. The Scheme layout including associated structures are presented on the drawing within *Appendix A*.

8.2. Earthworks

The earthworks along the proposed alignment are a mixture of cuttings and embankments. Proposed (PCF Stage 3) earthworks are summarised below and are typically associated with approach cuttings to Sacrewell Farm underbridge, embankments for link roads with existing local roads, and widening of existing cuttings and embankments along the length of the proposed A47 main alignment.

8.2.1. Design rationale

The highway alignment developed during PCF Stage 3 assumes 1V:3H side slopes are to be adopted for the mainline and side road cuttings throughout the Scheme. 1V:2.5H side slopes are to be adopted for the mainline and side road embankments throughout the Scheme, with the exception of the E/B mainline embankment adjacent to the scheduled monument (Ch.1080 to Ch.1120), where 1V:2H slopes have been adopted due to reduced land being available to run out a shallower slope gradient. The feasibility of the design slope angles has been assessed using proprietary modelling software GeoStudio 2020 - Slope/W by GEOSLOPE International, (Version 10.2.1.19666), using limit equilibrium methods. Stability calculations have been undertaken where cutting depth/embankment height is greatest, using the Morgenstern – Price method for composite circular / non-circular slip surfaces. The slip surface depth was limited to a minimum of 0.5m to supress near-surface failures.

Given the preliminary stage of geotechnical design works, the analyses undertaken for the proposed cuttings and embankments only consider drained conditions using effective stress parameters, which are considered more significant to long-term stability during the design life of the earthwork (CIRIA C591[47]).

Stability analysis has been undertaken in accordance with Design Approach 1 (DA1) of BS EN 1997-1:2004[3], using the partial factors on geotechnical material parameters defined in DA1 Combination 2, as it is recognised that this is often the most critical situation for slope stability issues. Analyses returning a Factor of Safety (FoS) of ≥1 are deemed acceptable.

8.2.2. Design assumptions

Where highway and/or maintenance loads have been included in the analysis, these have been modelled as a uniformly distributed load (UDL) and factored as variable, unfavourable actions in accordance with DA1C2. For the cutting stability models a factored surcharge of 13kN/m^2 was applied at the crest of the cut slope to represent maintenance loading, consistent with BS 6031:2009[48]. The embankment stability models include a

factored surcharge of 26kN/m^2 taken to the edge pf the carriageway to simulate carriageway loading in accordance with BD 37/01 (Design Manual for Roads and Bridges (DMRB), 2001)[49]. Beyond this a nominal surcharge was applied at the verge to account for construction and maintenance vehicles.

8.2.3. Cuttings

General

The cut slopes to the west and immediately south of the Scheduled Monument are located on sidelong ground, such that a cutting is formed on the Eastbound (EB) carriageway and an embankment on the Westbound carriageway. These cuttings are typically <2m in depth and are anticipated to be predominantly within River Terrace Deposits, of both granular and cohesive nature (gRTD, cRTD).

Cuttings are proposed on both the EB and WB carriageways between approximate chainage Ch.1400 to Ch.1600. The maximum depth of the cutting is circa. 4m. Located west of the scheduled monument, the existing ground investigation (GI) exploratory holes are typically 80 to 100m south of the proposed alignment, therefore an accurate assessment of likely materials to be encountered cannot be made. However, based upon the available exploratory hole logs and review of geological maps, it is anticipated that cut slopes will be predominantly within River Terrace Deposits, of both granular and cohesive nature (gRTD, cRTD). Further GI is required to inform detailed design.

The major cutting through the Scheme is to be provided either side of Sacrewell Farm underbridge between approximate chainages Ch.0 and Ch.320, detailed below (chainages given are for the access road and do not refer to the mainline chainage). The access road intercepts the mainline chainage at approximately Ch.280 to Ch.320).

Sacrewell Farm Access Road

Sacrewell Farm access road is proposed to sit within a cutting, traversing below the A47 via an underbridge. The proposed cutting ranges between existing ground level and up to c.6m in depth, being broadly equal in depth on both sides of the carriageway.

The cutting is proposed to reach a maximum depth of circa 6m between beneath the A47 carriageway, where it is anticipated to lie predominantly within both granular and intact Lower Lincolnshire Limestone (gLL and LLr respectively) and cohesive deposits of the Grantham Formation (cGF).

To the south of the underbridge, the available ground investigation information indicates the cutting is likely to lie predominantly within sand deposits of the Lower Lincolnshire Limestone (gLL) and intact Lower Lincolnshire Limestone (LLr).

Beyond the underbridge to the north at approximate chainage Ch.200, the cutting depth reduces to circa. 4m and is anticipated to lie predominantly in within sand deposits of the Lower Lincolnshire Limestone (gLL) and intact Lower Lincolnshire Limestone (LLr). Further to the north at approximate chainage Ch.260, the cutting reduces in depth to circa 1.3m and is anticipated to lie predominantly within clay deposits of the Lower Lincolnshire Limestone (cLL).

By approximate chainage Ch.300, cutting depth reduces to <0.5m, providing access into Sacrewell Farm. Here the cut slope is anticipated to lie predominantly within sand deposits of the Lower Lincolnshire Limestone (gLL).

Stability analysis

Slope stability analyses have been undertaken using representative topographic cross sections to assess the feasibility of the assumed 1V:3H design batters proposed for Sacrewell Farm underbridge cutting, and for the mainline cutting adjacent to the scheduled monument. Ground conditions have been superimposed onto the sections analysed based on adjacent exploratory holes to generate representative ground models. Table 8.1 below provides details of the sections used in the analysis and HE551994-GTY-HGT-000-DR-CE-30010 to HE551994-GTY-HGT-000-DR-CE-330019 (Appendix C) presents the location and inferred geology of the cross sections used.

Table 8.1: Sections used in cutting stability analysis

Section		Approx. finished road level (mAOD)	Depth of cut (mBGL)[1]	Stratigraphy	Slope gradient
A	Sacrewell Farm underbridge Ch.100 N/B	21.02	6.0	gLL / LLr / gGF / cGF / cLG	1V:3H[2]
B	Sacrewell Farm underbridge Ch.100 S/B		5.6		
C	Mainline Ch.1000 E/B	13.48	1.7	gRTD / cRTD / cGF / gGF / cGF / cLG	

[1] Depth of cut excludes the temporary cut allowance for road box and drainage construction
[2] Assumed slope gradient for cuttings prior to stability analysis

Model assumptions

The initial sections modelled in the stability analysis were selected based on the maximum depth expected through Sacrewell Farm underbridge cutting, and upon the varied thickness of granular weathered Lincolnshire Limestone encountered during the Soils Limited 2018 ground investigation.

It has been assumed the groundwater level will be drawn down by a minimum of 1.5m below the finished ground level, by installation of both slope crest and toe drainage. Additionally, a conservative piezometric surface has also been applied in separate models, that assumes a worst-case credible water table at 0.5mBGL. This was carried out to investigate the effect that the ground water level would have on the stability of the cuttings. Groundwater levels used in the stability analysis are assumed at significantly higher levels that those recorded during the 2018 Soils Limited ground investigation and subsequent monitoring of standpipe piezometer installations.

Where intact Lincolnshire Limestone rock has been encountered during the 2018 Soils Limited ground investigation, this has been conservatively modelled as granular material, with the same material properties of the overlying weathered, granular Lincolnshire Limestone. This is to account for potential degradation of limestone during design life of the cuttings.

Geotechnical design parameters

A summary of characteristic and design values of the geotechnical material parameters to be adopted for preliminary cutting stability analysis is provided in Table 8.2. Local exploratory holes to the relevant sections have been reviewed in order to determine local parameters rather than apply global site wide design parameters, in some cases leading to slightly improved parameters being modelled.

Table 8.2: Geotechnical design parameters (cuttings)

Stratum	Material Parameter	Characteristic Value[1]	Design values (factored - EC7 DA1 C2 Set M2)
gRTD	Unit weight γ_w (kN/m^3)	17.5	17.5
	Angle of shearing resistance φ'_{res} (°)	34	28.4
	Effective cohesion c'_{res} (kPa)	0	0
cRTD / cGF	Unit weight γ_w (kN/m^3)	19	19
	Angle of shearing resistance φ'_{res} (°)	26	21.3
	Effective cohesion c'_{res} (kPa)	0	0

Stratum	Material Parameter	Characteristic Value[1]	Design values (factored - EC7 DA1 C2 Set M2)
gLL / LLr	Unit weight γ_w (kN/m^3)	19	19
	Angle of shearing resistance φ'_p (°)	30	24.8
	Effective cohesion c'_p (kPa)	0	0
gGF	Unit weight γ_w (kN/m^3)	18	18
	Angle of shearing resistance φ'_p (°)	32[2] / 34[3]	26.6[2] / 28.4[3]
	Effective cohesion c'_p (kPa)	0	0
cLG	Unit weight γ_w (kN/m^3)	21	21
	Angle of shearing resistance φ'_p (°)	23[4]	18.8[4]
	Effective cohesion c'_p (kPa)	0	0

[1]Characteristic values optimised for individual sections, based on adjacent boreholes from the 2018 Soils Limited ground investigation.

[2]Sections A and B, based on adjacent boreholes from the 2018 Soils Limited ground investigation.

[3]Section C, based on adjacent boreholes from the 2018 Soils Limited ground investigation.

[4]Identification of polished fissures within four exploratory holes of the 2018 ground investigation to be further investigation during the PCF Stage 5 ground investigation to corroborate or modify the adopted design values within the Lias Group.

Stability results

Table 8.3 presents the results of the initial 1V:3H cutting stability models undertaken. It is evident that the minimum computed factor of safety (FoS) is above the target value required for all cutting sections analysed, only when slope drainage is assumed. When the cuttings are modelled without slope drainage and with a conservative worst-case ground water level at 0.5mBGL is applied, it is clear that stability of the Sacrewell Farm underbridge cutting is compromised in this scenario.

The reduction of pore water pressures caused by drainage of the slope is adequate to reduce the likelihood of instability and provide a factor of safety above 1. It is therefore considered likely that the 1V:3H design slope angles for cuttings will be feasible, providing that adequate drainage at the slope crest and toe is installed, in order to achieve drawdown of the groundwater level to a minimum of 1.5m below the finished cut depth. 1.5m draw down was adopted following sensitivity analysis, which showed draw down of 1m was not to be adequate.

Table 8.3: 1V:3H cutting stability

Section	Maximum permanent cut depth (m)	Minimum computed factor of safety	
		No Drainage (worst-case credible GWL at 0.5mBGL)	Slope Drainage (GWL at 1.5mBGL)
A	6.0	0.831	1.059
B	5.6	0.862	1.099
C	1.7	1.037	1.275

It is considered likely that subject to further analyses the 1V:3H cut slope angles may be made locally steeper at detailed design stage. However, where interbedded layers of granular and cohesive glacial materials are present, the cutting slope angles adopted will need to reflect these variable ground conditions, noting also the potential for perched water, or high groundwater level which could lead to soft pockets of ground and slope instability. The cut slope angles are considered to be particularly sensitive to groundwater levels. Reference should be made to Section 8.4 for a discussion of issues pertinent to ground and surface water.

Optioneering

Given that the initial stability models indicate that 1V:3H cut slopes are likely to be feasible, assuming adequate drainage at the slope crest and toe, investigation into methods to further increase the stability of the slopes has not been deemed necessary.

Steepening the cut slopes beyond 1V:3H has not been investigated as this would result in a reduction of the volume of fill excavated that could be used to construct the embankments throughout the Scheme. This would therefore negatively impact the earthworks balance, and a greater quantity of imported fill would be required. Additionally, it is widely understood that steeper slopes would prove less stable, and would result in higher whole life capital and maintenance costs.

8.2.4. Embankments

General

For the major earthworks, the highway alignment developed during PCF Stage 3 assumes embankment slope angles of 1(V):2.5(H) throughout the Scheme, with the exception of the E/B mainline embankment adjacent to the scheduled monument (Ch.1080 to Ch.1120), where 1V:2H slopes have been adopted.

The reuse of site won material is discussed in Section 8.2.5 and is based on the acceptability criteria given in Table 6/1 and 6/2 of the Highways Agency Specification for Highways Works (SHW) Series 600.

The fill materials used to construct the existing embankments of the A47 are likely to comprise locally won material. Embankment design will need to consider the variability of these soils both in-situ and when used as fill material.

Placement of earthworks materials should be to a suitably prepared earthworks specification and using appropriate controls/testing to allow validation of the placed materials. In general, it is recommended that as far as is possible the earthworks operation be programmed to take place during the (drier) summer months.

Embankments through the scheme are typically <4 m in height and will typically be founded upon weathered Lower Lincolnshire Limestone or River Terrace Deposits. The largest proposed embankment is located between approximate chainages Ch.1100 and Ch.1360 and reaches a maximum height of 7m. The closest, limited, GI indicates that this embankment will be founded upon weathered Lincolnshire Limestone Formation (cLL and gLL), overlying firm to stiff clays of the Lias Group/Whitby Mudstone Formation (cLG).

Preliminary recommendations for embankment slope angles have been based on computational slope stability analysis undertaken using the proprietary software, Slope/W.

Stability analysis

Slope stability analyses have been undertaken using representative topographic cross sections to assess the feasibility of the assumed 1V:2.5H and 1V:2H design batters proposed for the mainline embankments. Ground conditions have been superimposed onto the sections analysed based on adjacent exploratory holes to generate representative ground models. Table 8.4 below provides details of the sections used in the analysis and HE551994-GTY-HGT-000-DR-CE-30010 to HE551994-GTY-HGT-000-DR-CE-330019 (Appendix C) presents the location and inferred geology of the cross sections used.

Table 8.4: Sections used in embankment stability analysis

Section		Approx. finished road level (mAOD)	Height of embankment (m)	Stratigraphy below proposed embankment	Slope gradient
D	Mainline Ch.1120 E/B	13.40	1.6	gRTD / cGF	1V:2H
E	Mainline Ch.1240 W/B	17.21	7.5	Existing embankment fill[1] / GA / gGF / cLG	1V:2.5H

[1]Assumed from representative cross section profile. Ground investigation not undertaken within footprint of existing carriageway.

Model assumptions

The initial sections modelled in the stability analysis were selected based on the maximum height expected for both the 1V:2.5H and 1V:2H slope angles. Ground conditions are based upon exploratory holes from the 2018 Soils Limited ground investigation, in the closest proximity to the modelled embankments.

It is assumed that the mainline embankment is to be constructed on top of the existing embankment on which the carriageway currently sits upon. No exploratory holes were undertaken through the existing embankment, therefore material properties have had to be assumed as conservative, worst-case. The models assume that the slopes of the existing embankment will be benched prior to the construction of the proposed embankment.

Groundwater was taken at existing ground level to represent the worst-case scenario, with a conservative pore-water pressure ratio (R_u value) of 0.2 applied to the embankment fill.

Geotechnical design parameters

Embankment fill will comprise Class 1 material in accordance with the Specification for Highway Works (SHW), Series 600[50] sourced primarily from the weathered and in intact Lincolnshire Limestone Formation, and the Grantham Formation. Material parameters for embankment fills used in the stability analysis are provided in Table 8.5.

Table 8.5: Engineered fill parameters

Fill Material	Material Parameter	Characteristic Value	Design values (factored - EC7 DA1 C2 Set M2)
Class 1 (site won)	Unit weight γ_w (kN/m^3)	19	19
	Angle of shearing resistance φ'_p (°)	32	29.3
	Effective cohesion c'_p (kPa)	0	0

Characteristic material parameters for the embankment founding strata are provided in Section 4.5, these have been factored to in accordance with EC7 DA1C2 to provide design values for use in the stability models.

Stability results

The high-level stability analyses indicate that the proposed embankments, including mainline embankments at 1V:2.5H, and 1V:2H adjacent to the scheduled monument at Ch.1120, returned a factor of safety greater than unity. A summary of the results of the stability analyses of the embankment sections are given in Table 8.6. At this stage, it is considered that the embankments at their current design are likely to remain stable over their design life, assuming that embankment fill is compacted to obtain a minimum angle of shearing resistance of 32°.

Table 8.6: Embankment stability

Section	Height of embankment (m)	Slope gradient	Minimum computed factor of safety
D	1.6	1V:2H	1.007
E	7.5	1V:2.5H	1.065

Optioneering

Given that the initial stability models indicate that 1V:2.5H mainline embankments, and the 1V:2H mainline embankment, adjacent to the scheduled monument, are likely to be feasible, it is not considered necessary to investigate less steep slope angles for the embankments.

The embankment slope angles are predominantly dependent on the nature of the engineered fill used to construct the embankments and as such, should the majority of site won material be of a predominantly cohesive nature, for example within the cRTD, cGF, and cLL, or the interbedded nature of materials prove difficult to segregate, then the proposed slope angles may need to be relaxed. This presents a risk to the scheme given the deficit of required fill volumes from site won material. Potential options may involve the use of more cohesive material at the embankment core and granular material at embankment shoulders and side slopes.

Steeper slope angles of embankment sides would require a lower volume of fill to construct, therefore 1V:2H slope angles were investigated to assess their feasibility scheme wide. Slope stability analysis was undertaken using the same methods as above, on the largest embankment (W/B Ch.1240) on the Scheme, however with a modified slope angle at 1V:2H. This analysis resulted in a factor of safety below 1, and sensitivity analysis reveals an unrealistically high angle of shearing resistance of the site won/imported embankment fill (>40° un-factored) would be required to reach a factor of safety ≥1.

It is therefore deemed that slopes steeper than 1V:2.5H should not be adopted for embankments throughout the Scheme, with the exception of the low height embankment adjacent to the scheduled monument (Ch.1080-1120) where a imported fill with a minimum drained angle of shearing resistance may be specified if required, given the limited length and height of the proposed embankment

Settlement

Embankments will settle due to a combination of self-weight settlement and compression of the underlying strata. Settlement of highway embankments is considered critical to the serviceability of the earthwork and will require verification to ensure anticipated settlements are within tolerable limits or identify possible mitigation measures. Estimates for self-weight settlement are given in Table 8.7, based upon a conservative value of 1% of embankment height as self-weight settlement, as given in BS 6031:2009[48].

Table 8.7: Summary of anticipated self-weight settlement

Embankment height (m)	Estimated self-weight settlement (mm)
2	15-25
4	35-45
6	55-65
8	75-85

A high-level initial estimate of consolidation settlement due to the additional loading at existing ground level is provided in Table 8.8, based on the maximum height of the highway embankment at Ch.1240 (c.7.5m) and

the underlying ground conditions in this location. Initial calculations have been undertaken by hand calculation using the characteristic values defined in Section 4.5 and assuming a UDL of 150kN/m^2 (SLS).

Further settlement calculations for all proposed highway embankments using specific ground models and material parameters relevant to each location will be undertaken, following PCF stage 5 ground investigation, during detailed design and summarised in subsequent reporting.

Table 8.8: Preliminary consolidation settlement

Earthworks Section	Thickness of compresible starta (m)	Ground model	Approx.consolidation settlement (mm)[1]
Mainline Ch.1240 (c.7.5m height)	14	GA, m_v = 0.3	270-360
		cGF, m_v = 0.2	
		cLC, m_v = 0.1-0.15	

[1]No allowance for Boussinesq stress reduction with depth under the embankment at this stage of design

8.2.5. Material reuse and acceptability

General

The earthworks cut/fill balance across the proposed scheme represents a key consideration at this stage of design. Based upon latest estimates, there is likely to be a shortage in the volume of site won material owing to the requirement for greater amounts of filling for embankments, than excavated material from the proposed cuttings, with the potential for cost implications if earthworks volumes do not balance. This would necessitate additional costs relating to off-site disposal of excess/non suitable material, or the costs associated with importing additional fill during construction.

The suitability for reuse of site-won materials as part of the proposed scheme has been preliminary assessed at this design stage, based on the acceptability criteria given in Table 6/1 and 6/2 of the Highways Agency Specification for Highways Works (SHW) Series 600. General earthworks materials are initially classified by virtue of grading, in accordance with the SHW.

Earthworks balance

The current design indicates that there will be a significant overall deficit of engineered fill material generated by the proposed earthworks, with an approximate ratio of 2:3 between cut and fill material volumes. Based on a preliminary review of the GI data, excavated material re-usability across the site is considered overall to be predominantly acceptable, depending on the extents of strata encountered during construction, (see reuse and acceptability below).

It is envisaged the predominant source of site-won material will be the Sacrewell Farm underbridge cutting. The cutting is anticipated to encounter granular and intact Lincolnshire Limestone Formation, granular and cohesive Grantham Formation..

It is not anticipated to encounter Lias Group strata at formation of road pavement, however, should this not be the case, there is the potential risk of an expansive reaction upon oxidisation, which can lead to heave issues. The risk that pyrite presents as it is often present as fine-grained material in the Lias. In the presence of oxygen and water, it can break down to form ferrous sulphate and sulphuric acid. As the pyrite may be fine rather than in large crystals, in the right conditions the reaction can take place in a matter of days. The proposed mitigation for this may include a 400mm thick protection layer to be left in place during the excavation of any affected cutting to prevent oxidisation. The protection layer should only be removed once road base materials are ready to be placed. The same protection layer guidance should also be applied for embankments, where the Lias Group is proposed to be used as fill. Excavated site-won material should be transported and compacted immediately in the embankments, rather than storing in stockpiles with double handling. This would also have

an impact on the surface and groundwater chemistry, due to the reaction producing sulphuric acid. However, it is considered unlikely that the Lias Group will be won in significant volumes to be viable as a fill.

Reuse and acceptability

Based upon a very small set of testing results, it is considered that the River Terrace Deposits and Lincolnshire Limestone Formation are likely to be suitable for re-use as SHW Class 1 (granular) fill or SHW Class 2 (cohesive) fill. This is subject to the material meeting contract acceptability criteria, chemically suitable with respect to contamination risks and being capable of being placed, trafficked and maintaining the required surface profile.

Outstanding volumes of River Terrace Deposits and Lincolnshire Limestone Formation not meeting Class 1 or 2 requirements are likely to be suitable for Class 4 (landscape fills), with less stringent compaction requirements. Where River Terrace Deposits and Lincolnshire Limestone Formation are found to be too wet, air drying, granular drainage layers and/or blending with drier materials may allow wetter materials to be more widely used on low height and/or non-sensitive landscape areas.

Seasonal variations in moisture content may lead to construction issues such as trafficability and the risk of instability caused by porewater pressure generation during compaction. Earthworks undertaken in the winter months, are therefore likely to be problematical with significant rest period down times likely to be needed. Protection layers will also be required to minimise the risk of softening of previously compacted engineered fills.

Given the limited dataset, more confidence is required. It is therefore recommended that further GI and subsequent compaction testing is undertaken. An alternative may be using the more rapid MCV test for site controls during the construction phase. Testing should therefore comprise MCV/moisture content relationships and it is suggested that an early compaction trial is carried out on site to allow for a review of acceptability criteria, assessment of the suitability of the MCV, and refinement to the compaction methodology.

Subject to design development, there is also considered to be a low likelihood for generating suitable quantities of rock aggregate fill for use as fill to structures, capping material, and possibly for excavation replacement fill, with potential for importation of such Class 6 material.

8.3. Structures

The structures along the proposed alignment comprise major structures including underbridges for proposed crossings at Sacrewell Farm and the disused railway line, and minor structures including culverts. At the time of writing, general arrangements for the disused railway crossing and culverts are yet to produced, due to outstanding surveys.

8.3.1. Major structures

Sacrewell Farm underbridge (S05)

An underbridge to create access to Sacrewell Farm is proposed between approximately Ch.260 and Ch.310. of the main alignment, spanning a 6m wide carriageway, 2.5m wide footpath, and 0.6m wide rubbing strip. The access to Sacrewell Farm, beneath the bridge, will be aligned approximately north-south, perpendicular to the proposed A47 mainline carriageway above. The proposed underbridge will carry the realigned A47 over a new local access road which connects the existing Peterborough Road with Sacrewell Farm.

Eight boreholes (BH11 to BH18 inclusive) were undertaken across the alignment of the proposed structure as part of the 2018 ground investigation. Ground conditions comprised a nominal thickness of topsoil overlying 0.5 to 2.3m of granular Lincolnshire Limestone Formation, above 1 to 3.4m of intact Lincolnshire Limestone. Below the Lincolnshire Limestone lies 2.9 to 4.1m of granular Grantham Formation, and 3.2 to 4.3m of cohesive Grantham Formation. This is underlain by cohesive weathered Lias Group mudstone and clays of up to 14.8m thickness (total thickness unproven in this area). The results of groundwater monitoring undertaken to date indicates groundwater levels to fluctuate between 6.4 and 8.6mBGL in the vicinity of the structure.

Wansford railway underbridge (S02)

During the 2018 Soils Ltd. ground investigation, five exploratory holes were undertaken close to the alignment of the proposed bridge over the dismantled railway (S02). Ground conditions generally comprised a nominal thickness of Made Ground or Topsoil above weathered Lincolnshire Limestone Formation, underlain by the Lias Group. Alluvium or River Terrace Deposits were also recorded in three of the boreholes, close the ground surface. The five exploratory holes are BH30-BH34, inclusive (see attached plan).

River Terrace Deposits were encountered between Topsoil and the Lincolnshire Limestone Formation in BH31 and BH33 between 14.5 and 13.7mAOD (metres above ordnance datum) (0.4 and 1.2mBGL (below ground level)) and between 18.7 and 18.3mAOD (0.2 and 0.6 mBGL) respectively. River terrace deposits were recorded as sand in BH31, and as firm to very stiff clay in BH33. Alluvium was encountered in BH30 between Made Ground and the Lincolnshire Limestone Formation in BH30 from 11.8 to 10.9mAOD (0.3 and 1.2 mBGL). Alluvium in BH30 comprised sand.

Weathered Lincolnshire Limestone Formation was encountered in the all five boreholes from 10.9mAOD (1.2 mBGL) at BH30, and from 23.8mAOD (0.2 mBGL) at BH34. The level of the strata horizon appears to increase from west to east along the alignment. The weathered Lincolnshire Limestone Formation generally comprises weathered limestone recovered as medium dense to very dense sand and gravel, however occasional layers of soft to very stiff clay are recorded interbedded within this unit in four of the five boreholes. Some less intact layers of very weak to weak limestone gravel and cobbles were recorded within the strata, especially within BH34. Also recorded in this layer were zones of core loss, up to 1.0m thick in BH34 thought likely to be due to the weathered and interbedded nature of the materials, but could also be caused by dissolution of the limestone or poor drilling techniques.

Weathered Lincolnshire Limestone Formation is underlain in all five boreholes by the Lias Group strata the top of which ranges from between 3.6 and 12.9mAOD (12.3 and 11.1 mBGL) in BH32 and BH34, respectively. The top of the Lias Group appears to be shallower further away from the proposed bridge, and deeper closer to the bridge. The Lias Group was recorded to the base of each of the five boreholes, between -1.5mAOD and -10mAOD (25.5 and 25.9 mBGL) in BH34 and BH32, respectively. The Lias Group comprises firm to very stiff clay, with stiffness increasing with depth.

Groundwater strikes during drilling of all five boreholes showed groundwater between 8.3 and 11.1mAOD in BH30 and BH31 (3.8 mBGL in both boreholes), respectively, within the weathered Lincolnshire Limestone Formation. Standpipes were installed within the weathered Lincolnshire Limestone Formation in BH33 and within the weathered Lincolnshire Limestone Formation and Lias Group in BH34. Post fieldwork monitoring over a period of 12 weeks show groundwater level between 10.5 and 10.9mAOD (8.4 and 8 mBGL) in BH33, and between 15.9 and 16.3mAOD (8.1 and 7.7 mBGL) in BH34 (although a single dubious measurement of -1.7mAOD (25.7 mBGL) was recorded at the start of the monitoring period).

Preliminary foundation considerations

For the purpose of preliminary design, a number of foundation options are available for the underbridge proposed as part of this scheme. The foundation options most likely to suit local conditions are the following: -

- Conventional reinforced spread foundations – the use of shallow footings is likely to be dependent on the specific ground conditions encountered at the bridge location and the proposed founding depth of the bridge substructure. Insufficient bearing capacity at formation level and/or total and differential settlement above tolerable limits may necessitate the use of deep foundations (for example piles).
- Piles – CFA piles are adaptable to the varying ground conditions on site i.e. location of shallow bedrock, however bored piles may be needed where penetration into the rock is necessary. Cased piles should be considered where groundwater inflows are anticipated to be significant.

Abutment foundations will be designed in accordance with the relevant design standards based upon characteristic material parameters derived from available ground investigation data. The possible solutions identified above are to be developed further during the design process and will be summarised in subsequent reporting such as approval in principal submissions and the Geotechnical Design Report.

8.3.2. Concrete class

For Made Ground, River Terrace Deposits and the Rutland Formation DS-1 and AC-1 are likely to be appropriate. For the Lias Group, it is recommended that a minimum class of DS-3, AC-3 is adopted, due to the recorded presence of pyrite and anhydrite. No testing was undertaken on Topsoil, Head Deposits, River Alluvium, and Lincolnshire Limestone Formation, therefore testing may facilitate the adoption of classification of these strata. Further testing of Made Ground, River Terrace Deposits, and the Rutland Formation would increase the confidence in their classification, as only 1 sample from each stratum was tested.

Based upon the ground investigation information available, it is considered unlikely that the Lias Group will be encountered at road formation level, however should this not be the case, it is recommended that additional measures are taken to prevent oxidisation of sulphides during excavation. For further details, refer to Section 8.2.5.

8.3.3. Contamination and ground gas

All structures should consider the potential for creating contamination pathways and for potential risks associated with ground gas (discussed in Section 5).

8.4. Groundwater and drainage

Groundwater levels vary significantly across the site, and with relatively shallow groundwater levels found in all geological horizons. Significant groundwater risks are therefore likely to be encountered during any subsurface excavation or piling work. Dewatering may be required, especially if intercepting the Lincolnshire Limestone Principal Aquifer or any of the Secondary aquifers (i.e. Alluvium, River Terrace Deposits, Head, Rutland Formation or Grantham Formation) or adjacent to the River Nene or Wittering Brook.

As monitoring boreholes tend to have a significant response zone and information on hydraulic conductivities is limited, further investigation of groundwater conditions at specific depths relevant to the subsurface structures would be required.

Infiltration results highlight that the Lincolnshire Limestone and the River Terrace Deposits would be suitable receiving aquifers for soakaways, although this would be highly dependent on soakaway design, and a sufficient thickness of unsaturated zone beneath the soakaway[26] feature.

8.5. Pavements subgrade

The proposed design subgrade CBR values for the subgrade strata across the Scheme are summarised below:

- Cohesive Alluvium: ≤2.5%
- Cohesive River Terrace Deposits: ≥4%
- Granular River Terrace Deposits: ≥4
- Cohesive Rutland Formation: 4%
- Granular Rutland Formation: ≥6
- Cohesive Lincolnshire Limestone Formation: 4%
- Granular Lincolnshire Limestone Formation: ≥10
- Cohesive Grantham Formation: ≥2.5%

- Granular Grantham Formation: ≥6
- Cohesive Lias Group: ≥2.5%

Based on the design CBR values presented above, it can be seen that the design CBR for Cohesive Grantham Formation and Cohesive Lias Group is anticipated to be ≥2.5%. In accordance with DMRB CD 225 (2020)[37], this correlates to a subgrade surface modulus of 30MPa. Subgrade stiffness below this value will likely require subgrade improvement measures.

Such measures should provisionally comprise a minimum 0.5 m over-excavation of the formation and replacement with an improvement layer formed of imported granular fill materials compacted in accordance with SHW. This layer shall improve stiffness and protect the materials from degeneration during the construction stage due to trafficking. Following improvement, the upper limit on design surface modulus for areas of improvement of the subgrade shall be 50 MPa, regardless of actual CBR improvement, in accordance with CD 225 (2020)[37].It would be anticipated that similar CBR values could be achieved for engineered fill comprised of the same soils.

Further CBR testing should be taken across the scheme during construction to verify the Design CBR. In areas where the undrained shear strength is less than 50kN/m^2 it is likely that material will need to be excavated and replaced with a suitable granular fill to achieve a minimum CBR of 2.5%. Full details of the pavement design including thicknesses of capping and/or sub-base will be provided during detailed design and documented in subsequent reporting.

9. References

[1]BSI Standards Publication, BS EN 1997-2:2007, Eurocode 7 – Geotechnical design, Part 2: Ground investigation and testing, June 2010

[2]Highways England, CD 622 Managing Geotechnical Risk, Design Manual for Roads and Bridges (DMRB), Revision 1, March 2020.

[3]BSI Standards Publication, BS EN 1997-1:2004, Eurocode 7 – Geotechnical design, Part 1: General Rules, February 2009

[4]Highways England, Geotechnical Data Management System (HAGDMS), [redacted]

[5]MMSJV, Addendum Preliminary Sources Study Report (PSSR), April 2018

[6]Amey, Preliminary Sources Study Report (PSSR), April 2017

[7]Envirocheck Report, Landmark Information Group, A47 Wansford to Sutton, September 2017

[8]England and Wales Sheet 157 Stamford, Solid and Drift Edition, 1:50,000, BGS, 1978

[9]Memoir for Sheet 158, Peterborough District, BGS, 1989.

[10]Classical areas of British geology Sheet 14 Peterborough, Solid and Drift Edition, 1:25,000, BGS, 1972.

[11]England and Wales Sheet TL09NE Solid and Drift Edition, 1:10,000, BGS, 1947.

[12]Geology of Britain online viewer, [redacted]

[13]British Geological Survey Lexicon of Named Rock Units, [redacted]

[14]British Geological Survey Borehole Scans Database, [redacted]

[15]Chandler, R.J (1979), Stability of a structure constructed in a landslide: selection of soil strength parameters.

[16]Google Maps, [redacted]

[17]Coal Authority, Interactive Map Viewer [redacted]

[18]MAGIC, Interactive Map Viewer [redacted]

[19]Unexploded Ordnance (UXO) A guide for the construction Industry, CIRIA C681, London 2009

[20]BSI Standards Publication, BS 5930:2015, Code of practice for ground investigations, July 2015

[21]BSI Standards Publication, BS EN ISO 22476-3:2005, Geotechnical investigation and testing. Field testing. Standard penetration test (+A1:2011), January 2012

[22]BSI Standards Publication, BS EN ISO 14688-1:2002, Geotechnical investigation and testing - identification and classification of soil. Identification and description (+A1:2013), 2002

[23]BSI Standards Publication, BS EN ISO 14688-2:2004, Geotechnical investigation and testing - identification and classification of soil. Principles for a classification (+A1:2013), 2004

[24]BSI Standards Publication, BS 10175:2011, Investigation of potentially contaminated sites - code of practice (+A1:2013), 2011

[25]BSI Standards Publication, BS EN ISO 22475-1:2006, Geotechnical investigation and testing - Sampling methods and groundwater measurements. Technical principles for execution, 2006

[26]BRE Digest 365, Soakaway Design, 2016

[27]Deere, D. U. and Deere, D. W., "The Rock Quality Designation (RQD) Index in Practice," Rock Classifications for engineering purposes. ASTM STP 984, Louis Kirkaldie, ed., American Society for Testing and Materials, Philadelphia, 1988, pp. 91-101

[28]Tomlinson, M. J., Foundation Design and Construction, Seventh Edition, 2001

[29]Elson, W. K., CIRIA Report 103 – Design of laterally-loaded piles, 1984

[30]Clayton, C. R. I., CIRIA Report 143 – The Standard Penetration Test (SPT): Methods and Use, 1995

[31]Skempton, A.W. and Bjerrum, L. (1957) A Contribution to the Settlement Analysis of Foundations on Clay. Géotechnique, 7, 168-178

[32]Stroud, M. A (1989) 'The Standard Penetration Test – its application and interpretation'. Proceedings of the ICE Conference on Penetration Testing in the UK, Birmingham. Thomas Telford. London

[33]Highways England, CS 229 Data for pavement assessment (formerly HD29/08), Design Manual for Roads and Bridges (DMRB), Revision 0, March 2020

[34]Highways England, IAN73/06 Design guidance for road pavement foundations (Draft HD25) Revision 1 (2009)

[35]J A Gannon, G T Masterton, W A Wallace et al, CIRIA Report 181 – Piled foundations in weak rocks, 1999

[36]BSI Standards Publication, BS8004:2015, Code of practice for foundations (+A1:2020), 2015

[37]Highways England, CD 225 Design for new pavement foundations (formerly IAN 73/06 HD25/94), Design Manual for Roads and Bridges (DMRB), Revision 1, April 2020

[38]BRE Special Digest 1, Concrete in aggressive ground, 3rd edition (2005)

[39]Hobbs, P. R. N., Entwistle, D. C., Northmore, K. G., Sumbler, M. G., Jones, L. D., Kemp, S., Self, S., Barron, M., Meakin, J. L. (2012) 'Engineering Geology of British Rocks and Soils – Lias Group' British Geological Survey, NERC

[40]EH40/2005 Workplace exposure limits (fourth edition, 2020)

[41]The Water Supply (Water Quality) Regulations. 2016

[42]World Health Organisation. Guidelines for Drinking Water Quality. Fourth Edition. 2011

[43]The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

[44]CL:AIRE Definition of Waste Code of Practice (DoW CoP 2008), Version 2 (2011)

[45]DEFRA "Construction Code of Practice for the Sustainable use of Soils on Construction Sites, September 2009

[46]Environment Agency, Technical Guidance WM3, Waste Classification, Guidance on the Classification and Assessment of waste (Version 1.1: May 2018)

[47]Perry, J. & Pedley, M., & Brady, K. (2003) 'Infrastructure Cuttings – Condition Appraisal and Remedial Treatment'. CIRIA Report C591.

[48]British Standard BS 6031:2009, 'Code of Practise for Earthworks'. British Standards Institution.

[49]BD 37/01 (2001). Design Manual for Roads and Bridges, DMRB, Volume 1, Section 3, Part 14 – Loads for Highway Bridges.

[50]Highways Agency (2008). Manual of Contract Documents for Highway Works (MCDHW), Volume 1 – Specification for Highway Works (SHW), Series 600.

Appendix A. Exploratory Hole Location Plan

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

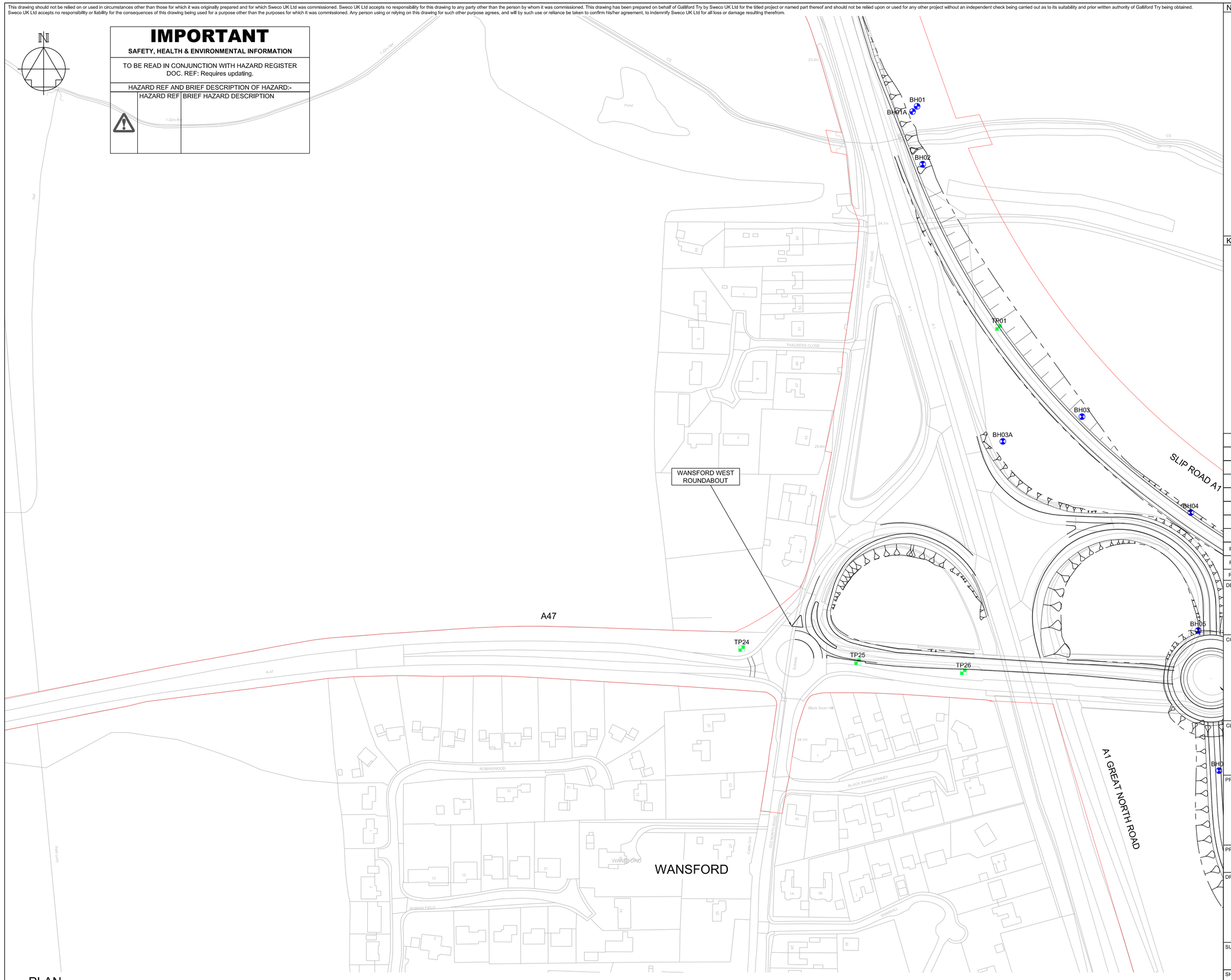
IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION



PLAN
Scale: 1:1250

1:1250 0 62.5m 125m

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	16/10/20	For Review and Issue	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
EXPLORATORY HOLE LOCATIONS
SHEET 1 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P02

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30001

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

	HAZARD REF	BRIEF HAZARD DESCRIPTION
⚠		

SLIP ROAD A1 TO A47

A1 GREAT NORTH ROAD

WANSFORD EAST ROUNDABOUT

RIVER NENE

TP07 TP18 BH18 BH18-IP TP16-IP TP06 BH17 BH17-IP TP05 TP04 BH04 TP27 BH05 BH15 BH16 BH06 BH13 BH14 4A BH19 TP08 BH20 BH25 CPT1 CPT2 TP10 TP10-IP BH22 BH12 BH21 BH21A BH24A BH24 TP03 BH11 TP12 TP11 TP28 TP02 BH07 BH08 BH09 TP09A

PLAN
Scale: 1:1250

1:1250 0 62.5m 125m

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	16/10/20	For Review and Issue	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
EXPLORATORY HOLE LOCATIONS
SHEET 2 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P02

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30002

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

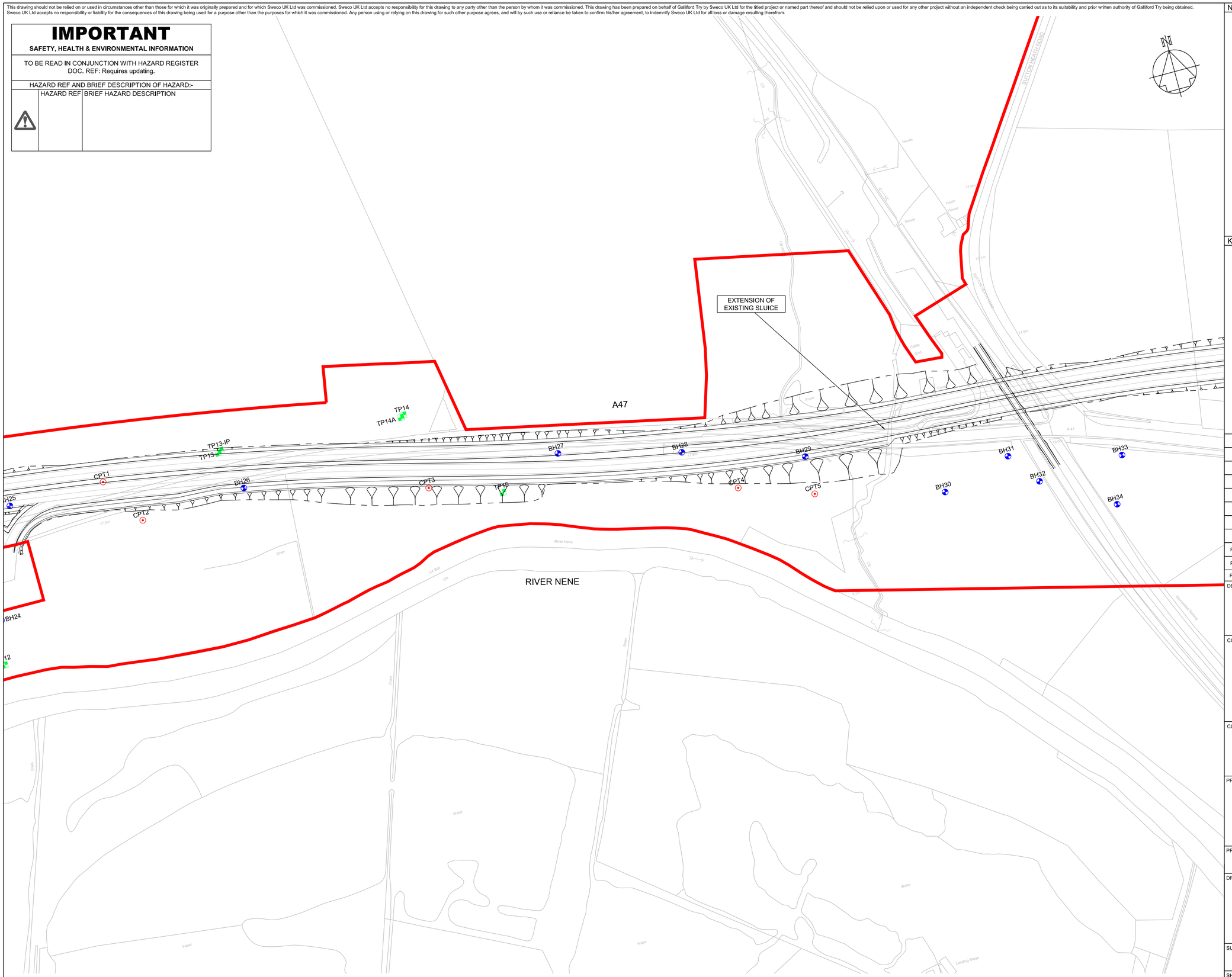
IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

	HAZARD REF	BRIEF HAZARD DESCRIPTION
⚠		


A47
EXTENSION OF EXISTING SLUICE
RIVER NENE
SUTTON HEATH ROAD
TP14
TP14A
TP13-IP
TP13
TP15
CPT1
CPT2
CPT3
CPT4
CPT5
BH24
BH25
BH26
BH27
BH28
BH29
BH30
BH31
BH32
BH33
BH34
River Nene
Drain
Water
Landing Stage
Health House
Sluice Gate
Pumping Station
Culvert
Gas Main
Overhead Wires
Footbridge
Slipway
Jetty
Weir
Boat House
Boathouse
Island
Ford
Bridge
Slipway
Sluice
Gas Governor
Gas Valve
Gas Valve Kiosk
Gas Valve Compound
Gas Pipeline
Gas Pipeline Marker
Gas Pipeline Marker Post
Gas Pipeline Marker Post
Gas Pipeline Marker Post

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

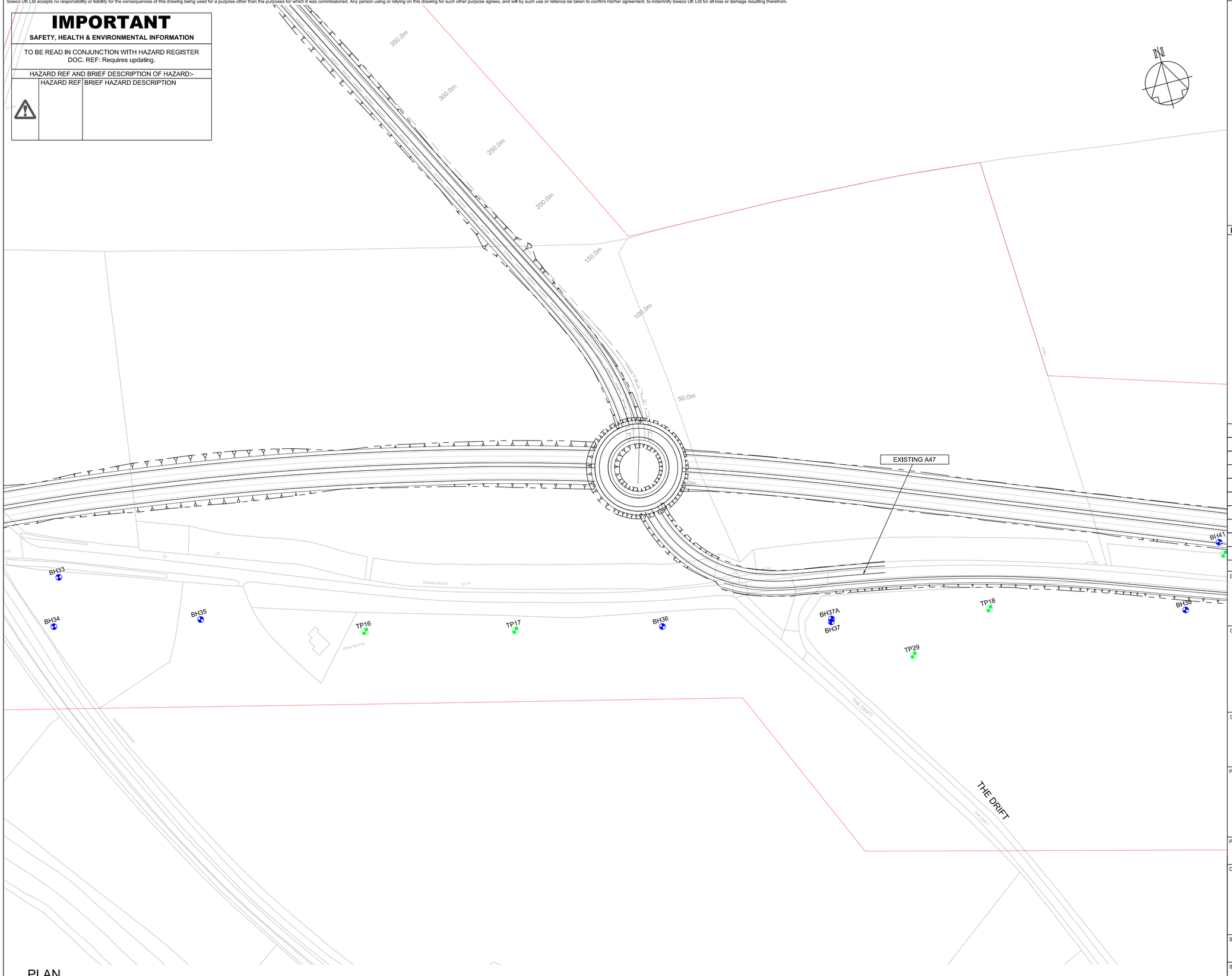
IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

	HAZARD REF	BRIEF HAZARD DESCRIPTION
⚠		



PLAN
Scale: 1:1250

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

1:1250 0 62.5m 125m

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	16/10/20	For Review and Issue	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
EXPLORATORY HOLE LOCATIONS
SHEET 4 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P02

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30004

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

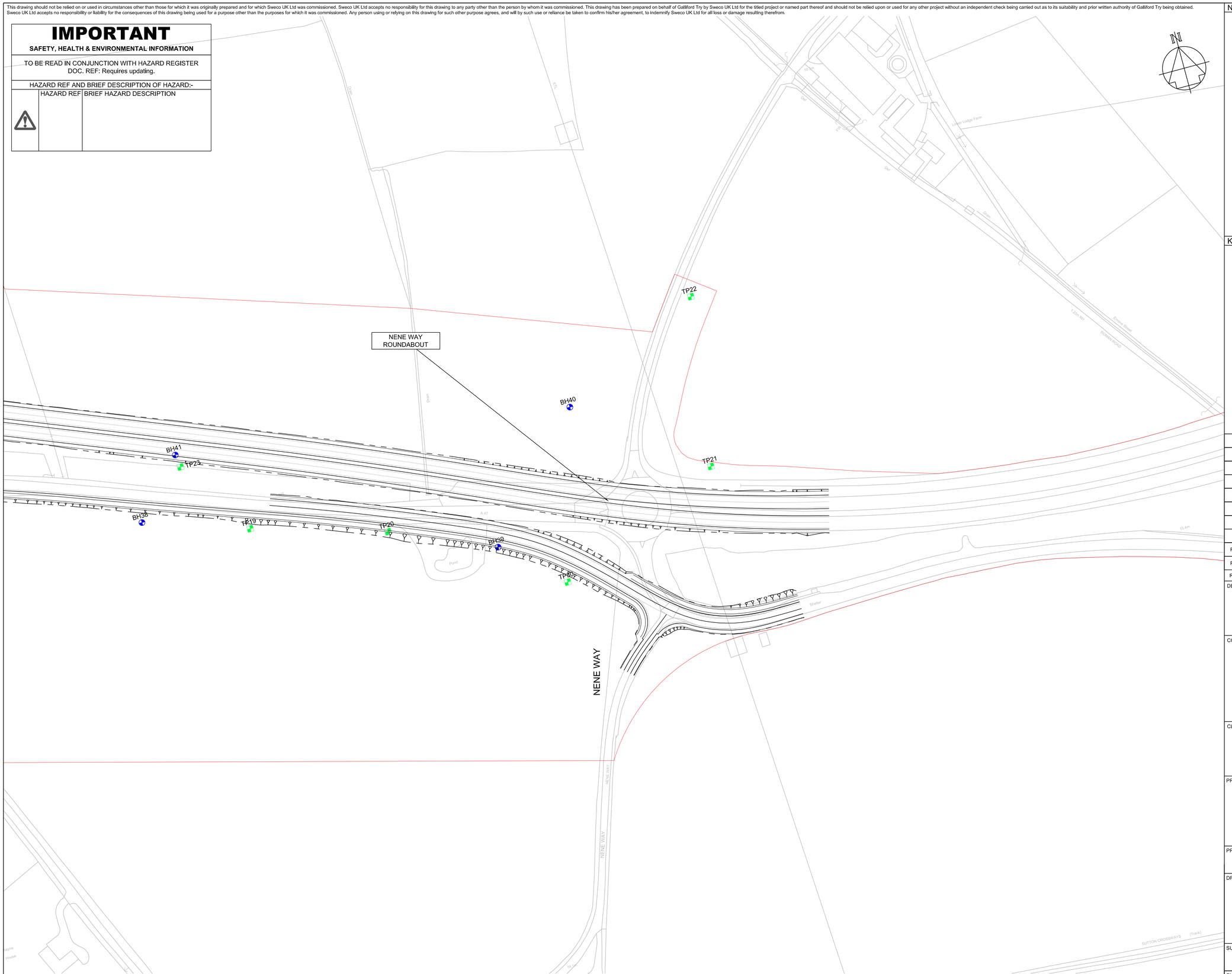
IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION



PLAN
Scale: 1:1250

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

1:1250 0 62.5m 125m

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	16/10/20	For Review and Issue	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
EXPLORATORY HOLE LOCATIONS
SHEET 5 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P02

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30005

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

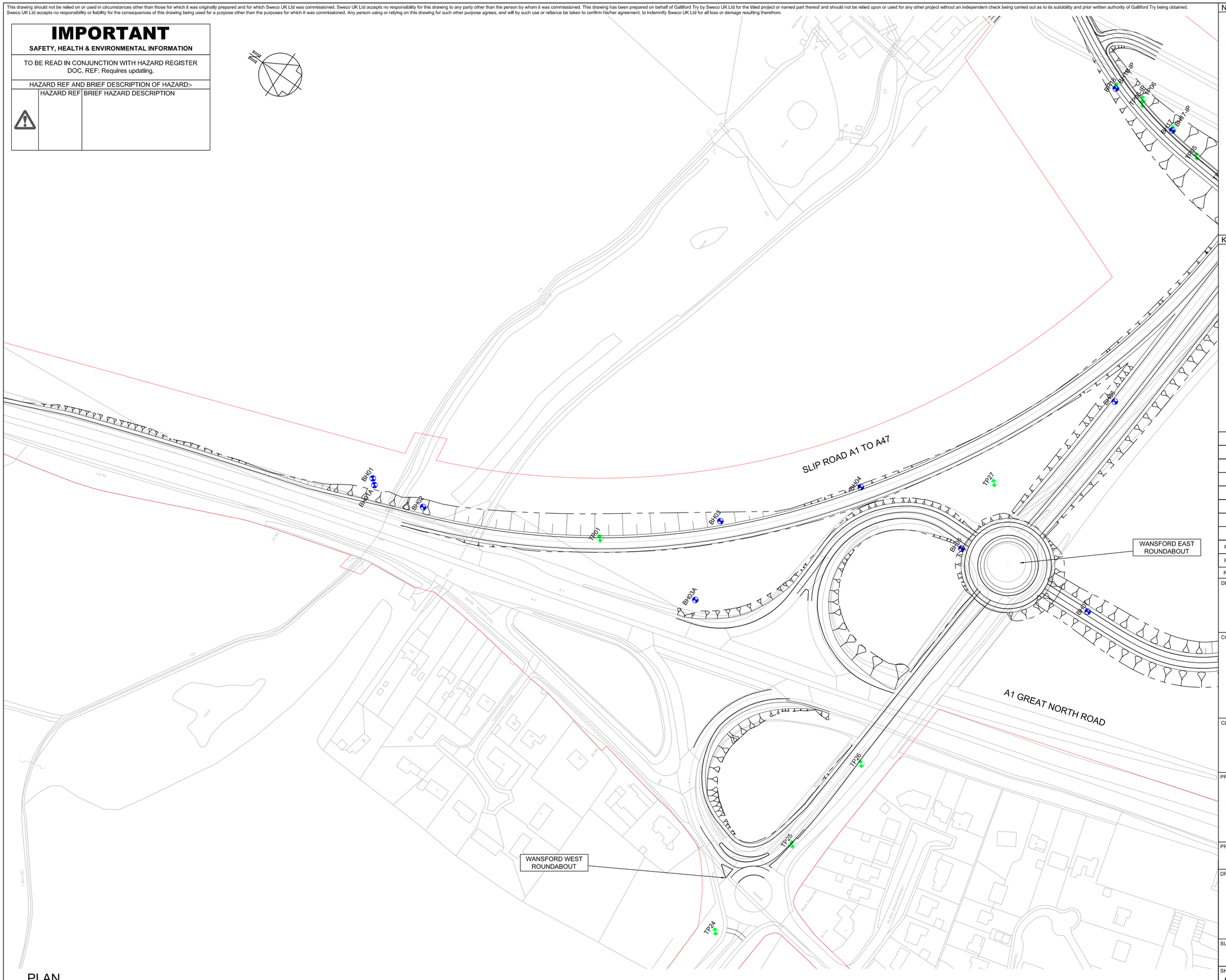
IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION



PLAN
Scale: 1:1250

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

1:1250 0 62.5m 125m

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

P01	09/07/20	Review for comment	GW	EW	MS
P02	16/10/20	For Review and Issue	OT	MSan	MSan
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
EXPLORATORY HOLE LOCATIONS
SHEET 6 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P02

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30006

Appendix B. Soils Limited Factual Report – September 2018

soils LIMITED

Factual Ground Investigation Report

at
A47 Improvements Programme - Wansford to Sutton Dualling Scheme

for
Interserve Construction Limited

Reference: 17076/FGIR/Final v1.07
October 2019

Control Document

Project
A47 Improvements Programme - Wansford to Sutton Dualling Scheme

Document Type
Factual Ground Investigation Report

Document Reference
17076/FGIR/Final v1.07

Document Status
Final

Date
October 2019

Prepared by
J Hills BSc (Hons) AMIEnvSc

[redacted]

First check by
S J Bevins BSc. (Hons) MSc. CEng, CEnv, MIMMM, FGS, RoGEP

[redacted]

Second check by
C Morrison BSc (Hons), FGS, MIEnvSc.

[redacted]

This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

AGS Association of Geotechnical & Geoenvironmental Specialists

ISO 9001 : 2015 REGISTERED FIRM

ISO 18001 : 2007 REGISTERED FIRM

BGA CORPORATE MEMBER 2018 www.britishgeotech.org.uk

Commission

Interserve Construction Limited (ICL) commissioned Soils Limited (SL) to undertake a Factual Ground Investigation Report for the site known as A47 Improvements Programme - Wansford to Sutton Dualling Scheme.

At the time of commission Mott MacDonald Sweco (MMSJV) were appointed as Principal Designers. Mott MacDonald Sweco (MMSJV) were named as the Investigation Supervisor (IS). Highways England (HE), who were the end client for the project.

The investigation was undertaken in accordance with the HE specification, reference HEWNSFRD-MMSJV-HGT-000-RP-CE-00002 – C01, dated August 2018 and referenced in SL quotation reference Q19817, dated 21st March 2018.

This document comprises the Factual Ground Investigation Report for the preliminary ground investigation and incorporates the description and results of the works.

At the request of ICL, a draft report, reference 17076/FGIR/Preliminary, dated January 2019 was issued prior to the completion of all laboratory testing. A revised document was issued, reference 17076/FGIR/Rev1.02, dated February 2019 and incorporated all laboratory testing along with confirmed and finalised engineer logs. This report, reference 17076/FGIR/Final v1.07 dated October 2019, is issued following comments made by MMSJV upon version 17076/FGIR/v1.06 of this report, dated August 2019. The comments made by MMSJV were received from ICL on the 13th September 2019.

Standards

The site works, soil descriptions and laboratory testing were undertaken in accordance with the following standards:

- BS 5930:2015 and BS EN ISO 22476-3:2005+A1:2011
- BS EN 1997-1:2004+A1:2013 Eurocode 7
- BS EN 1997-2-2007:2009 UK National Annex to Eurocode 7
- BS EN ISO 14688-1:2002+A1:2013
- BS EN ISO 14688-2:2004+A1:2013
- BS 10175:2011+A1:2013
- BS EN ISO 22475-1:2006

The geotechnical laboratory testing was performed by GEO Site & Testing Services Ltd

(GSTL) in accordance with the methods given in BS 1377:1990 Parts 1 to 8 and their UKAS accredited test methods.

For the preparation of this report, the relevant BS code of practice was adopted for the geotechnical laboratory testing technical specifications, in the absence of the relevant Eurocode specifications (ref: ISO TS 17892).

The chemical analyses were undertaken by DETs Environmental Limited in accordance with their UKAS and MCERTS accredited test methods or their documented in-house testing procedures. This investigation did not comprise an environmental audit of the site or its environs.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or windowless sample borehole implies the specific technique used to produce a trial hole.

Contents

Commission ..... **ii**

Section 1 Introduction **1**

1.1 Objective of Investigation 1
1.2 Location 1
1.3 Site Description 1
1.4 Proposed Development 2
1.5 Anticipated Superficial Geology 2
1.5.1 Alluvium 2
1.5.2 Head 2
1.5.3 River Terrace Deposits 3
1.6 Anticipated Bedrock Geology 3
1.6.1 Great Oolite Group 3
1.6.1.1 Cornbrash Formation 3
1.6.1.2 Blisworth Clay Formation 3
1.6.1.3 Blisworth Limestone Formation 4
1.6.1.4 Rutland Formation 4
1.6.2 Inferior Oolite Group 4
1.6.2.1 Lincolnshire Limestone Formation 4
1.6.2.2 Grantham Formation 4
1.6.2.3 Northampton Sand Formation 4
1.6.3 Lias Group 5
1.6.3.1 Whitby Mudstone Formation 5
1.7 Limitations and Disclaimers 5

Section 2 Summary of Intrusive Investigation **7**

2.1 Proposed Project Works 7
2.1.1 Actual Project Works 7
2.2 Additional Trial Hole Information 9
2.3 Site Works 10
2.4 Groundwater - During Intrusive investigation 14
2.4.1 Groundwater Monitoring During Investigation 14
2.5 Groundwater Monitoring and Sampling – Post Site Works 15
2.6 Gas Monitoring 16

Section 3 Summary of Geotechnical In-Situ Testing 17
3.1 Standard Penetration Testing 17
3.2 Dynamic Cone Penetrometer Tests 17
3.3 Infiltration Tests 17
3.4 Continuous Cone Penetration Testing 18
Section 4 Summary of Geotechnical Laboratory Testing 19
4.1 Atterberg Limit Tests Moisture Content Tests 19
4.2 Particle Density 19
4.3 Particle Size Distribution Tests and Pipette Analysis 19
4.4 Organic Content 20
4.5 Loss of Ignition 20
4.6 Compaction Testing 20
4.6.1 4.5kg Rammer Compaction Tests 20
4.6.2 Vibrating Hammer Compaction Tests 20
4.7 California Bearing Ratio 20
4.8 One Dimensional Consolidation Testing 21
4.9 Laboratory Swelling Testing 21
4.10 Shear Box (60mm Quick Shear) 21
4.11 Quick Undrained Triaxial Compression Tests – 100mm Multistage 21
4.12 Consolidated Undrained Triaxial Compression Tests 21
4.13 Uniaxial Compressive Strength 22
4.14 Point Load 22
4.15 Aggregate Abrasion Value 22
4.16 Soundness by Magnesium Sulphate 23
4.17 Sulphate and pH Tests 23
Section 5 Determination of Chemical Analysis 24
5.1 Contamination Analysis - Soils 24
5.2 Contamination Analysis - Headspace Analysis 25
5.3 Contamination Analysis - Waters 25

List of Figures

Figure 1 – Site Location Map 27
Figure 2 – Aerial Photograph 28

Figure 3 – Trial Hole Plan – West 29
Figure 4 – Trial Hole Plan - Centre 30
Figure 5 – Trial Hole Plan - East 31

List of Tables

Table 2.1 Investigation Variations/ Additional Tests 9
Table 2.2 Final Depth and Co-ordinates of Trial Holes 12
Table 2.3 Groundwater Strikes and Seepage 14
Table 2.4 Groundwater Monitoring During Investigation 15
Table 2.5 Groundwater Monitoring Post Investigation 16
Table 3.1 SPT Hammer Efficiency Ratios 17

List of Appendices

Appendix A Field Work
Appendix A.1 Engineers Logs
Appendix A.2 Dynamic Cone Penetration
Appendix A.3 Cone Penetration Test – Lankelma Report
Appendix A.4 Infiltration Testing
Appendix B Geotechnical Laboratory Testing
Appendix C Chemical Laboratory Results
Appendix C.1 Soils Chemical Laboratory Results
Appendix C.2 Groundwater Chemical Laboratory Results
Appendix D Gas Monitoring Data
Appendix E Groundwater Sampling Parameters
Appendix F Site Photographs
Appendix G SPT Hammer Certificates

Section 1 Introduction

1.1 Objective of Investigation

ICL commissioned SL to undertake an intrusive ground investigation to supply their client (HE) and their designers (MMSJV) with preliminary information regarding ground conditions, to assist in preparing a construction scheme for redevelopment that was appropriate to the settings present on the site.

The investigation was to be undertaken to provide information on ground conditions for the preliminary design of the proposed highways development, which included the widening of the existing A47 to dual carriageway standard. The investigation was to be made by means of in-situ testing and geotechnical laboratory testing, to a schedule provided by the IS (MMSJV), undertaken on soil samples taken from the trial holes.

Soil samples were taken for chemical laboratory testing, to a schedule provided by the Investigation Supervisor, to enable recommendations for the safe redevelopment of the site and the protection of site workers, end-users and the public from any contamination identified.

1.2 Location

The site stretched 2.5km along the existing A47 and was located west of Peterborough between the interchange with the A1 (to the west) and the existing roundabout at Sutton (to the east). The site compound had an approximate O.S Land Ranger Grid Reference of TL 10003 98912.

The site location map is presented in Figure 1.

1.3 Site Description

The area of investigation was extensive, comprising a 2.5km stretch of existing single-carriageway A-road surrounded by farmland, occasional housing, a truck stop and a petrol filling station. As such, the landscaping, vegetation and topography were varied and are summarised below.

The majority of trial holes were located within arable fields, with only a small number of locations sited on or within close proximity of the existing highway.

Various highways were present across the site with the A1 running north-south in the west of the site area with the A47 intersecting the site from east to west. Minor roadways came off the A47 including an access route to a truck stop, private access routes to domestic dwellings, Sacrewell Farm and a petrol filling station. In addition, minor B roads ran off the A47 to provide access to the villages of Wansford, Sutton and Upton.

Ecological features of note were the River Nene that bordered the site to the south and

an area under Tree Protection Order (TPO) located within the vicinity of BH33 and BH34.

The general topography dipped down to the southeast towards the River Nene, the village of Sutton and on to Hereward Way. The site was intersected by White Water Brook and a disused railroad that ran from north to south, with the adjacent areas (around BH30 and BH35) dipping into the valley setting.

An aerial photograph has been presented in Figure 2.

1.4 Proposed Development

As highlighted in the specification, reference HEWNSFRD-MMSJV-HGT-000-RP-CE-00002 – C01, dated August 2018 the existing A47 single carriageway is proposed to be upgraded to dual carriageway standard. It is understood that from the western end the new road will be constructed slightly to the north of the existing A47 from the A1/A47 interchange for approximately 800m, before crossing the existing A47. It will then be constructed to the south of the existing alignment until it ties into the existing dual carriageway at the Sutton Roundabout at the eastern extent.

The main components of the proposed scheme are shown in drawings HE551494-MMSJV-HGT-000-DR-CE-00001 - C01, HE551494-MMSJV-HGT-000-DR-CE-00003 - C01 and HE551494-MMSJV-HGT-000-DR-CE-00004 - C01, dated 22nd June 2018 and are included within the project specification.

1.5 Anticipated Superficial Geology

The 1:50,000 British Geological Survey (BGS) map shows three main types of superficial deposits are present along the route whilst two areas are mapped with no superficial deposits. The majority of superficial deposits are River Terrace Gravels. A narrow band of Alluvium was noted crossing the route in the base of the White Water Brook Valley and along the existing River Nene. Head deposits were noted close to the planned free flow slip road off the A1 in the northeast of the site. The following generic superficial geology descriptions are provided by the BGS Lexicon of Named Rock Units:

1.5.1 Alluvium

A more recent deposit from the Quaternary Period, “Alluvium is a general term for clay, silt, sand and gravel. It is the unconsolidated detrital material deposited by a river, stream or other body of running water as a sorted or semi-sorted sediment in the bed of the stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope. Synonym: alluvial deposits. Normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present”.

1.5.2 Head

Another more recent deposit from the Quaternary Period, “Head is poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep,

mantling a hillslope and deposited by solifluction and gelifluction processes. Solifluction is the slow viscous downslope flow of waterlogged soil and other unsorted and unsaturated superficial deposits. The term gelifluction is restricted to the slow flow of fluidised superficial deposits during the thawing of seasonally frozen ground. The flow is initiated by meltwater from thawing ice lenses. Polymict deposit: comprises gravel, sand and clay depending on upslope source and distance from source. Locally with lenses of silt, clay or peat and organic material".

1.5.3 River Terrace Deposits

A deposit from the Quaternary Period comprising "sand and gravel, locally with lenses of silt, clay or peat".

1.6 Anticipated Bedrock Geology

The 1:50,000 BGS map showed three main types of bedrock geology. The Parent Groups present were recorded as the Great Oolite Group to the far east, the Inferior Oolite Group, seen widely across the site and the Lias Group, which is recorded along the path of the existing River Nene.

A fault is noted 250m north of the proposed route boundary. The fault is orientated northeast – southwest but is not shown to extend across the scheme.

The following generic bedrock geology descriptions are taken from both the BGS Lexicon of Named Rock Units and from the HE Specification, reference HEWNSFRD-MMSJV-HGT-000-RP-CE-00002 – C01, dated August 2018:

1.6.1 Great Oolite Group

Typically encountered as a variety of mudstone-dominated and ooidal, bioclastic and fine-grained limestone formations. Four Formations were noted to be in proximity to the area of works, these are summarised in sections 1.6.1.1 to 1.6.1.4.

1.6.1.1 Cornbrash Formation

The Cornbrash Formation is medium- to fine-grained, predominantly bioclastic wackestone and packstone with sporadic peloids; generally and characteristically intensely bioturbated and consequently poorly bedded, although better bedded. Generally bluish grey when fresh, but weathers to olive or yellowish brown. Thin argillaceous partings or interbeds of calcareous mudstone may occur.

1.6.1.2 Blisworth Clay Formation

The Blisworth Clay Formation typically comprises grey silicate-mudstone commonly variegated purplish red, yellow and green, poorly bedded to blocky. Commonly contains fossil rootlets and ironstone nodules. Locally with impersistent beds and lenses of argillaceous limestone including shell fragments.

1.6.1.3 Blisworth Limestone Formation

The Blisworth Limestone Formation typically comprises grey, pale grey to off-white or yellowish limestones with thin marls and mudstones with common fossiliferous, bioturbated peloidal, ooidal and shell-fragments.

1.6.1.4 Rutland Formation

The Rutland Formation is a sedimentary bedrock formed approximately 166 to 170 million years ago in the Jurassic period. The sediments are described as mainly siliciclastic, deposited as sandstones, siltstones and fireclays, occasionally containing rootlets, particularly towards the top of the succession.

1.6.2 Inferior Oolite Group

A varied succession of bioclastic, peloidal, sandy, ferruginous, argillaceous, bioturbated limestones, with subordinate ooidal limestone, sandstone, limestone conglomerate, lime-mudstone and mudstone beds. Three Formations were noted to be in proximity to the area of works, these are summarised in sections 1.6.2.1 to 1.6.2.3.

1.6.2.1 Lincolnshire Limestone Formation

The Lincolnshire Limestone Formation was formed approximately 168 to 170 million years ago in the Jurassic period and is comprised of the Upper Lincolnshire Limestone Member and the Lower Lincolnshire Limestone Member. The Upper Lincolnshire Limestone Member is described as limestone overwhelmingly dominated by high-energy ooidal and shell fragmental grainstones.

The Lower Lincolnshire Limestone Member is composed of flat bedded oolitic limestones with marl partings and commonly include sandy limestone or calcareous sandstone.

1.6.2.2 Grantham Formation

The Grantham Formation overlies the Whitby Mudstone and is a sedimentary bedrock formed approximately 172 to 176 million years ago during the Jurassic Period in an environment dominated by shallow seas. The materials are likely to comprise white and grey leached silts and sands and dark grey clays, commonly containing rootlets and lignitic debris.

1.6.2.3 Northampton Sand Formation

The Northampton Sand Formation typically comprises sandy, berthierine-ooidal and sideritic ironstone. Greenish grey where fresh, weathering to brown limonitic sandstone, typically displaying a box-stone structure. The basal part is commonly muddy and less ferruginous. The uppermost beds are generally more or less ferruginous sandstone. The unit includes lenses of mudstone and limestone in places, and contains a fairly abundant marine fauna of bivalves, brachiopods and ammonites, which are not generally evident in weathered sections.

1.6.3 Lias Group

Predominantly grey, well bedded, marine calcareous mudstone and silty mudstone. Thin tabular or nodular beds of argillaceous limestone, particularly in the lower part. Thicker units of siltstone and sandstone are present in the upper part, and ironstone, particularly in the middle part. Marginal limestone facies also occur. One Formation was noted to be in proximity to the area of works, this is summarised below in section 1.6.3.1.

1.6.3.1 Whitby Mudstone Formation

The Whitby Mudstone Formation is a sedimentary bedrock formed approximately 176 to 183 million years ago during the Jurassic Period in an environment dominated by shallow seas. The sediments are mainly siliciclastic, deposited as clay, silt, sand and gravel. The BGS Lexicon suggests the unit will be composed of grey mudstones and shales with bands of phosphatic and limestone nodules.

1.7 Limitations and Disclaimers

This Factual Ground Investigation Report relates to the site located at A47 Improvements Programme - Wansford to Sutton Dualling Scheme and was prepared for the benefit of ICL, from here on referred to as the Client and includes the end client (HE) and their respective designers. The report was prepared solely for the brief described in Section 1.1 of this report.

SL disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report has been prepared by SL, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Conditions of Contract of Business and taking into account the resources devoted to us by agreement with the Client.

The report is personal and confidential to the Client and SL accept no responsibility of whatever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report wholly at its own risk.

The Client may not assign the benefit of the report or any part to any third party without the written consent of SL.

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation and information given in this report were prepared for the sole benefit of the Client in accordance with their brief. As such these do not necessarily address all aspects of ground behaviour at the site.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

The depth to roots and/or of desiccation may vary from that found during the investigation. The Client is responsible for establishing the depth to roots and/or of desiccation. Supplied site surveys may not include substantial shrubs or bushes and is also unlikely to have data of any trees, bushes or shrubs removed prior to or following the site survey.

Where trees are mentioned in the text this means existing trees, substantial bushes or shrubs, recently removed trees (approximately 20 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

Ownership of land brings with it onerous legal liabilities in respect to contaminating the land or harm to the environment. Contaminated Land is defined in Section 57 of the Environment Act 1995 as:

“Land which is in such a condition by reason of substances in, on or under the land that significant harm is being caused or that there is a significant possibility of such harm being caused or that pollution of controlled waters is being or is likely to be caused”.

The investigation and report do not address, define or make recommendations in respect of environmental liabilities. A separate environmental audit and liaison with statutory authorities is required to address these issues.

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets remains with SL. License is for the sole use of the Client and may not be assigned, transferred or given to a third party.

Section 2 Summary of Intrusive Investigation

2.1 Proposed Project Works

The proposal was to undertake a geotechnical and geo-environmental ground investigation to provide preliminary information on the ground conditions on site. The proposed preliminary investigation was outlined in the end client's (HE) specification, reference HEWNSFRD-MMSJV-HGT-000-RP-CE-00002 – C01, dated August 2018.

- 17No. Cable Percussive boreholes (CP) (or suitable alternative) to a maximum depth of 15m below ground level (bgl)
- 12No. Cable Percussive boreholes (or suitable alternative) with Rotary Core (RC) follow on to a maximum depth of 25mbgl
- 13No. Rotary Core boreholes (commencing with Dynamic Sampling (DS), if required) to a maximum depth of 25mbgl
- 3No. Contingency boreholes – locations to be confirmed, if required
- 5No. Cone Penetration Tests (CPTUs) to a maximum depth of 10mbgl
- 30No. Machine excavated Trial Pits (TP) to a maximum depth of 4.5mbgl
- 1No. Contingency trial pit – location to be confirmed, if required
- 13No. Dynamic Cone Penetrometer Tests (DCP) to a maximum depth of 1.5mbgl, co-located with trial pits
- 5No. BRE 365 infiltration tests, co-located with trial pits
- Installations for groundwater and gas monitoring
- Geotechnical laboratory testing on soils and rock
- Chemical laboratory testing on soils and groundwater
- Establishing ground levels and locations of exploratory holes
- Groundwater and gas monitoring for a period of three months following the completion of fieldwork

2.1.1 Actual Project Works

The actual project works were undertaken between the 29th August 2018 and the 9th November 2018 and between the 27th November 2018 and the 29th November 2018. The intrusive works comprised:

- 15No. Cable Percussive boreholes (BH01A, BH20, BH25, BH27 – BH30, BH35 – BH41 and BH37A)
- 2No. Windowless Sampler boreholes (TP25 and TP26)
- 5No. Cable Percussive boreholes with Rotary Core follow on (BH08, BH09, BH11, BH31 and BH32)
- 24No. Rotary Cored boreholes, commencing with dynamic sampling boreholes

(BH02-BH07 BH03A, BH12, BH14, BH14A – BH19, BH21, BH22, BH22A, BH24, BH24A, BH26, BH22 and BH34)

- 5No. Cone Penetration Tests (CPTUs) (CPTU01 – CPTU05)
- 30No. Machine Excavated Trial Pits (TP01, TP03 – TP30, TP09A and TP14A)
- 12No. Dynamic Cone Penetrometer Tests (DCP01, DCP07, DCP16 – DCP23, DCP25 – DCP26)
- 51No. Hand excavated inspection pits at all exploratory hole locations to a maximum depth of 1.20m below ground level
- 5No. BRE 365 infiltration tests (TP14, TP27 – TP30)
- 19No. Installations for groundwater and gas monitoring
- Geotechnical laboratory testing on soils and rock
- Chemical laboratory testing on soils and groundwater
- Establishing ground levels and locations of exploratory holes
- Groundwater and gas monitoring comprising eight visits over a period of three months following the completion of initial fieldwork

The hand excavated inspection pits were dug in accordance with safe digging techniques set out with HS(G)47 – 'Avoiding Danger from Underground Services' and using insulated hand tools. All trial holes were scanned using an eCAT4+ at minimum 300mm depth intervals, within the top 1.20m bgl, to ensure the health and safety of operatives and to avoid damage to services.

An inspection pit was hand-excavated to a maximum depth of 1.20m bgl at each borehole location to check for shallow buried services. The boreholes were then advanced by dynamic, percussive or rotary techniques. Typically, inspection pits were terminated at shallower depths than 1.20m bgl due to encountering limestone bedrock.

On the 24th July 2018, during an onsite meeting between G. Jackson (SL), J. Hills (SL) and R. Harris (ICL), it was agreed that one borehole (BH02) was to be drilled utilising rotary coring techniques instead of cable percussive techniques due to access constraints. Additionally, three trial holes (BH09, BH13 and TP22) were relocated from locations on the highway and onto areas of soft landscaping.

On the 24th August 2018, during an onsite meeting between R. Jones (ICL), David Price (ICL), Kurt Bland (ICL), Mark Gipson (MMSJV) and Chris van den Berg (SL), it was agreed that four borehole locations (BH21, BH22, BH24 and BH26) were to be drilled utilising rotary coring techniques instead of cable percussive techniques due to access constraints.

All trial hole locations were selected by the Client. SL complied with the permit to dig procedures put in place by ICL.

16No. trial locations required an ecological watching brief. 25No. trial hole locations

required an archaeological watching brief.

In addition to the UT100 sampling undertaken within the cable percussion boreholes, 22No. thin walled open-tube samples (UT100) were attempted within eight of the rotary core borehole locations (BH02, BH03A, BH08, BH11, BH14, BH15, BH24, BH26). Undisturbed samples were recovered from the recovered soil core within the remainder of the boreholes.

Three boreholes (BH14A, BH21A and BH24A) were re-drilled using the Geobor S sampling methodology.

Two trial pit locations (TP25 and TP26) were carried out using a tracked windowless sampler rig in place of a mechanical excavator due to access constraints between the vehicular highway and underground utilities.

Soil cores along with recovered samples were logged and sub-sampled so that samples could be sent to the laboratory for both contamination and geotechnical testing.

Two borehole locations were not undertaken. BH10 was omitted from the specification prior to attendance on site. BH23 was not undertaken due to very steep terrain. It was then proposed that the borehole was to be moved to the forecourt of the petrol station, however, the landowner did not agree to this proposal and as such the location was cancelled.

A re-drill of BH32 was requested. However, this borehole was later cancelled by HE due to access issues emplaced by the landowner.

All trial hole locations are presented in Figure 3 to Figure 5.

2.2 Additional Trial Hole Information

All additional works undertaken are summarised in Table 2.1 below.

Table 2.1 Investigation Variations/ Additional Tests

Trial Hole	Variation
BH01	A land drain was noted at 0.30m bgl within the inspection pit. As a result, BH01 was terminated and BH01A was undertaken adjacent to BH01
BH01A	Location drilled with cable percussion method only
BH03	Depth of borehole was extended from 6.00m bgl to 7.50m bgl
BH03A	Depth of borehole was extended from 6.00m bgl to 15.45m bgl
BH05	Located adjacent to highway. Night works were required
BH07	Polymer drilling solution (Purebore) required in order to obtain suitable core recovery from granular strata. Depth of borehole was extended from 10.00m bgl to 12.85m bgl
BH10	This location was cancelled by the IS during the planning stage of the works programme
BH14	In-situ testing instructed at 1.00m intervals.
BH14A	Additional borehole drilled

Trial Hole	Variation
BH15	In-situ testing instructed at 1.00m intervals.
BH18	Depth of borehole was extended from 10.00m bgl to 13.95m bgl
BH19	Depth of borehole was extended from 10.00m bgl to 12.00m bgl
BH20	Location drilled with cable percussion method only
BH21	Location changed from cable percussion to dynamic sampling + rotary coring in preliminary stages due to unsuitable slope angle for the cable percussion rig to set up.
BH21A	Borehole drilled to collect additional undisturbed samples
BH22	Location changed from cable percussion to dynamic sampling + rotary coring in preliminary stages due to access constraints between highway barriers
BH23	Location was not undertaken
BH24	Location changed from cable percussion to dynamic sampling + rotary coring in preliminary stages due to steep access constraints.
BH24A	Additional borehole drilled to collect further undisturbed samples
BH26	Location changed from cable percussion to dynamic sampling + rotary coring in preliminary stages due to steep access constraints.
BH28	Location terminated at 5.70m bgl
BH31	In-situ tests instructed every 1.00m
BH33	Undertaken in an area under a tree protection order. Permits issued outside of the original period of works
BH34	Undertaken in an area under a tree protection order. Permits issued outside of the original period of works
TP + DCP24	Location cancelled after encountering a concrete slab at 0.30m bgl across the wider area surrounding the location
TP09A	Re-excavation of TP09 in order to confirm underlying geology
TP14	TP14 was excavated on 2No. occasions, the second being labelled as TP14A. TP14 was instructed to be backfilled following completion of the infiltration tests at a depth of 1.50m bgl due to failing light. TP14A was excavated to the specified 4.50m bgl as the contingency trial pit.
TP14A	
TP27	Terminated at 1.50m bgl following the infiltration testing
TP28	Terminated at 1.50m bgl following the infiltration testing
TP30	Terminated at 1.50m bgl following the infiltration testing

2.3 Site Works

On dates between the 29th August 2018 and the 31st August 2018 (BH38, BH39), 2No. cable percussive boreholes were drilled using a Dando 2000 percussive drilling rig to depths ranging between 7.20m bgl (BH39) and 8.10m bgl (BH38).

On dates between 3rd September and the 18th October 2018, 13No. cable percussive boreholes (BH01A, BH20, BH27 – BH30, BH35 – BH37, BH40, BH41 and BH37A) were drilled using a Dando 1500 percussive drilling rig to depths ranging between 2.40m bgl (BH35) and 15.00m bgl (BH27).

On dates between the 29th August 2018 and the 8th November 2018, 23No. rotary coring and dynamic sampling boreholes (BH02-BH07 BH03A, BH12, BH14 – BH19, BH21, BH22, BH22A, BH24, BH24A, BH26, BH22 and BH34) were drilled using Comacchio 205, Comacchio 305 and Comacchio 450 dual purpose drilling rigs to depths between 6.00m bgl (BH04) and 25.50m bgl (BH14). On dates between 27th November 2018 and the 30th November 2018 an additional rotary coring and dynamic sampling borehole

(BH14A) was drilled to a depth of 25.00m bgl.

On dates between the 6th September 2018 and the 10th October 2018, 5No. boreholes (BH08, BH09, BH11, BH31 and BH32) were drilled using both cable percussive and rotary coring techniques. The boreholes were drilled using a Dando 2000 percussive drilling rig until refusal, and then drilled to the final borehole depth using a Comacchio 205 dual purpose drilling rig. Final depths ranged between 10.95m bgl (BH11) and 25.95m bgl (BH32).

During a night shift on the 29th October 2018, 2No. windowless sampler boreholes (TP25 and TP26) were drilled using a Premier Compact 110 windowless sampler rig, to depths ranging between 1.65m bgl (TP25) and 1.70m bgl (TP26). Depths achieved were shallower than planned due to encountering hard stratum that could not be penetrated by the windowless sampler.

On dates between the 26th September 2018 and the 9th October 2018, 30No. trial pits (TP01, TP03 – TP30, TP09A and TP14A) were excavated using a JCB 3CX wheeled mechanical excavator to depths ranging between 1.50m bgl (TP06, TP27, TP28 and TP28) and 4.80m bgl (TP15). Infiltration testing was undertaken in five trial pits (TP14, TP27 – TP30) in accordance with the principles of BRE DG365: Soakaway Design:2016.

All trial hole locations were selected by MMSJV and agreed upon by HE, ICL and SL prior to attending site.

On the 13th and 14th September 2018, 5No. Cone Penetration Tests (CPTU01 – CPTU05) were undertaken using a 17.5T TrackTruck mounted probe. Depths tested ranged between 2.68m bgl (CPTU02) and 10.01m bgl (CPTU01, CPTU03 and CPTU04).

19No. boreholes were installed with dual purpose groundwater and gas monitoring wells as instructed by the IS. The installations comprised of 63mm OD HDPE, with the use of a geotextile filter sock, bentonite caps and a non-calcareous gravel response zone. All monitoring wells were installed in accordance with the Technical Specification (S4.6 Section 12) and Schedule 2. All groundwater and ground gas monitoring installations were covered appropriately with installation covers. Where possible, well development was undertaken within five working days of installation.

The remaining 32No. borehole locations, including CPTU locations, were backfilled with bentonite pellets and the surface reinstated to match the original condition. Well installation depths are included within the engineer logs, which are presented in Appendix A.1.

Photographs showing the excavated trial holes and the reinstatement of the trial holes are presented in Appendix F. All trial hole locations have been presented in Figure 3 to Figure 5, with the maximum depths of trial holes and coordinates provided in Table 2.2.

All trial holes were service cleared by TriTech using GPR, Cable Avoidance Tool (C.A.T.) and signal generator (Genny) prior to excavation to ensure the health and safety of the operatives. TriTech were instructed by ICL directly.

Table 2.2 Final Depth and Co-ordinates of Trial Holes

Trial Hole	Proposed Depth (m bgl)	Final Depth (m bgl)	Coordinates		
			Eastings	Northings	Elevation
BH01A (w)	10.00	10.00	507448.95	300138.64	19.38
BH02	10.00	10.45	507455.91	300102.33	18.36
BH03	6.00	7.50	507565.91	299928.09	30.12
BH03A (w)	6.00	15.45	507511.25	299911.02	28.59
BH04	6.00	6.00	507640.96	299861.88	29.90
BH05	6.00	6.57	507646.05	299780.49	NA
BH06 (w)	6.00	6.45	507790.34	299751.90	29.59
BH07 (w)	10.00	12.29	507660.44	299683.80	29.45
BH08	10.00	10.95	507690.01	299584.96	22.83
BH09 (w)	10.00	10.95	507767.66	299547.12	18.38
BH11 (w)	10.00	10.95	507943.62	299634.44	21.09
BH12	10.00	10.95	507932.95	299677.01	24.66
BH13 (w)	20.00	20.00	507936.92	299730.59	27.54
BH14	25.00	25.75	507966.04	299726.12	26.71
BH14A	25.00	25.45	507970.69	299725.50	26.64
BH15	25.00	25.45	507937.63	299757.94	27.93
BH16 (w)	20.00	20.00	507967.73	299755.82	27.61
BH17	15.00	15.45	507967.03	299826.98	28.08
BH18 (w)	10.00	13.95	507968.35	299875.74	26.32
BH19	10.00	12.00	508068.25	299721.22	24.88
BH20 (w)	10.00	10.00	508176.00	299709.03	22.32
BH21	15.00	14.95	508047.57	299652.27	22.03
BH21A	15.00	15.00	508043.29	299648.45	21.62
BH22	15.00	15.00	508114.94	299671.64	20.64
BH24 (w)	15.00	15.45	508260.89	299630.07	12.32
BH24A	15.00	15.50	508257.28	299632.52	12.46
BH25	10.00	10.00	508286.94	299704.74	18.21
BH26 (w)	15.00	15.50	508445.89	299674.95	15.66
BH27 (w)	15.00	15.00	508661.04	299641.95	14.07
BH28	15.00	5.70	508743.62	299620.62	12.26
BH29 (w)	15.00	15.00	508825.05	299595.72	9.87
BH30	15.00	15.00	508911.82	299547.18	12.06
BH31	20.00	21.45	508960.03	299559.84	14.89
BH32	25.00	25.95	508976.58	299537.49	15.94
BH33 (w)	20.00	20.50	509036.12	299540.28	18.88
BH34 (w)	25.00	25.50	509024.12	299508.37	24.02
BH35	6.00	2.40	509122.83	299487.02	19.86
BH36 (w)	6.00	4.40	509428.09	299400.22	19.54
BH37	6.00	3.50	509541.16	299373.20	18.78
BH37A (w)	6.00	5.00	509541.72	299375.15	19.32
BH38	6.00	8.10	509778.47	299318.15	18.65
BH39 (w)	10.00	7.20	510011.08	299238.27	16.93
BH40	6.00	6.00	510083.79	299318.70	16.86

Trial Hole	Proposed Depth (m bgl)	Final Depth (m bgl)	Coordinates		
			Eastings	Northings	Elevation
BH41	6.00	4.20	509812.71	299357.16	19.30
TP01	4.50	3.80	507508.27	299989.62	14.90
TP02	4.50	1.70	507887.45	299583.76	14.94
TP03	4.50	1.70	507945.13	299650.30	22.71
TP04	4.50	2.60	507960.92	299778.91	28.55
TP05	4.50	2.80	507961.92	299802.91	27.19
TP06	4.50	1.50	507970.02	299854.62	27.19
TP07	4.50	2.50	507999.02	299969.62	19.47
TP08	4.50	2.40	508135.25	299721.22	24.73
TP09	4.50	4.50	507777.59	299491.40	10.19
TP09A	4.50	4.50	507776.69	299492.79	10.38
TP10	4.50	3.10	508066.06	299674.72	22.47
TP11	4.50	2.30	508192.37	299587.91	9.60
TP12	4.50	2.10	508255.2	299599.68	9.46
TP13	4.50	4.50	508435.16	299702.77	17.31
TP14	4.50	1.50	508565.60	299695.03	15.93
TP14A	4.50	4.50	508562.99	299693.93	15.66
TP15	4.50	4.80	508617.45	299625.72	10.63
TP16	4.50	2.00	509229.86	299449.86	20.41
TP17	4.50	3.05	509329.80	299423.86	20.44
TP18	4.50	4.50	509648.47	299353.89	18.86
TP19	4.50	4.50	509849.44	299294.74	17.86
TP20	4.50	4.50	509940.65	299268.17	17.23
TP21	4.50	4.50	510167.14	299254.06	15.85
TP22	4.50	4.50	510184.06	299370.7	NA
TP23	4.50	4.50	509814.04	299348.28	19.18
TP25	4.50	1.65	507411[1]	299759[1]	NA
TP26	4.50	1.70	507484[1]	299752[1]	NA
TP27	4.50	1.50	507696.16	299788.14	31.38
TP28	4.50	1.50	507852.91	299610.83	20.06
TP29	4.50	4.50	509589.87	299336.56	18.44
TP30	4.50	1.50	510051.22	299202.62	15.82
CPT01	10.00	10.01	508353.24	299704.06	17.02
CPT02	10.00	2.68	508372.84	299671.47	14.76
CPT03	10.00	10.01	508568.92	299641.99	9.15
CPT04	10.00	10.01	508774.82	299586.86	10.43
CPT05	10.00	3.09	508824.76	299569.22	9.44

Notes: w - well installation. [1]Co-ordinatees taken from specification. NA – information not available

Trial holes TP25 and TP26 (undertaken using WS drilling techniques) were not surveyed at the time of drilling as the trial holes were located within a busy carriageway. As such, no ‘as dug’ co-ordinates are available for these locations and the co-ordinates included within Table 2.2 are taken from the specification documents.

The approximate trial hole locations are presented on Figure 3 to Figure 5.

The soil conditions encountered were recorded and soil sampling undertaken as detailed in the specification. The depths given on the trial hole logs and quoted in this report were measured from ground level.

2.4 Groundwater - During Intrusive investigation

Groundwater was encountered within 20No. trial holes during the investigation. It was struck at depths ranging between 1.00m bgl (BH15) and 22.50m bgl (BH15): details on seepage rates and risen levels are included with Table 2.3. In some cases, a perched water table was encountered at shallow depth. Such information has been summarised within Table 2.3.

Table 2.3 Groundwater Strikes and Seepage

Trial Hole	Strike (m bgl)	Notes
BH02	1.20	Rising to 1.10m bgl at 20 minutes. Slow ingress. Possibly perched water
BH08	2.15	Rising to 2.00m bgl at 20 minutes. Slow ingress. Possibly perched water.
BH09	4.90	No rise. Very slow groundwater seepage.
BH14	10.00	Rising to 6.80m bgl. Fast inflow.
BH15	1.00	Seepage at 1.00m bgl. Possibly perched water.
	22.50	Seepage encountered at 22.50m bgl.
BH19	10.40	No rise noted. Very slow ingress.
BH20	6.40	Seepage at 6.40m bgl. No rise noted Very slow.
BH21	6.00	No rise noted. Moderate rate of inflow.
BH22	12.75	Water strike encountered in core run 12.00-13.50m bgl. Fast inflow.
BH28	5.60	Groundwater strike at 5.60m bgl. No movement after 20 minutes.
BH29	2.60	Groundwater strike at 2.60m bgl, rising to 2.50m bgl after 20 minutes.
BH30	4.00	Groundwater strike at 4.00m bgl, rising to 3.80m bgl after 20 minutes.
BH31	4.00	Groundwater strike at 4.00m bgl, rising to 3.80m bgl after 20 minutes.
	8.00	Groundwater strike at 8.00m bgl, rising to 5.40m bgl after 20 minutes.
BH32		No Strike noted. Water level rose from 10.50m bgl at EOS on 7/10/18 to 5.10m bgl at SOS on 8/10/18.
BH33	9.95	Groundwater strike at 9.95m bgl, rising to 8.00m bgl after 20 minutes.
BH34	13.40	Groundwater seepage at 13.40m bgl. Level falling with borehole depth.
TP02	1.70	Groundwater seepage at 1.70m bgl.
TP11	2.10	Very slow groundwater seepage encountered at 2.10m bgl.
TP12	2.10	Very slow groundwater seepage encountered at 2.10m bgl.
TP29	2.20	Very slow groundwater seepage encountered at 2.20m bgl.

Notes: EOS – End of Shift. SOS – Start of shift

2.4.1 Groundwater Monitoring During Investigation

Further groundwater monitoring was conducted within the standpipes installed on site whilst site works were still ongoing and has been presented in Table 2.4.

Data is missing for a period of three weeks, between 11th October and the 5th November 2018. This resulted from the change of monitoring schedules between the on-site team and the post-site monitoring team.

Table 2.4 Groundwater Monitoring During Investigation

Trial Hole	Depth to Water (m bgl)					
	05/09/2018	12/09/2018	17/09/2019	25/09/2018	03/10/2018	11/10/2018
BH01	n/a	0.67	0.68	1.10	0.80	0.70
BH03A	n/a	n/a	n/a	8.42	8.18	8.13
BH06	n/a	n/a	n/a	6.13	Dry	Dry
BH07	n/a	6.28	6.30	6.36	6.37	6.37
BH09	n/a	n/a	3.44	4.70	5.16	5.15
BH11	n/a	2.59	2.55	2.85	2.82	2.82
BH13	6.66	6.69	6.73	6.79	6.80	Dry
BH16	6.91	8.05	8.19	8.09	8.28	8.62
BH18	n/a	n/a	n/a	n/a	6.50	6.20
BH20	n/a	4.49	4.45	4.55	4.50	3.95
BH24	n/a	n/a	n/a	n/a	3.10	3.14
BH26	n/a	n/a	n/a	n/a	3.75	4.00
BH27	n/a	n/a	n/a	n/a	5.30	5.00
BH29	n/a	n/a	n/a	2.14	2.15	2.07
BH33	n/a	n/a	n/a	n/a	n/a	n/a
BH34	n/a	n/a	n/a	n/a	n/a	n/a
BH36	n/a	n/a	n/a	n/a	n/a	n/a
BH37A	2.52	4.46	Dry	Dry	Dry	Dry
BH39	Dry	Dry	Dry	Dry	Dry	Dry

Notes : n/a = is shown where monitoring was undertaken before the date of installation.

2.5 Groundwater Monitoring and Sampling – Post Site Works.

Post works groundwater monitoring was undertaken on eight separate occasions as presented within Table 2.5. Groundwater monitoring visits were undertaken by a specialist sub-contractor (Enitial) and were programmed, as per the specification, to comprise eight visits over a period of three months with initial visits at weekly intervals within the first month, and fortnightly intervals thereafter for a period of two months.

Groundwater sampling was undertaken on one occasion following completion of the site works. Samples were taken from 14No. borehole locations (BH01A, BH03A, BH07, BH09, BH11, BH16, BH18, BH20, BH24, BH26, BH27, BH29 BH33 and BH34) from within the installed wells (identified in Table 2.5).

The test results from the chemical laboratory analysis undertaken on groundwater samples are included within Appendix C.2. Owing to a high suspended silt content within the sample from BH33, insufficient sample remained to allow a full suite of analysis to be undertaken. Silting up of well installations were mitigated by using low flow sampling techniques and installing geosock within all wells. Despite the use of geosock, continued silting up was recorded in some locations over the monitoring programme.

Prior to taking the groundwater samples, the installed boreholes were purged a minimum of three well volumes, as specified. The purging was undertaken using a SmarTROLL

MP low flow cell with readings taken at two second intervals for parameters including RDO concentration and saturation, conductivity, temperature, salinity, TDS, resistivity, ORP, pH and barometric pressure. This information is presented within Appendix E.

Groundwater samples were taken upon stabilisation of the above parameters and sent to the laboratory for chemical analysis.

Table 2.5 Groundwater Monitoring Post Investigation

Trial Hole	Depth to Water (m bgl)							
	05-06/11/2018	12/11/2018	22/11/2018	29/11/2018	11/12/2018	21/12/18	08/01/2019	24/012019
BH01	0.56	0.65	0.95	0.73	0.67	0.72	0.56	1.35
BH03A	7.82	7.83	8.34	8.04	8.4	7.85	8.28	8.37
BH06	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
BH07	6.67	6.4	6.42	6.4	6.46	6.70	6.48	6.50
BH09	5.14	5.15	5.11	5.07	5.09	4.82	5.09	5.12
BH11	2.81	2.82	2.87	2.5	2.87	3.22	2.83	2.66
BH13	6.87	6.87	6.91	6.91	Dry	Dry	Dry	Dry
BH16	8.26	8.36	8.32	6.84	6.35	8.60	8.24	8.31
BH18	6.32	6.34	6.36	6.33	6.41	6.75	6.23	6.38
BH20	4.57	4.55	4.57	4.6	4.6	5.00	4.64	5.10
BH24	3.26	3.16	2.88	2.79	2.79	2.82	2.57	2.48
BH26	3.93	3.93	4.01	3.96	4.01	4.30	3.96	4.02
BH27	4.73	4.66	4.74	4.68	4.65	4.90	4.59	4.57
BH29	1.76	1.69	1.66	1.59	1.5	15.20	1.22	1.28
BH33	n/a	7.94	7.9	7.91	7.93	8.28	7.96	8.40
BH34	25.67	7.9	7.91	7.8	7.74	8.15	7.71	8.13
BH36	2.75	Dry	Dry	Dry	Dry	Dry	Dry	Dry
BH37A	4.56	Dry	Dry	Dry	Dry	4.96	Dry	5.00
BH39	5.54	5.5	5.53	Dry	Dry	Dry	5.29	5.66

Notes: n/a = is shown where monitoring was undertaken before the date of installation (BH33 only).

2.6 Gas Monitoring

Gas monitoring visits were programmed as per the specification, over a period of three months with initial visits at weekly intervals within the first month, followed by fortnightly visits for a period of two months, totalling eight visits. Monitoring was carried out using a HydroTerra GA 5000 – Portable Landfill Gas Analyser with integrated PID.

It should be noted that the gas bung was absent on the installation in BH24 during the visit on the 6th November 2018. This was rectified on the 11th December 2018, when a replacement bung was fitted. The gas monitoring results are presented in Appendix D.

Section 3 Summary of Geotechnical In-Situ Testing

3.1 Standard Penetration Testing

Standard Penetration Tests (SPTs) were undertaken in all 46No. borehole locations. The SPT values presented on the borehole logs have **not** been corrected in accordance with BS EN 22476 Part 3, to account for the rig efficiency, borehole depth, overburden factors etc. Correction of the 'N' values will therefore be necessary using relevant energy ratios of the SPT hammers used during the works, which are summarised in Table 3.1, recorded on the individual engineer logs presented in Appendix A.1, and the SPT calibration certificates that are presented within Appendix G.

Table 3.1 SPT Hammer Efficiency Ratios

Rig Type	Hammer Reference	SPT Efficiency Ratio (%)
Comacchio 205	TEC1301612020	82.18
Comacchio 305	305	77.57
Comacchio 450	EQU1642	65.12
Dando1500	AR1575	73.00
Dando 2500	SEDS04	63.00
Premier 2	Premier 2	76.23

3.2 Dynamic Cone Penetrometer Tests

The Transport Research Laboratory (TRL), Dynamic Cone Penetrometer (DCP) was undertaken at 12No. locations (DCP01, DCP07, DCP16 – DCP23, DCP25 – DCP26). DCP tests were undertaken prior and adjacent to their corresponding machine excavated trial pit location.

As stated in Table 2.1, TP + DCP24 were cancelled by the IS after encountering a concrete slab at 0.30m bgl across the wider area, surrounding the location.

The DCP results are presented in Appendix A.2.

3.3 Infiltration Tests

Infiltration testing was undertaken in 5No. Machine Excavated Trial Pits (TP14, TP27 – TP30) at a depth of 1.50m in accordance with the principles of BRE Digest 365 Soakaway design: 2016.

TP14 was excavated on two occasions, the second being labelled as TP14A. TP14 was backfilled on completion of the infiltration tests due to failing light and was backfilled. TP14A was excavated to the specified 4.50m bgl. Trial pits TP27, TP28 and TP30 were all terminated at 1.50m bgl following the infiltration tests. TP29 was excavated to a depth of 1.50m bgl to allow infiltration testing to be undertaken. Following the completion of testing, the TP29 was extended to the specified depth of 4.50m bgl. The field data is presented within Appendix A.4.

3.4 Continuous Cone Penetration Testing

5No. Cone Penetration Tests (CPTU01 – CPTU05) were undertaken using a 17.5T TrackTruck mounted probe. Depths tested ranged between 2.68m bgl (CPTU02) and 10.01m bgl (CPTU01, CPTU03 and CPTU04). All CPTU tests were carried out by Lankelma, a sub-contractor working on behalf of SL.

The results of the CPTU tests are included within the sub-contractor report and are presented in Appendix A.3.

Section 4 Summary of Geotechnical Laboratory Testing

642No. geotechnical laboratory tests were originally scheduled by the IS. Following failed tests on undisturbed samples, a further 8No. tests were scheduled by the IS. 650No. results have been included within this version of the report. Amendments to the schedules were made following the issuing of failed tests or missing samples. A description of each of these events is incorporated within the relevant sections below.

Within this document, the Engineer logs have been amended to reflect the results of the completed laboratory testing.

The complete set of results is included within the laboratory report presented in Appendix B.

4.1 Atterberg Limit Tests Moisture Content Tests

126No. Atterberg Limit (4 Point Liquid & Plastic Limit (LL/PL) and 171No. Moisture Content tests have been scheduled by the IS. 3No. additional tests were scheduled following the issue of test amendment notices by the geotechnical testing laboratory following the failed testing of undisturbed samples. 129No. Atterberg Limit tests and 174No. Moisture Content tests have been completed. The tests were undertaken in accordance with BS1377:1990 Part 2: 3.2, 4.3 & 5.3.

The results are included within the laboratory report presented in Appendix B.

4.2 Particle Density

9No. samples were scheduled for Particle Density (Glass Jar) testing by the IS. Particle Density (Glass Jar) tests were completed in accordance with BS1377:1990 Part 2: 8.2.

The results are included within the laboratory report presented in Appendix B.

4.3 Particle Size Distribution Tests and Pipette Analysis

Particle Size Distribution (PSD) tests (Wet Sieve Method) and Sedimentation by hydrometer tests were scheduled by the IS. The appointed testing laboratory's accredited sedimentation analysis method was sedimentation by pipette. All tests were undertaken in accordance with BS1377:1990 Part 2: 9.2 & 9.4.

Sedimentation analysis was only undertaken where the PSD tests recorded a fines fraction of greater than 15%.

Sedimentation testing was not carried out on 5No. samples, where the percentage of fines were above 15% (BH03A 9.20-9.30m bgl, BH09 6.30-6.40m bgl, BH14 8.70-8.80m bgl, BH15 6.60-6.70m bgl, TP29 2.00m bgl). Further testing was attempted on these

samples following receipt of the PSD results, however, insufficient sample remained to allow subsequent tests to be performed.

84No. PSD tests and 65No. Sedimentation by pipette tests were undertaken, as instructed by the IS.

The results are included within the laboratory report presented in Appendix B.

4.4 Organic Content

14No. Organic Matter Content (Dichromate Method) tests were undertaken as instructed by the IS. The tests were undertaken in accordance with BS1377:1990 Part 3: 3.

The results are included within the laboratory report presented in Appendix B.

4.5 Loss of Ignition

1No. sample was scheduled for Loss of Ignition testing as scheduled by the IS. The test was undertaken in accordance with BS1377:1990 Part 3: 4.

The results are included within the laboratory report presented in Appendix B.

4.6 Compaction Testing

Two different compaction test methods were scheduled by the IS, as detailed below.

4.6.1 4.5kg Rammer Compaction Tests

3No. samples were scheduled for compaction testing using the 4.5kg Rammer Method. Testing was undertaken in accordance with BS 1377:1990 Part 4: 3.6.

The results are included within the laboratory report presented in Appendix B.

4.6.2 Vibrating Hammer Compaction Tests

2No. samples were scheduled for compaction tests using the Vibrating Hammer Method. Testing was undertaken in accordance with BS 1377:1990 Part 4: 3.7.

The results are included within the laboratory report presented in Appendix B.

4.7 California Bearing Ratio

6No. samples were scheduled for Laboratory California Bearing Ratio tests. 1No. sample was tested at the natural moisture content, whilst the remaining five samples were tested at the optimum moisture content as scheduled by the IS. Both tests were undertaken in accordance with BS1377:1990 Part 4: 7.

The laboratory report is presented in Appendix B.

4.8 One Dimensional Consolidation Testing

10No. samples were tested for One Dimensional Consolidation testing at pressures specified by the IS. Tests were undertaken in accordance with BS1377:1990 Part 5.3.

The results are included within the laboratory report presented in Appendix B.

4.9 Laboratory Swelling Testing

3No. samples were tested for a Laboratory Measurement of Swelling Pressure – two day test as specified by the IS. Testing was undertaken in accordance with BS1377:1990 Part 5: 3.

The results are included within the laboratory report presented in Appendix B.

4.10 Shear Box (60mm Quick Shear)

3No. samples were tested for 60mm Quick Shear tests at pressures specified by the IS. Testing was undertaken in accordance with BS1377:1990 Part 7: 4.

The results are included within the laboratory report presented in Appendix B.

4.11 Quick Undrained Triaxial Compression Tests – 100mm Multistage

34No. samples were scheduled for Multistage Triaxial tests at pressures specified by the IS. 30No. tests were completed in accordance with BS1377:1990 Part 7: 9.

Test Amendment Notices (T.A.N.) were issued by the laboratory for 4No. samples where the test failed or could not be completed. These T.A.N. were supplied direct to the IS at the time of issue. BH08 at 5.60m bgl fell apart during extrusion. No replacement test was scheduled by the IS. BH14 at 17.20 to 17.40m bgl did not have sufficient material present within the sampler to allow testing. No replacement test was scheduled by the IS. BH14 at 19.20m bgl slumped whilst being extruded. No replacement test was scheduled by the IS. BH15 at 22.50m bgl fell apart during extrusion. No replacement test was scheduled by the IS.

The results are included within the laboratory report presented in Appendix B.

4.12 Consolidated Undrained Triaxial Compression Tests

7No. samples were scheduled for Consolidated Undrained Triaxial Compression test (Multi-stage with pore water pressure, volume change, saturation and consolidation) in accordance with BS1377:1990 Part 8, at parameters selected by the IS, however, only 5No. results are included within this report.

Test Amendment Notices (T.A.N.) were issued by the laboratory for 2No. samples where the test failed or could not be completed. These T.A.N. were supplied to the IS at the time of issue. BH14 at 9.00 – 9.50m bgl slumped within the sampler. A Moisture Content test and 4-point Atterberg Limit test was scheduled on the sample by the IS. BH25 at 6.50 – 6.80m bgl fell apart during extrusion. A Moisture Content test and 4-point Atterberg Limit test was subsequently scheduled on the sample by the IS.

The results are included within the laboratory report presented in Appendix B.

4.13 Uniaxial Compressive Strength

Uniaxial Compressive Strength testing of rock were scheduled on 9No. samples as instructed by the IS, however, only 6No. results are included within this report. Testing was carried out in accordance with ISRM recommended methods.

Test Amendment Notices (T.A.N) were issued by the laboratory for 2No. samples where the test could not be completed due to fractured samples (BH03:4.50-4.78m bgl and BH03:6.00-6.22m bgl)

One sample from BH33 at 5.61 – 5.82m bgl was misplaced during transit from the SL warehouse to the laboratory. As such, a replacement sample at 5.46 – 5.60m bgl was tested.

The results are included within the laboratory report presented in Appendix B.

4.14 Point Load

40No. samples were scheduled for determination of Point Load Value Axial or Diametrical in accordance with ISRM recommended methods as scheduled by the IS. 42No. results are included within this report.

The additional 2No. Point Load tests with Moisture Content tests were scheduled by the IS as a replacement test for UCS testing on a sample at BH15 at 2.48 – 2.72m bgl. A sample from BH33 at 5.16 – 5.26m bgl was misplaced during transit from the SL warehouse to the laboratory. As such a replacement sample at 5.01 – 5.10m bgl was tested and is included within this report.

The results are included within the laboratory report presented in Appendix B.

4.15 Aggregate Abrasion Value

3No. samples were tested for Aggregate Abrasion Value tests as specified by the IS. Testing was undertaken in accordance with BS EN 1097-8.

The results are included within the laboratory report presented in Appendix B.

4.16 Soundness by Magnesium Sulphate

2No. samples were tested for Soundness by Magnesium Sulphate tests as specified by the IS. Testing was undertaken in accordance with BS EN 1397-2.

The results are included within the laboratory report presented in Appendix B.

4.17 Sulphate and pH Tests

68No. samples were tested for Suite D (BRE SD1) analysis in accordance with the ICE recommended testing suites, as scheduled by the IS.

The results are included within the laboratory report presented in Appendix B.

Section 5 Determination of Chemical Analysis

5.1 Contamination Analysis - Soils

A total of 162No. environmental samples were scheduled for chemical analysis. A total of 9No. samples were lost in transit between the site and the laboratory, therefore those samples were not tested. As such, 153No. samples were tested. This included 110No. Suite E soils tests and 43No. Suite E leachate tests.

All environmental samples were sent to the laboratory directly from site, typically within twenty-four hours. Where exceptions were required, e.g. where samples were taken prior to a weekend, the samples were stored within refrigerated conditions.

Contamination schedules that were provided by the IS were typically forwarded to the laboratory on the day of receipt (or on the next working day when received over a weekend).

63No. samples exceeded the recommended holding times by between one and nine days. 14No. samples exceeded the recommended holding times by between ten and twenty-five days.

No Waste Acceptance Criteria (WAC) tests were scheduled by the IS.

Samples taken were tested for general contamination properties, the suite being specified by the IS, modified from Suite E of ICE Specification for Ground Investigation, including the following determinants:

- Metals including: Boron, Cadmium, Chromium (Chromium III and Chromium VI), Copper, Lead, Mercury, Nickel and Zinc
- Arsenic
- pH
- Soil Organic Matter
- Phenols
- Speciated Polyaromatic Hydrocarbons (16 USEPA PAHs)
- Speciated Total Petroleum Hydrocarbons (TPH) CWG with aliphatic/aromatic splits
- Selenium and Vanadium
- PCB’s
- Asbestos identification

The results of all of the contamination analysis are presented in Appendix C.1.

5.2 Contamination Analysis - Headspace Analysis

Head space analysis was undertaken on environmental samples from 55No. trial holes and has been reported on the engineer logs presented within Appendix A.1.

5.3 Contamination Analysis - Waters

Groundwater sampling and testing formed part of the monitoring programme. 14No. samples (BH01A, BH03A, BH07, BH09, BH11, BH16, BH18, BH20, BH24, BH26, BH27, BH29 BH33 and BH34) were collected and tested for general contamination properties, the suite being specified by the IS, modified from Suite F and BRE Suite A of ICE Specification for Ground Investigation, including the following determinants:

- Water suitable metals including: Boron, Cadmium, Chromium (Chromium III and Chromium VI), Copper, Lead, Mercury, Nickel and Zinc
- Arsenic
- Dissolved organic carbon
- pH
- Cyanide, Sulphate and chloride
- Speciated Polyaromatic Hydrocarbons (16 USEPA PAHs)
- Speciated Total Petroleum Hydrocarbons (TPH) CWG with aliphatic/aromatic splits
- BTEX/MTBE Suite
- Nitrate as NO_3

Samples from 5No. locations (BH06, BH13, BH36, BH37A, BH39) could not be taken due to there being insufficient groundwater within the well installation.

1No. sample from BH33 could not be tested for all determinands due to a high silt content within the sample. Full results of the monitoring programme along with laboratory tests results of groundwater analysis are presented within Appendix C.2.

Groundwater monitoring visits were undertaken by Enitial, a specialist sub-contractor, and were programmed as per the specification. Prior to taking the groundwater samples, the installed boreholes were purged a minimum of three well volumes, as specified. The purging was undertaken using a SmarTROLL MP low flow cell with readings taken at two-second intervals for parameters including RDO concentration and saturation, conductivity, temperature, salinity, TDS, resistivity, ORP, pH and barometric pressure.

Groundwater samples were taken upon stabilisation of the above parameters, packaged in cool boxes and sent to the laboratory on the same day for chemical analysis.

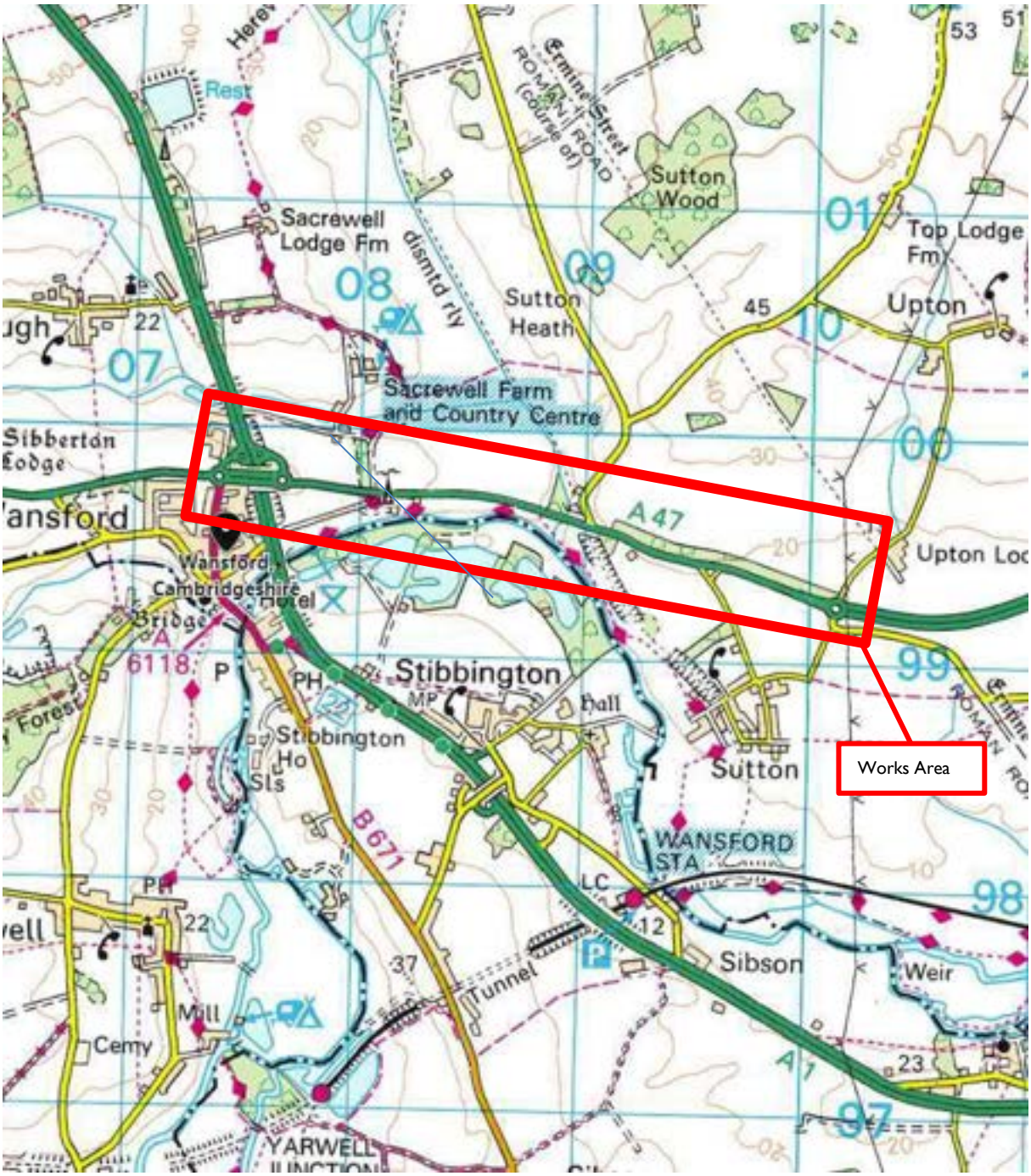
The monitoring information is presented within Appendix E.

List of Figures

Figure 1 – Site Location Map 27
Figure 2 – Aerial Photograph 28
Figure 3 – Trial Hole Plan – West 29
Figure 4 – Trial Hole Plan - Centre 30
Figure 5 – Trial Hole Plan - East 31

List of Appendices

Appendix A Field Work
Appendix A.1 Engineers Logs
Appendix A.2 Dynamic Cone Penetration
Appendix A.3 Cone Penetration Test – Lankelma Report
Appendix A.4 Infiltration Testing
Appendix B Geotechnical Laboratory Testing
Appendix C Chemical Laboratory Results
Appendix C.1 Soils Chemical Laboratory Results
Appendix C.2 Groundwater Chemical Laboratory Results
Appendix D Gas Monitoring Data
Appendix E Groundwater Sampling Parameters
Appendix F Site Photographs
Appendix G SPT Hammer Certificates

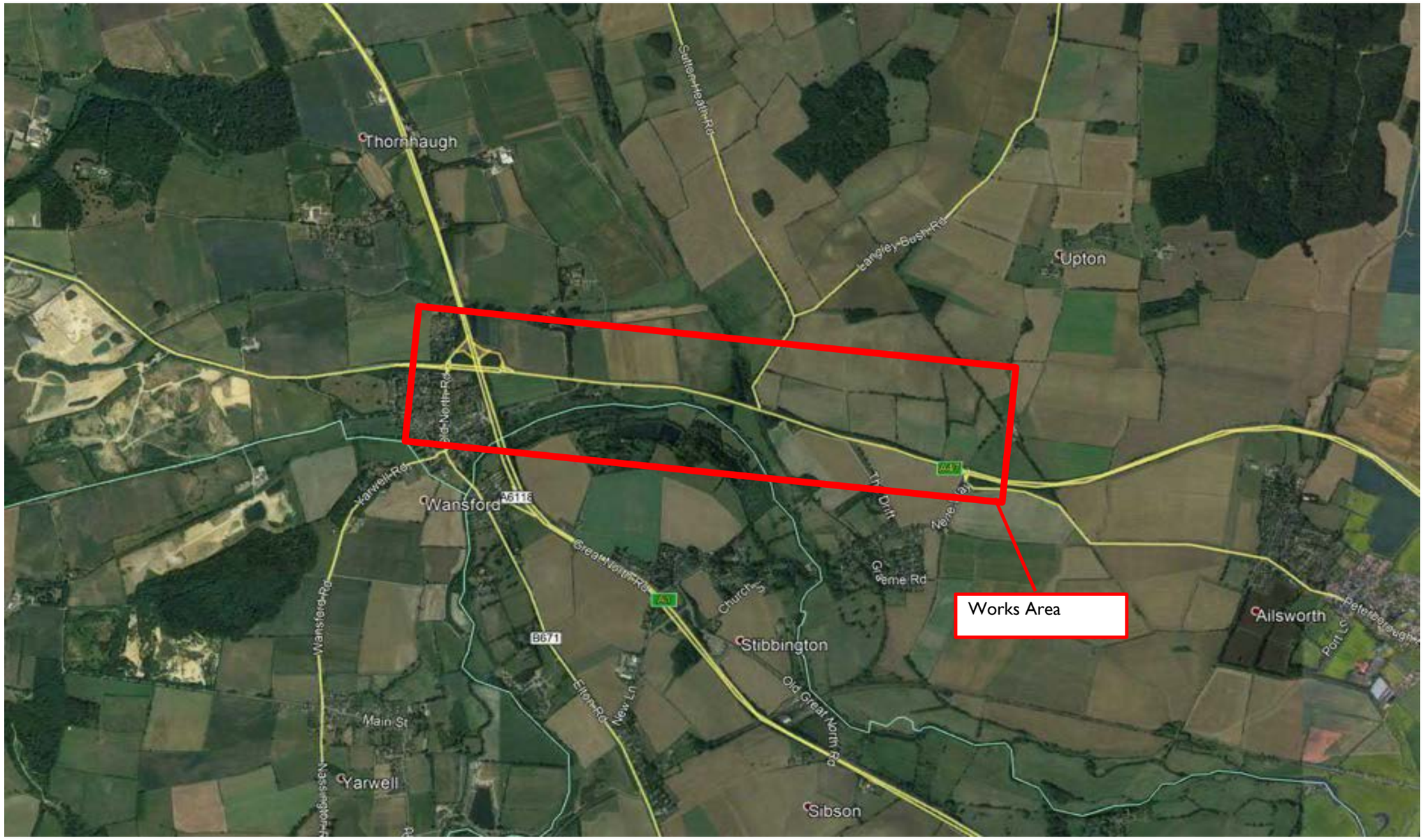


Source: Bing Maps

Figure 1 – Site Location Map

Job Number 17076	**Project** A47 Improvements Programme - Wansford to Sutton Dualling Scheme
Client Interserve Construction Limited	**Date** October 2019

Figure 2 – Aerial Photograph



Project
A47 Improvements Programme - Wansford to Sutton Dualling Scheme

Client
Interserve Construction Limited

Date
October 2019

Job Number
17076

Figure 3 – Trial Hole Plan – West



Project
A47 Improvements Programme - Wansford to Sutton Dualling Scheme

Client
Interserve Construction Limited

Date
October 2019

Job Number
17076

Figure 4 – Trial Hole Plan - Centre



Project
A47 Improvements Programme - Wansford to Sutton Dualling Scheme

Client
Interserve Construction Limited

Date
October 2019

Job Number
17076

N

Figure 5 – Trial Hole Plan - East



Project
A47 Improvements Programme - Wansford to Sutton Dualling Scheme

Client
Interserve Construction Limited

Date
October 2019

Job Number
17076

N

Appendix A Field Work

Appendix A.1 Engineers Logs

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP01** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Trial Pit Width: 0.60m	
Dates: 30/09/2018	Level: 14.90m AOD	Co-ords: E507508.27 N299989.62	Logged By RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D					Grass over sandy SILT. Sand is fine and medium. Rare rootlets. TOPSOIL
		ES					
		J					
	0.20	D		0.30	14.60		
		J					Firm dark brown rarely multicoloured gravelly very sandy CLAY. Sand is fine and medium. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	0.50	B					
		D		0.60	14.30		
		ES					Firm light brown sandy, very gravelly CLAY. Sand is fine and medium. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
		J					
				0.90	14.00		
	1.00	B					Light brown and white very clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
		D					
		J					
				1.30	13.60		
	1.50	D					Brown occasionally light brown slightly clayey very gravelly fine to coarse SAND with a moderate angular and sub-angular limestone and sandstone cobble content. Gravel is angular and sub-angular fine to coarse limestone and sandstone. Weathered INFERIOR OOLITE GROUP
	2.00	B					
		D					
				2.30	12.60		
	2.50	D					Weak white and brown sandy LIMESTONE recovered as slightly clayey sandy gravelly, angular and sub-angular limestone and sandstone cobbles and boulders. Sand is fine and medium. Gravel is angular and sub-angular fine to coarse limestone and sandstone. Weathered INFERIOR OOLITE GROUP
	3.00	B					
		D					
				3.80	11.10		End of Pit at 3.800m

General Remarks:

Trial pit terminated at 3.80m due to side wall instability. Roots encountered to 0.30m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP02
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.20m	Trial Pit Width: 0.60m	
Dates: 27/11/2018	Level: 14.94m AOD	Co-ords: E507887.45 N299583.76	Logged By CB

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D ES J		0.10	14.84		Dark yellowish brown slightly clayey gravelly fine to coarse SAND. Gravel is angular fine to coarse limestone. Rare rootlets. TOPSOIL
	0.20	D ES EW J					Light orangish brown slightly clayey sandy angular fine to coarse limestone GRAVEL with a moderate sub-angular limestone cobble content. Sand is fine to coarse. Rare rootlets. Weathered INFERIOR OOLITE GROUP
	0.50	D ES J		0.80	14.14		Light yellowish grey clayey sandy GRAVEL with a low angular limestone cobble and boulder content. Sand is fine to coarse. Gravel is angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	1.00	B C D J					*Rootlets present.*
	1.50	D		1.70	13.24		End of Pit at 1.700m

1
2
3
4
5

General Remarks:

Roots encountered to 1.40m bgl. Trial hole terminated at 1.70m bgl on impenetrable limestone strata. Upon completion, trial hole was backfilled with materials arising.

Groundwater Remarks: Groundwater seepage encountered at 1.70m bgl.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP03** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.20m	Trial Pit Width: 0.60m	
Dates: 01/10/2018	Level: 22.71m AOD	Co-ords: E507945.13 N299650.30	Logged By CB

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D		0.20	22.51		Grass over firm brown sandy SILT. Sand is fine and medium. Occasional rootlets. TOPSOIL
		J					
		PID	0.0ppm				
	0.20	D					Very weak light yellowish brown and light grey sandy moderately weathered LIMESTONE. Sand is fine to coarse. Recovered as slightly clayey sandy gravel with a low angular and sub-angular limestone cobble and boulder content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
		ES					
		J					
		PID	0.0ppm				
	0.50	B					
		ES					
		J					
	0.50 - 1.00	4 X B					
	0.50	PID	0.0ppm				
	1.00	D					
	1.00 - 1.70	J					
	1.00	PID	0.0ppm				
	1.20	B					
		C					
				1.70	21.01		End of Pit at 1.700m

1 2 3 4 5

General Remarks:

Trial pit terminated at 1.70m bgl on impenetrable limestone strata. Roots encountered to 0.20m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP04** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.95m	Trial Pit Width: 0.60m	
Dates: 01/10/2018	Level: 28.55m AOD	Co-ords: E507960.92 N299778.91	Logged By RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.00 - 0.20	B					Firm brown slightly gravelly sandy CLAY with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Roots and rootlets present. Reworked TOPSOIL
	0.10	2 X D					
		ES					
		J					
	0.20	2 X D		0.35	28.20		
		ES					Firm orangish brown to brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Reworked INFERIOR OOLITE GROUP
		EW		0.50	28.05		
		J					Weak light yellowish brown and light grey moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as slightly clayey sandy gravel with a low angular and sub-angular cobble and boulder content. Weathered INFERIOR OOLITE GROUP
	0.50	2 X D					
		B					
		J					
	0.50 - 0.70	7xB					
	1.00	ES					
				1.30	27.25		Weak light yellowish brown and light grey moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as slightly clayey sandy gravel with a medium to high angular and sub-angular cobble and low to medium angular and sub-angular boulder content. Calcite cement and iron staining present. Weathered INFERIOR OOLITE GROUP
	1.50 - 1.60	2xB					
	2.00	B					
		C					
	2.00 - 2.10	2xB					
	2.10 - 2.50	6XB					
	2.50	2xB					
				2.60	25.95		End of Pit at 2.600m

General Remarks:

Trial pit terminated at 2.60m bgl on impenetrable limestone strata. Roots encountered to 0.35m bgl. Upon completion, trial hole backfilled with materials arising. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP05** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.65m	
Dates: 01/10/2018	Level: 27.19m AOD	Co-ords: E507961.92 N299802.91	Logged By: RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D J					Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Roots and rootlets present. Reworked TOPSOIL
	0.20	2 X D ES J		0.30	26.89		
	0.50	2 X D B J					Yellowish brown, slightly clayey gravelly fine to coarse SAND with a low to medium sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	1.00	2 X B B ES J		1.00	26.19		Weak yellowish brown, light grey and light brownish grey moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as clayey sandy angular and sub-angular fine to coarse gravel with a medium to high angular and sub-angular cobble and low angular and sub-angular boulder content. Pockets and lenses of light grey stiff to very stiff clay. Weathered INFERIOR OOLITE GROUP
	1.60	6XB B					
	2.00	2 X B C					
	2.50	B					
				2.80	24.39		End of Pit at 2.800m

1 2 3 4 5

General Remarks:

Trial pit terminated at 2.80m bgl on impenetrable limestone strata. Roots encountered to 0.30m bgl. Upon completion, trial hole backfilled with materials arising. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP06
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Trial Pit Width: 0.60m	
Dates: 01/10/2018	Level: 27.19m AOD	Co-ords: E507970.02 N299854.62	Logged By WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D J PID	0.0ppm	0.30	26.89		Light brown gravelly fine and medium SAND with a low sub-angular limestone cobble content. Gravel is sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	0.20	2 X D J PID	0.0ppm	0.50	26.69		Light yellowish orange gravelly fine to coarse SAND with a low sub-angular limestone cobble content. Gravel is angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	0.50	2 X D J PID	0.0ppm				Light yellowish grey LIMESTONE recovered as sandy angular and sub-angular fine to coarse GRAVEL with a moderate angular cobble and boulder content. Weathered INFERIOR OOLITE GROUP
	1.00	2 X D J PID	0.0ppm				
				1.60	25.59		End of Pit at 1.600m

General Remarks:

Trial pit terminated at 1.60m bgl on impenetrable limestone strata. Roots not encountered. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP06-IP
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Hand Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: None	
		Support: None	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 0.40m	Trial Pit Width: 0.40m	
Dates: 30/12/2018	Level: 27.16m AOD	Co-ords: E507973.00 N299856.00	Logged By: JO

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J					Yellowish brown to brown gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. Rootlets present. Weathered INFERIOR OOLITE GROUP
	0.20	2 X D J		0.30	26.86		Yellowish brown to brown slightly clayey gravelly fine to coarse SAND with a low angular limestone cobble content. Gravel is sub-angular fine to coarse limestone. Rootlets present. Weathered INFERIOR OOLITE GROUP
	0.50	2 X D J		0.50	26.66		End of Pit at 0.500m

General Remarks:
Trial pit excavated to 0.50m bgl, adjacent to TP06, to obtain additional environmental samples. Rootlets encountered to 0.50m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP07** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.80m	Trial Pit Width: 0.60m	
Dates: 28/09/2018	Level: 19.47m AOD	Co-ords: E507999.02 N299969.62	Logged By RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
				0.05	19.42		Tarmacadam. MADE GROUND
	0.10	D ES J		0.20	19.27		Firm sandy silty CLAY. Sand is fine and medium. Rare rootlets. TOPSOIL
	0.20	D ES EW J		0.40	19.07		Dark brown gravelly silty fine and medium SAND. Gravel is angular to rounded fine to coarse sandstone and mudstone. Weathered INFERIOR OOLITE GROUP
	0.50	D ES J		0.90	18.57		Light brown gravelly silty fine to coarse SAND. Gravel is angular to rounded fine to coarse sandstone and mudstone. Weathered INFERIOR OOLITE GROUP
	1.00	B D J					White, light brown, brownish grey and light grey silty very gravelly fine and medium SAND with a high angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	1.50	D					
	2.00	B D		1.80	17.67		White, light brown, brownish grey, light grey silty very sandy, angular and sub-angular fine to coarse limestone GRAVEL with a moderate angular and sub-angular limestone cobble content. Sand is fine and medium. Weathered INFERIOR OOLITE GROUP
	2.50	D		2.50	16.97		End of Pit at 2.500m

1 2 3 4 5

General Remarks:

Trial pit terminated at 2.50m bgl on impenetrable limestone strata. Roots encountered to 0.20m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP08** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.90m	Trial Pit Width: 0.60m	
Dates: 01/10/2018	Level: 24.73m AOD	Co-ords: E508135.25 N299721.22	Logged By WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D J					Light brown gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse limestone. TOPSOIL
	0.20	D ES J		0.30	24.43		Light yellowish brown very gravelly fine to coarse SAND. Gravel is angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	0.50	D J					
	0.60	B D		0.60	24.13		Light orangish brown very gravelly fine to coarse SAND with a moderate sub-angular limestone cobble content. Gravel is angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	1.00	2 X B B D J					
	1.50	D					*Pocket of light yellowish brown sandy clay.*
	2.00	B D					
				2.40	22.33		End of Pit at 2.400m

1 2 3 4 5

General Remarks:

Trial pit terminated at 2.40m bgl on impenetrable limestone strata. Roots not encountered. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP09** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.95m	Support: None / Trial Pit Width: 0.60m	
Dates: 27/09/2018	Level: 10.19m AOD	Co-ords: E507777.59 N299491.40	Logged By: RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D J		0.20	9.99		Grass over dark brown slightly clayey slightly gravelly silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone and flint. Frequent rootlets present. MADE GROUND
	0.20	D J					Soft locally firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse sandstone, mudstone, flint, coal and concrete. Rare rootlets. MADE GROUND
	0.50	D J		0.70	9.49		Firm locally stiff dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse, sandstone, mudstone and flint. Frequent pockets of ash. MADE GROUND
	1.00	B D J					*Unused and detached land drain encountered.*
	1.50	D		1.80	8.39		Firm locally stiff laminated dark grey slightly sandy CLAY. Sand is fine and medium. LIAS GROUP
	2.00	B D					
	2.50	D					
	3.00	B D					
	3.50	D					
	4.00	B D					
	4.50	D		4.50	5.69		End of Pit at 4.500m

1 2 3 4 5

General Remarks:

Roots encountered to 0.70m bgl. Unused and detached land drain encountered at 0.70m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP09A** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.20m	Support: None / Trial Pit Width: 0.60m	Logged By: RP
Dates: 10/10/2018	Level: 10.38m AOD	Co-ords: E507776.68 N299492.79	

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D J					Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent roots (up to 6mm diam). MADE GROUND
		PID	0.0ppm				
	0.20	2 X D J		0.30	10.07		Soft locally firm brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse sandstone, mudstone, flint, coal and concrete. Rare rootlets. MADE GROUND
		PID	0.0ppm				
	0.50	2 X D D J					
		PID	0.0ppm				
	1.00	2 X D B ES J		1.10	9.28		Firm dark brown slightly gravelly sandy CLAY. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine and medium flint and brick. MADE GROUND
		PID	0.0ppm				
	1.30	2 X D B J		1.40	8.98		Stiff fissured dark grey slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine and medium limestone and calcite. Fissures are very closely spaced and polished. Rare shell and belemnite fossils. LIAS GROUP
	1.50	D					
	2.00	2 X D B J					
	2.50	D					
	3.00	2 X D B J					
	3.50	D					
	4.00	2 X D B J					
	4.50	D		4.50	5.88		End of Pit at 4.500m

1 2 3 4 5

General Remarks:
Roots encountered to 1.10m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP10** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 01/10/2018	Level: 22.47m AOD	Co-ords: E508066.06 N299674.72	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D					Grass and moss over dark brown gravelly fine to coarse SAND locally tending to firm slightly gravelly sandy clayey SILT. Gravel is sub-angular and sub-rounded fine and medium limestone. Weathered INFERIOR OOLITE GROUP
		J					
		PID	0.0ppm				
	0.20	D					
		J					
		PID	0.0ppm				
	0.50	D					
		J					
		PID	0.0ppm				
	1.00	B					
		D					
		J		1.15	21.32		
	1.20	B					Light orangish brown sandy angular fine to coarse limestone GRAVEL with a moderate angular limestone cobble content. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP
		D					
	1.50	D					
	2.00	B					
		D					
	2.20	B		2.20	20.27		Light orangish brown mottled greyish brown silty gravelly fine to coarse SAND with a low to moderate sub-angular limestone cobble content. Gravel is angular fine and medium limestone. Weathered INFERIOR OOLITE GROUP
		D					
	2.50	B		2.50	19.97		Yellowish orange slightly gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
		D					
	3.00	B					
		D		3.10	19.37		End of Pit at 3.100m

1 2 3 4 5

General Remarks:

Trial pit terminated at 3.10m bgl on impenetrable limestone strata. Roots not encountered. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP10-IP
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Hand excavated.	Hole Type TP
Location: Wansford to Sutton		Plant: None	
		Support: None.	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 0.40m	Trial Pit Width: 0.40m	
Dates: 17/10/2018	Level: 22.47m AOD	Co-ords: E508070.00 N299672.00	Logged By RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J		0.15	22.32		Firm dark brown slightly gravelly sandy clayey SILT. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine and medium sandstone and limestone. Frequent rootlets. TOPSOIL
	0.20	2 X D ES EW J		0.30	22.17		Firm light brown slightly gravelly sandy clayey SILT. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine and medium limestone and rare flint. Frequent rootlets. RIVER TERRACE DEPOSITS
	0.50	2 X D J		0.70	21.77		Firm light yellowish brown sandy gravelly SILT. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone. Rare rootlets. Weathered INFERIOR OOLITE GROUP
							End of Pit at 0.700m

1
2
3
4
5

General Remarks:

Trial pit excavated to 0.70m bgl, adjacent to TP10, to obtain additional environmental samples. Roots encountered to 0.70m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP11
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	Logged By: RP
Dates: 27/09/2018	Level: 9.60m AOD	Co-ords: E508192.37 N299587.91	

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.00	2 X D J		0.10	9.50		Grass over soft dark grey sandy silty CLAY. Sand is fine and medium. Occasional rootlets. MADE GROUND
	0.10	2 X D J					Soft locally firm dark grey slightly gravelly sandy CLAY with rare fragments of plastic. Sand if fine to coarse. Gravel is sub-angular to rounded fine to coarse sandstone, mudstone and concrete. Occasional rootlets. MADE GROUND
	0.20	ES EW		0.30	9.30		Soft locally firm greyish brown and light brown slightly gravelly sandy silty CLAY. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse sandstone, mudstone and limestone. ALLUVIUM
	0.50	2 X D D ES J					
	0.50 - 0.60	B					
	1.00	2 X D D					
	1.00 - 1.10	J					
	1.00 - 1.20	B					
	1.50 - 1.60	D					
▼	1.90 - 2.00	B D		1.90	7.70		Multicoloured slightly sandy angular to rounded fine to coarse sandstone, mudstone, mica, ironstone and limestone GRAVEL. Sand is fine and medium. ALLUVIUM
				2.30	7.30		End of Pit at 2.300m

General Remarks:
Roots encountered to 1.10m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater seepage encountered at 2.10m bgl.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP12** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 27/09/2018	Level: 9.46m AOD	Co-ords: E508255.20 N299599.68	Logged By: RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.00 - 0.10	2 X D J		0.10	9.36		Grass over firm brown sandy SILT. Sand is fine to coarse. Occasional rootlets. TOPSOIL
	0.10	D ES					Firm grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse sandstone. Occasional rootlets. ALLUVIUM
	0.10 - 0.20	2 X D J					
	0.50	ES					
	0.50 - 0.60	2 X D J					
				0.80	8.65		Soft locally firm greyish brown and light brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse sandstone, mudstone and limestone. ALLUVIUM
	1.00 - 1.10	2 X D J					
	1.00 - 1.20	B					
	1.50 - 1.60	D					
				1.60	7.86		Multicoloured slightly sandy silty angular to rounded fine to coarse sandstone, mudstone, mica, ironstone and limestone GRAVEL. Sand is fine and medium. ALLUVIUM
	1.90 - 2.00	B D					
▼				2.10	7.36		End of Pit at 2.100m

1 2 3 4 5

General Remarks:

Trial pit terminated at 2.10m bgl on impenetrable strata. Roots encountered to 0.80m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater seepage encountered at 2.10m bgl.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited Newton House, Cross Road, Tadworth KT20 5SR Tel: 01737 814221 Email: admin@soilslimited.co.uk	**Trial Pit Log**	Trial Pit No. **TP13** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated		Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX		Scale 1:25
		Support: None		
Client: Interserve Construction Limited		Trial Pit Length: 2.00m	Trial Pit Width: 0.70m	
Dates: 02/10/2018	Level: 17.31m AOD	Co-ords: E508435.16 N299702.77		Logged By WN

Water Strike	Samples & In Situ Testing			Depth (m)	Level (mAOD)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	J,D					Light orangish brown silty gravelly fine to coarse SAND locally tending to slightly gravelly sandy clayey SILT. Gravel is angular to sub-rounded fine to coarse limestone. Rare rootlets. TOPSOIL
		PID	0.0ppm				
	0.20	J,D					
		PID	0.0ppm	0.30	17.01		
	0.50	B					Light orangish brown very gravelly fine to coarse SAND with a low angular limestone cobble content. Gravel is angular to sub-rounded fine to coarse limestone. RIVER TERRACE DEPOSITS 2
		J,D					*Rare rootlets.*
		PID	0.0ppm				
	1.00	J,D					
				1.20	16.11		
	1.30	B					Light orangish brown slightly clayey silty gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
		D					
	1.50	D					
	2.00	B					
				2.40	14.91		
	2.50	B					Light orangish brown very gravelly fine to coarse SAND with a low angular limestone cobble content. Gravel is angular to sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
		D					
	3.00	B					
		D					
	3.50	D					
	4.00	B					
		D					
				4.50	12.81		End of Pit at 4.500m

1 2 3 4 5

General Remarks:

Roots encountered to 0.40m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type

D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP13-IP
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Hand Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: None	
		Support: None	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 0.40m	Trial Pit Width: 0.40m	
Dates: 17/10/2018	Level: 17.31m AOD	Co-ords: E508437.00 N299704.00	Logged By: JO

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D J					Firm yellowish brown to brown slightly gravelly sandy clayey SILT. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. Rootlets present. TOPSOIL
	0.20	2 X D ES J		0.30	17.01		Yellowish brown to brown slightly clayey gravelly fine to coarse SAND with a low angular limestone cobble content. Gravel is sub-angular and angular fine to coarse limestone. RIVER TERRACE DEPOSITS 2
	0.50	2 X D J		0.70	16.61		End of Pit at 0.700m

General Remarks:
Trial pit excavated to 0.70m bgl, adjacent TP TP13, to obtain additional environmental samples. Roots encountered to 0.70m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP14** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.85m	Support: None / Trial Pit Width: 0.70m	
Dates: 03/10/2018	Level: 15.93m AOD	Co-ords: E508565.00 N299695.00	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D J					Grass over slightly gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine and medium limestone. TOPSOIL
	0.20	D J		0.30	15.63		Light orangish brown very gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. RIVER TERRACE DEPOSITS 2
	0.50	D J		0.60	15.33		Dark orangish brown slightly clayey very gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse limestone. RIVER TERRACE DEPOSITS 2
	0.70	B D					
	1.00	B D J					
	1.50	B D		1.45	14.48		Light orangish brown very gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. RIVER TERRACE DEPOSITS 2
				1.50	14.43		End of Pit at 1.500m

General Remarks:

Roots not encountered. Infiltration testing in accordance with BRE 365; 2016 undertaken at 1.50m bgl. Upon completion, trial hole was backfilled with materials arising. Trial pit was not extended to 4.50m bgl to allow more time for soakage testing, as requested by MM.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP14A
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 10/10/2018	Level: 15.66m AOD	Co-ords: E508562.99 N299693.93	Logged By: RP

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	ES J,D,D PID	0.0ppm				Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse quartz. Frequent roots (up to 3mm diam). TOPSOIL
	0.20	ES EW J,D,D PID	0.0ppm	0.40	15.26		Light brown silty gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
	0.50	ES J,D,D PID	0.0ppm	0.80	14.86		Dark brown clayey silty gravelly fine to coarse SAND. Gravel is sub-rounded and rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
	1.00	B D J,D,D PID	0.0ppm				
	1.50	D		1.50	14.16		Dark brown very gravelly fine to coarse SAND. Gravel is sub-rounded and rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
	2.00	B D					
	2.50	D		2.50	13.16		Firm light grey slightly gravelly sandy silty CLAY with frequent pockets of dark grey clay. Sand is fine and medium. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP
	3.00	B D					
	3.50	D		3.30	12.36		Reddish brown mottled grey clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Frequent iron staining present. Weathered INFERIOR OOLITE GROUP
	4.00	B D					*Moderate sub-angular limestone cobble content.*
	4.50	D		4.50	11.16		End of Pit at 4.500m

General Remarks:

Trial Pit 14A excavated to a greater depth than TP14 to confirm the ground conditions observed in Trial Pit 14. Roots encountered to 0.40m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP15** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 04/10/2018	Level: 10.63m AOD	Co-ords: E508617.45 N299625.72	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J		0.20	10.43		Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent roots (up to 5mm diam). TOPSOIL
	0.20	2 X D J					Light brown gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse limestone and flint. RIVER TERRACE DEPOSITS 1
	0.40 - 0.70	B					
	0.50	2 X D ES J					
	1.00	2 X D D J		0.80	9.83		Firm dark grey mottled brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse limestone. Iron staining present. LIAS GROUP
	1.00 - 1.50	B					
	1.50	D ES		1.40	9.23		Firm friable fissured dark grey mottled reddish brown slightly sandy slightly gravelly silty CLAY. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine and medium limestone and calcite. Fissures are very closely spaced with iron staining. Occasional fossils present. LIAS GROUP
	1.80 - 2.30	B					
	2.00	D					
	2.50	D		2.30	8.33		Stiff dark grey fissured slightly sandy slightly gravelly silty CLAY with frequent lenses of sand. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine and medium limestone and calcite. Fissures are very closely spaced and polished, with occasional iron staining. Occasional fossils including shell fragments and belemnites. LIAS GROUP
	2.80 - 3.20	B					
	3.00	D					
	3.50	D					
	3.80 - 4.20	B					
	4.00	D					
	4.50	D		4.80	5.83		End of Pit at 4.800m

1 2 3 4 5

General Remarks:
Roots encountered to 0.20m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP16** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.85m	Support: None / Trial Pit Width: 0.60m	
Dates: 04/10/2018	Level: 20.41m AOD	Co-ords: E509229.86 N299449.86	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J					Dark brown slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent roots (up to 5mm diam). TOPSOIL
	0.20	2 X D ES EW J		0.40	20.01		Light brown clayey silty sandy sub-angular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 2
	0.50	2 X D J					
	0.80 - 1.20	B					
	1.00	2 X D D J PID	0.0ppm				
	1.50	D					
	1.80 - 2.00	B		1.80	18.61		Weak light grey LIMESTONE. Frequent calcite crystals up to 3mm. GREAT OOLITE GROUP
	2.00	D		2.00	18.41		End of Pit at 2.000m

1 2 3 4 5

General Remarks:

Trial pit terminated at 2.00m bgl on impenetrable limestone strata. Roots encountered to 0.40m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP17** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 04/10/2018	Level: 20.44m AOD	Co-ords: E509329.80 N299423.86	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J		0.20	20.24		Dark brown slightly gravelly clayey fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent roots (up to 5mm diam). TOPSOIL
	0.20	2 X D J					Dark brown clayey silty sandy sub-angular and sub-rounded fine to coarse flint and limestone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3
	0.20 - 0.50	B					
	0.50	2 X D D J					
	0.80	D					
	1.00	2 X D J		1.00	19.44		Firm light reddish brown sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse limestone and flint. RIVER TERRACE DEPOSITS 3
	1.20 - 1.40	B					
	1.50	D					
	2.00	D					
	2.50	D					
	2.50 - 3.00	B					
	3.00	D		3.00	17.44		Weak light grey LIMESTONE. GREAT OOLITE GROUP
				3.05	17.39		End of Pit at 3.050m

1 2 3 4 5

General Remarks:

Trial pit terminated at 3.05m bgl on impenetrable limestone strata. Roots encountered to 0.20m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP18** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 05/10/2018	Level: 18.86m AOD	Co-ords: E509648.47 N299353.88	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J		0.25	18.61		Dark brown slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent roots (up to 3mm diam). RIVER TERRACE DEPOSITS 3
	0.20	2 X D ES J					Dark brown clayey silty gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint and limestone. Rare rootlets. RIVER TERRACE DEPOSITS 3
	0.50	2 X D ES J		0.60	18.26		Light brown slightly clayey slightly silty gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine and medium flint. RIVER TERRACE DEPOSITS 3
	0.60 - 1.00	B					
	1.00	D J					*Sand becoming coarse.*
	1.40 - 1.80	B		1.30	17.56		Brown very sandy sub-angular to rounded fine and medium flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3
	1.50	D					
	2.00	D					
	2.40 - 2.80	B					
	2.50	D					
	3.00	D		2.90	15.96		Brown gravelly fine and medium SAND with a low sub-angular limestone cobble content. Gravel is sub-angular and sub-rounded fine flint. RIVER TERRACE DEPOSITS 3
	3.20 - 3.50	B					
	3.50	D					
				4.50	14.36		End of Pit at 4.500m

1 2 3 4 5

General Remarks:

Roots encountered to 0.60m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP19** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	Logged By: WN
Dates: 05/10/2018	Level: 17.86m AOD	Co-ords: E509849.44 N299294.74	

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J					Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent roots (up to 3mm diam). MADE GROUND
	0.20	2 X D J		0.40	17.46		
	0.50	2 X D J					Dark brown slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine and medium flint and coal. MADE GROUND
	1.00	2 X D D ES J					
	1.00 - 1.50	B					
	1.50	2 X D ES EW J		1.60	16.26		Dark brown clayey silty gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3
	2.00	2 X D D ES J					
	2.00 - 2.50	B					
	2.50	D					
	3.00	D		2.90	14.96		Light brown slightly clayey very sandy angular to sub-rounded fine to coarse flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3
	3.00 - 3.50	B					
	3.50	D					
	4.00	D					
	4.00 - 4.50	B					
	4.50	D		4.50	13.36		End of Pit at 4.500m

General Remarks:
Roots encountered to 0.40m bgl. Upon completion, trial hole backfilled with materials arising.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP20** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.10m	Trial Pit Width: 0.60m	
Dates: 08/10/2018	Level: 17.23m AOD	Co-ords: E509940.65 N299268.17	Logged By WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D J PID	0.0ppm				Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Rare roots (up to 3mm diam). TOPSOIL
	0.20	2 X D ES J PID	0.0ppm	0.40	16.82		Light brown slightly clayey slightly silty sandy angular to sub-rounded fine to coarse flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3
	0.50	2 X D ES J PID	0.0ppm				
	1.00	2 X D B D J PID	0.0ppm	1.30	15.92		Brown slightly gravelly clayey silty fine to coarse SAND with a low sub-angular flint cobble content. Locally varying to very sand SILT. Gravel is sub-rounded and rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3
	1.50	D					
	2.00	B D					*Becoming light brown.*
	2.50	D					
	3.00	B D					
	3.50	D					
	4.00	B D					
	4.50	D		4.50	12.72		End of Pit at 4.500m

1 2 3 4 5

General Remarks:

Roots encountered to 0.40m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP21** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.30m	Trial Pit Width: 0.60m	
Dates: 09/10/2018	Level: 15.85m AOD	Co-ords: E510167.14 N299254.06	Logged By WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D J					Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Rare roots (up to 3mm diam). Reworked TOPSOIL
	0.20	2 X D ES J		0.30	15.55		
	0.50	2 X D D J					Firm dark brown slightly clayey slightly gravelly sandy SILT. Sand is fine. Gravel is angular to sub-rounded fine and medium flint. RIVER TERRACE DEPOSITS 2
	1.00	2 X D B J					
				1.20	14.65		Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
	1.50	D					
	2.00	B D					
	2.50	D					
				2.90	12.95		Dark brown gravelly fine to coarse SAND. Gravel is sub-rounded and rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
	3.00	B D					
	3.50	D					
				3.80	12.05		Brown very sandy sub-rounded and rounded fine to coarse flint GRAVEL. Sand is fine and medium. RIVER TERRACE DEPOSITS 2
	4.00	B D					
	4.50	D		4.50	11.35		End of Pit at 4.500m

General Remarks:
Roots encountered to 0.30m bgl. Upon completion, trial hole backfilled with materials arising. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP22** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	
Dates: 09/10/2018	Level: 16.96m AOD	Co-ords: E510184.06 N299370.70	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J					Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Rare roots (up to 3mm diam). Reworked TOPSOIL
	0.20	2 X D ES EW J		0.40	16.56		
	0.50	2 X D J					Dark brown slightly gravelly clayey silty fine to coarse SAND locally tending to sandy silty CLAY. Gravel is sub-rounded and rounded fine flint. RIVER TERRACE DEPOSITS 3
	1.00	2 X D B D ES J					
	1.50	D					
	2.00	B D					
	2.50	D					
	3.00	B D					
				3.20	13.76		Dark brown silty very gravelly fine to coarse SAND locally tending to sandy silty CLAY. Gravel is sub-angular and sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3
	3.50	D					
	4.00	B D					
	4.50	D		4.50	12.46		End of Pit at 4.500m

1 2 3 4 5

General Remarks:
Roots encountered to 0.00m bgl. Upon completion, trial hole backfilled with materials arising. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP23** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Trial Pit Width: 0.60m	
Dates: 08/10/2018	Level: 19.18m AOD	Co-ords: E509814.04 N299348.28	Logged By WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J PID	0.0ppm				Dark brown clayey gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine and medium flint. Rare rootlets. Reworked TOPSOIL
	0.20	2 X D ES EW J PID	0.0ppm	0.40	18.78		Brown slightly clayey silty sandy sub-rounded and rounded fine to coarse flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3
	0.50	2 X D ES J PID	0.0ppm				
	1.00	2 X D B J PID	0.0ppm				
	1.50	D		1.40	17.78		Light brown, locally slightly clayey, gravelly, locally very gravelly fine and medium SAND. Gravel is sub-angular to rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3
	2.00	B D					
	2.50	D					
	3.00	B D					
	3.50	D					
	4.00	B D		3.90	15.28		Light brown slightly gravelly fine and medium SAND. Gravel is sub-angular to rounded fine and medium flint. RIVER TERRACE DEPOSITS 3
	4.50	D		4.50	14.68		End of Pit at 4.500m

General Remarks:

Roots encountered to 0.30m bgl. Upon completion, trial hole backfilled with materials arising. DCP test undertaken adjacent to trial pit, prior to excavation. Reworked refers to ploughed ground. Results presented in the factual report.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP24** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Support: None / Trial Pit Width: 0.60m	Logged By: TR
Dates: 29/10/2018	Level: 35.62m AOD	Co-ords: E507331.00 N299768.00	

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D ES J PID	0.0ppm	0.15	35.47		Firm dark greyish brown slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is sub-angular fine and medium flint. Frequent rootlets. MADE GROUND
	0.20	D J PID	0.0ppm	0.30	35.32		Light grey silty sandy sub-angular fine to coarse limestone, concrete and tarmacadam GRAVEL. Rare rootlets. MADE GROUND
							MADE GROUND comprising CONCRETE.
							End of Pit at 0.300m

General Remarks:

Solid concrete obstruction encountered at 0.30m bgl. Roots encountered to 0.30m bgl. Trial hole attempted in five locations. Trial hole and DCP cancelled on Interserve's request on 30th October 2018.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**TP25**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/18	TR	SB	FINAL	**WS**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507411.0	299759.0	35.45mAOD	Premier 2	01/08/2019	1:50

Weather: | Termination: Hole completed | SPT Hammer: Premier 2 Energy Ratio: 76.23% | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D		35.20	0.25		Dark greyish brown slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is sub-angular fine and medium flint. Frequent rootlets. MADE GROUND		
	J							
	PID	0.0ppm						
0.20	D			(0.40)		Light grey silty sandy sub-angular to rounded limestone GRAVEL. Sand is fine to coarse. MADE GROUND		
	ES							
	J		34.80	0.65				
	PID	0.0ppm				Weak light yellow medium grained LIMESTONE recovered as sandy sub-angular fine to course GRAVEL. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
0.50	D							
	ES			(1.00)				
	EW							
	J							
	PID	0.0ppm						
1.00	B		33.80	1.65		End of Borehole at 1.65m		
	D							
	ES							
	J							
	PID	0.0ppm						
1.20	SPT	N=39 (1,5/4,10,12,13)						
1.20 - 1.60	B							
1.50	C							
	D							

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
26-10-2018	23:00	1.20	0.00		1.65	113		
26-10-2018	23:30	1.65	0.00					

Remarks:

Trial Pit replaced by Windowless Sampler Borehole as requested by client. Hand dug inspection pit to 1.20m bgl. DCP test undertaken adjacent to borehole, prior to excavation. Results presented in the factual report. Very high SPT blow counts at 1.20m bgl. Borehole terminated at 1.60m bgl on impenetrable limestone strata. Upon completion, borehole backfilled with bentonite pellets.

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**TP26**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/18	TR	SB	FINAL	**WS**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507484.0	299752.0	35.85mAOD	Premier 2	01/08/2019	1:50

Weather: | Termination: Hole completed | SPT Hammer: Premier 2 Energy Ratio: 76.23% | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D		35.70	0.15		Firm dark greyish brown slightly sandy slightly gravelly SILT. Sand is fine and medium. Gravel is sub-angular fine and medium flint. Frequent rootlets. MADE GROUND		
	J							
	PID	0.0ppm				Light yellowish brown slightly silty sandy sub-angular fine to coarse limestone and concrete GRAVEL with a low sub-angular concrete cobble content. Sand is fine and medium. MADE GROUND		
0.20	D							
	J			(0.95)				
	PID	0.0ppm						
0.50	D					*Gravel sized fragment of brick.*		
	ES					*Tarmacadam.*		
	J		34.75	1.10				
	PID	0.0ppm				Light yellow medium grained LIMESTONE recovered as sandy sub-angular fine to coarse limestone GRAVEL. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
1.00	B							
	D			(0.60)				
	J							
	PID	0.0ppm	34.15	1.70		End of Borehole at 1.70m		
1.10 - 1.70	B							
1.20	SPT	N=42 (1,1/9,14,13,6)						
1.60	C							
	D							

1 2 3 4 5 6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
29-10-2018	01:00	1.20	0.00		1.70	113		
29-10-2018	01:30	1.70	0.00					

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Trial Pit replaced by Windowless Sampler Borehole as requested by client. Man-made obstruction encountered at 0.60m bgl in inspection pit. Hole abandoned and re-drilled 1.60m towards the roadway. Hand dug inspection pit terminated at 1.10m bgl on hard strata. Roots encountered to 0.15m bgl. Very high blow counts from 1.20m bgl. Borehole terminated at 1.70m bgl on impenetrable limestone strata. Upon completion, borehole backfilled with bentonite pellets.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not enountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No.
TP27
Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.55m	Support: None / Trial Pit Width: 0.60m	
Dates: 02/10/2018	Level: 31.38m AOD	Co-ords: E507696.16 N299788.14	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.00 - 0.30 0.10 0.20 0.50 1.00 1.50	B 2 X D J 2 X D ES J B C J 2 X B J B		0.30 1.00 1.50	31.08 30.38 29.88		Soft brown sandy gravelly CLAY with a low sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Roots and rootlets present. Reworked TOPSOIL Very weak white, light grey and light yellowish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as slightly clayey sandy angular and sub-angular GRAVEL with a low angular and sub-angular cobble content and low angular and sub-angular boulder content. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP Yellow to yellowish brown slightly clayey slightly gravelly fine to coarse SAND with a moderate angular and sub-angular sandy limestone cobble and a low angular and sub-angular sandy limestone boulder content. Gravel is angular and sub-angular fine to coarse sandy limestone. Weathered INFERIOR OOLITE GROUP End of Pit at 1.500m

1 2 3 4 5

General Remarks:

Roots encountered to 0.30m bgl. Infiltration test in accordance with BRE 365; 2016 undertaken at 1.50m bgl. Upon completion, trial hole backfilled with materials arising, as instructed by MM. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP28** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.75m	Trial Pit Width: 0.60m	
Dates: 26/09/2018	Level: 20.06m AOD	Co-ords: E507852.90 N299610.83	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	D ES J					Grass over soft greyish brown sandy silty CLAY with fragments of concrete and plastic. Sand is fine to coarse. Rare rootlets. MADE GROUND
		PID	0.0ppm	0.30	19.76		
	0.20	D ES EW J					Very weak yellowish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy sub-angular and sub-rounded fine to coarse gravel and sub-angular and sub-rounded cobbles. Weathered INFERIOR OOLITE GROUP
		PID	0.0ppm				
	0.50	2 X D J					
		PID	0.0ppm				
	1.00	2 X D B ES J					
		PID	0.0ppm				
	1.50	2 X D		1.50	18.56		End of Pit at 1.500m

General Remarks:

Trial pit terminated at 1.50m bgl on impenetrable limestone strata. Roots encountered to 0.30m bgl. Infiltration testing in accordance with BRE 365; 2016 undertaken at 1.50m bgl. Upon completion, trial hole backfilled with materials arising, as instructed by MM.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP29** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type TP
Location: Wansford to Sutton		Plant: JCB 3CX	
		Support: None	Scale 1:25
Client: Interserve Construction Limited	Trial Pit Length: 2.00m	Trial Pit Width: 0.60m	
Dates: 11/10/2018	Level: 18.44m AOD	Co-ords: E509589.87 N299336.56	Logged By WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J					Dark brown clayey gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine and medium flint. Rare rootlets. Reworked TOPSOIL
		PID	0.0ppm				
	0.20	2 X D ES EW J		0.40	18.04		Firm dark brown slightly gravelly sandy clayey SILT. Sand is fine. Gravel is sub-rounded and rounded fine and medium flint. RIVER TERRACE DEPOSITS 3
		PID	0.0ppm				
	0.50	2 X D J					
		PID	0.0ppm				
	1.00	2 X D B ES J					
		PID	0.0ppm	1.20	17.24		Light brown clayey silty gravelly fine to coarse SAND. Gravel is sub-rounded and rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3
	1.50	D					
▼	2.00	B D					
				2.40	16.04		Light orangish brown slightly gravelly clayey fine to coarse SAND. Gravel is sub-rounded fine and medium flint. RIVER TERRACE DEPOSITS 3
	2.50	B D					
				2.70	15.74		Firm light orangish brown sandy CLAY. Sand is fine to coarse. GREAT OOLITE GROUP
	2.80	D					
	3.00	B D		3.00	15.44		Light orangish brown mottled white silty fine to coarse SAND. GREAT OOLITE GROUP
	3.50	B D					
	4.00	B D					
	4.50	B D		4.50	13.94		End of Pit at 4.500m

General Remarks:

Roots encountered to 0.40m bgl. Infiltration testing in accordance with BRE 365; 2016 undertaken at 1.50m bgl, then trial hole was advanced to 4.50m bgl. Upon completion, trial hole backfilled with materials arising. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater seepage encountered at 2.20m bgl.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **TP30** Sheet 1 of 1

Project Name: A47 Improvements Programme	Project No.: 17076	Method: Machine Excavated	Hole Type: TP
Location: Wansford to Sutton		Plant: JCB 3CX	Scale: 1:25
Client: Interserve Construction Limited	Trial Pit Length: 1.85m	Support: None / Trial Pit Width: 0.60m	
Dates: 08/10/2018	Level: 15.82m AOD	Co-ords: E510051.22 N299202.62	Logged By: WN

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (mAOD)	Legend	Stratum Description
	0.10	2 X D ES J					Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Rare rootlets. Reworked TOPSOIL
		PID	0.0ppm				
	0.20	2 X D ES EW J		0.40	15.42		Brown clayey silty sandy sub-rounded and rounded fine to coarse flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 2
		PID	0.0ppm				
	0.50	2 X D J					
		PID	0.0ppm				
	1.00	2 X D B ES J		1.20	14.62		Brown silty gravelly fine to coarse SAND. Gravel is sub-rounded and rounded fine to coarse flint. RIVER TERRACE DEPOSITS 2
		PID	0.0ppm				
	1.50	D		1.50	14.32		Weak yellowish brown LIMESTONE. INFERIOR OOLITE GROUP End of Pit at 1.500m

1 2 3 4 5

General Remarks:

Trial pit terminated at 1.50m bgl on impenetrable limestone strata. Roots encountered to 0.40m bgl. Infiltration testing in accordance with BRE 365; 2016 undertaken at 1.50m bgl. Upon completion, trial hole backfilled with materials arising. Reworked refers to ploughed ground.

Groundwater Remarks: Groundwater not encountered.

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH01**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	05/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507452.1	300142.2	19.79mAOD	n/a	01/08/2019	1:25

Weather: Clear | Termination: Hole terminated. | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.70)		Firm orangish brown slightly gravelly CLAY. Gravel is sub-angular fine and medium limestone. Occasional roots and rootlets. TOPSOIL		
			19.09	0.70		Firm yellow and orangish brown mottled sandy CLAY. Sand is fine and medium. Roots present. INFERIOR OOLITE GROUP		
				(0.50)				
			18.59	1.20		End of Borehole at 1.20m		

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
08-05-2018	14:00	0.00	0.00	Dry
08-05-2018	16:00	1.20	0.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)

Casing Diameter

Depth (m)	Dia (mm)

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hole terminated at 1.20m bgl due to encountering a ceramic / clay land drain. Location moved to BH01A. Roots encountered to 1.20m bgl.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH01A**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	06/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507449.0	300138.6	19.38mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D					Firm orangish brown slightly gravelly CLAY. Gravel is sub-angular fine and medium limestone. Occasional roots and rootlets. TOPSOIL		
	ES							
	J							
0.20	D							
	J			(0.70)				
0.50	ES							
	EW							
	J							
0.65	ES		18.68	0.70		Firm yellow and orangish brown mottled sandy CLAY. Sand is fine and medium. Roots present. INFERIOR OOLITE GROUP		
	EW							
0.70	D							
0.90	D							
				(0.50)				
1.00	2 X D							
	D							
	ES							
	J		18.18	1.20				
1.20	SPT	N=3 (1,0/1,0,1,1)				Soft grey mottled orangish brown sandy silty CLAY. Sand is fine and medium. Roots and rootlets present. INFERIOR OOLITE GROUP		
1.20 - 1.70	B							
				(0.70)				
1.90	SPT	N=9 (1,2/2,3,2,2)	17.48	1.90		Firm grey mottled orangish brown slightly gravelly sandy CLAY with pockets of yellowish brown fine and medium sand. Gravel is angular and sub-angular fine to coarse limestone and sandstone. Sand is fine and medium. Roots and rootlets present. INFERIOR OOLITE GROUP		
1.90 - 2.40	B							
				(0.60)				
2.40	D							
2.50 - 3.00	B		16.88	2.50		Firm becoming stiff grey, occasionally mottled orangish brown, slightly sandy CLAY with lenses and pockets of orangish brown and yellowish brown fine and medium sand. INFERIOR OOLITE GROUP		
3.00 - 3.45	UT	Ublow = 35						
				(1.60)				
3.80	D							
4.10	SPT	N=9 (2,2/2,2,2,3)	15.28	4.10		Firm grey to dark grey silty CLAY with occasional white fossil fragments. LIAS GROUP		
	D							
4.10 - 4.50	B							
4.50 - 5.00	B							
5.00 - 5.45	UT	Ublow = 45						

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
05-09-2018	14:00	0.00	0.00	Dry
06-09-2018	10:00	10.00	4.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
10.00	200

Casing Diameter

Depth (m)	Dia (mm)
4.00	200

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	2.70	SLOTTED	50

Remarks:

BH01A relocated due to encountering land drain in inspection pit BH01. Roots encountered to 2.50m bgl. Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20-10.00m bgl. Undisturbed sample attempted at 2.50m bgl - no recovery. 200mm Diameter casing installed to 4.00m bgl. Upon completion, borehole was installed with a slotted standpipe (50mm diam ID HDPE) to 2.70m bgl. Granular response zone 2.70-1.00m bgl. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH01A**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	06/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507449.0	300138.6	19.38mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Firm grey to dark grey silty CLAY with occasional white fossil fragments. LIAS GROUP		
5.45	D							
6.00 - 6.50	B							
6.50	SPT	N=13 (2,2/3,3,3,4)						
6.50 - 7.00	B							
				(4.90)				
7.50	D							
8.00	B							
8.00 - 8.45	UT	Ublow = 70						
8.45	D							
9.00 - 9.50	B		10.38	9.00		Stiff grey to dark grey CLAY with occasional white fossil fragments. LIAS GROUP		
9.50	SPT	N=15 (2,3/3,4,4,4)		(1.00)				
9.50 - 10.00	B							
			9.38	10.00		End of Borehole at 10.00m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					10.00	200	4.00	200

Chiselling			
From (m)	To (m)	Duration	Remarks

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	2.70	SLOTTED	50

Remarks:

BH01A relocated due to encountering land drain in inspection pit BH01. Roots encountered to 2.50m bgl. Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20-10.00m bgl. Undisturbed sample attempted at 2.50m bgl - no recovery. 200mm Diameter casing installed to 4.00m bgl. Upon completion, borehole was installed with a slotted standpipe (50mm diam ID HDPE) to 2.70m bgl. Granular response zone 2.70-1.00m bgl. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH02**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	KL	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507455.9	300102.3	18.36mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D J									Firm orangish brown gravelly CLAY. Gravel is sub-angular fine limestone. Occasional roots and rootlets. Reworked TOPSOIL		
0.20	0ppm D J 0ppm							(0.60)				
0.50	D ES EW J 0ppm						17.76	0.60		Firm grey silty CLAY. HEAD		
								(0.60)				
1.00	D ES J 0ppm											
1.20	0 (0 for 0mm/0 for 0mm) (S) D						17.16	1.20		Very loose brownish grey and dark brownish grey fine to coarse SAND. Wood and plant material present. INFERIOR OOLITE GROUP *600mm self weight penetration*		
								(0.30)				
							16.86	1.50		Soft brown CLAY. Occasional roots and rootlets. Wood and plant material present. INFERIOR OOLITE GROUP		
1.20 - 2.20		100	0	0								
								(0.70)				
2.00	D											
							16.16	2.20		Very soft dark brown to brown slightly sandy CLAY. Sand is fine to coarse. Plant material present. INFERIOR OOLITE GROUP		
								(0.60)				
2.60	D											
2.20 - 3.20		70	0	0								
2.80	D						15.56	2.80		Brown and light grey clayey fine to coarse SAND with plant material present. INFERIOR OOLITE GROUP *Assessed zone of core loss*		
								(0.40)				
3.20	D UT						15.16	3.20		Soft to firm dark grey CLAY. LIAS GROUP		
								(0.41)				
3.60	D						14.75	3.61		Brownish grey to light grey with dark grey and black mottling, slightly clayey slightly gravelly fine and medium SAND. Gravel is sub-angular fine to coarse siltstone. LIAS GROUP		
3.20 - 4.20		84	0	0			14.63	3.73		Firm to stiff indistinctly laminated dark grey CLAY. LIAS GROUP *Assessed zone of core loss*		
4.20	D							(0.97)				
4.20 - 4.70		100	0	0								
4.70	N=50 (13,12/50 for 250mm)(S) D						13.66	4.70		Very stiff indistinctly laminated dark grey slightly sandy silty CLAY. Sand is fine. LIAS GROUP		
4.90	D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
12-09-2018	12:00	0.00	0.00	Dry
12-09-2018	17:30	6.70	3.60	Dry
13-09-2018	09:00	6.70	3.60	Dry
13-09-2018	11:45	10.45	3.60	Dry

Borehole Diameter

Depth (m)	Dia (mm)
10.45	128

Casing Diameter

Depth (m)	Dia (mm)
3.60	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:
Hand dug inspection pit to 1.20m bgl. SPT undertaken at 1.20m bgl - 800mm Self weight penetration. Borehole drilled by dynamic sampling 1.20m -10.45m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	0.00	3.60	20	1.10	Slow ingress. Groundwater strike at 1.20m bgl, rising to 1.10m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH02**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	KL	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507455.9	300102.3	18.36mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.70 - 5.50		100	0	0						Very stiff indistinctly laminated dark grey slightly sandy silty CLAY. Sand is fine. LIAS GROUP		
5.40	D											
5.60	D											
5.50 - 6.20		100	0	0				(2.00)				
6.00	D											
6.20	D UT											
6.70	D						11.66	6.70		Stiff dark grey CLAY. Occasional white and light brown fragments of shell. LIAS GROUP		
6.80	D											
6.70 - 7.50		100	0	0								
7.20	D											
7.50	N=20 (2,4/4,5,5,6)(S) SPT							(1.80)				
7.80	D											
7.50 - 8.50		100	0	0								
8.40	D											
8.50	UT						9.86	8.50		Very stiff dark grey CLAY. LIAS GROUP		
9.00	D											
8.50 - 10.00		88	0	0				(1.38)				
							8.48	9.88		Assessed zone of core loss		
10.00	N=31 (3,5/6,7,8,10)(S) SPT											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					10.45	128	3.60	180

Remarks:
Hand dug inspection pit to 1.20m bgl. SPT undertaken at 1.20m bgl - 800mm Self weight penetration. Borehole drilled by dynamic sampling 1.20m -10.45m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	0.00	3.60	20	1.10	Slow ingress. Groundwater strike at 1.20m bgl, rising to 1.10m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH02**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	KL	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507455.9	300102.3	18.36mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
								(0.57)				
							7.91	10.45		End of Borehole at 10.45m		

11 12 13 14 15

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
10.45	128

Casing Diameter

Depth (m)	Dia (mm)
3.60	180

Remarks:

Hand dug inspection pit to 1.20m bgl. SPT undertaken at 1.20m bgl - 800mm Self weight penetration. Borehole drilled by dynamic sampling 1.20m -10.45m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	0.00	3.60	20	1.10	Slow ingress. Groundwater strike at 1.20m bgl, rising to 1.10m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH03**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	17/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507565.9	299928.1	30.12mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 1 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	J 0ppm									Brown clayey gravelly fine to coarse SAND with a low angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
0.20	J 0ppm											
0.30	B ES											
0.50	B J 0ppm							(1.00)				
1.00	B J 0ppm						29.12	1.00		Weak yellowish brown highly weathered sandy LIMESTONE. Sand is fine to coarse. Calcite present. Weathered INFERIOR OOLITE GROUP		
										1.0-1.42m Fragmented Core		
1.00 - 1.50		84	0	0				(0.50)				
										Assessed zone of core loss		
							28.62	1.50		Weak yellowish brown fine to coarse moderately weathered sandy LIMESTONE. Sand is fine to coarse. Calcite present. Weathered INFERIOR OOLITE GROUP		
										1.5-2.0m Fragmented Core		
					6			(1.14)		*J, 5, R, P, tight , sandy veneer*		
										J, 25, R, P, very tight		
										J, 30, R, P, very tight		
1.50 - 3.00		73	73	54						*J, 40, R, P, very tight*		
										2.27-2.45m Fragmented Core		
										J, 85, R, P, tight		
										J, 5, R, P, tight		
										2.54-2.61m Fragmented core		
2.70	C						27.48	2.64		Weak yellowish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Some iron staining. Weathered INFERIOR OOLITE GROUP		
										J, 5, R, P, sandy veneer		
										J, 5, R, P-UN, partly open =5mm, sandy veneer		
										3.14-3.19m Fragmented Core		
										J, 0-10, R, UN-IR, open, sandy veneer		
					6			(1.42)		*J, 20, R, P-CU, partly open =15mm, sandy veneer*		
										3.42-3.57m Fragmented Core		
										J, 5, R, P, sandy veneer		
										J, 0, R, P, partly open =5mm, sandy veneer		
3.00 - 4.50		70	70	46						*3.73-3.81m Fragmented core*		
										J, 20, R, P, partly open =10mm, sandy veneer		
										J, 70, R, P, iron staining and sandy veneer		
										3.9-3.96m Fragmented Core		
										J, 0, R, P, sandy veneer		
							26.06	4.06		Assessed zone of core loss.		
								(0.44)				
4.40	C											
4.50	C						25.62	4.50		Medium strong yellowish brown and light yellowish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Occasional dissolution features present. Weathered INFERIOR OOLITE GROUP		
										J, 5, R, P		
										J, 0-10, R, P-CU, tight		
										J, 10, R, P-UN, partly open =10mm, some calcite veneer and iron staining		
										4.78-4.92m Fragmented Core		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-09-2018	09:00	0.00	0.00	Dry
18-09-2018	12:00	7.50	1.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
7.50	128

Casing Diameter

Depth (m)	Dia (mm)
1.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00-7.50m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
1.00	1.50	Air/Mist	100%-100%	yellow
1.50	3.00	Air/Mist	100%-100%	yellow
3.00	4.50	Air/Mist	100%-100%	yellow
4.50	6.00	Air/Mist	100%-100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH03**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	17/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507565.9	299928.1	30.12mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed |

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		82	82	45	8			(2.19)		Medium strong yellowish brown and light yellowish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Occasional dissolution features present. Weathered INFERIOR OOLITE GROUP *J, 0, R, P, open 5-10mm, sandy veneer* *5.08-5.33m Fragmented Core* *J, 5, R, P, open 10mm* *J, 0, R, P, partly open =10mm, some calcite and iron staining* *J, 0, R, P, IR, some calcite* *J, 0, R, IR* *J, 90, R, P-ST, sandy veneer (5.58-5.7m)* *J, 0, R, P, tight, iron staining* *J, 0, R, P, iron staining* *Assessed zone of core loss.*		
6.00	C											
6.17	C									*J, 0, R, P, partly open =10mm, some calcite* *J, 0, R, P-ST, partly open =10-15mm, some iron staining* *J, 0, R, P, partly open =10mm, calcite veneer* *J, 0, R, P, partly open =10mm, calcite veneer* *J, 0, R, P, partly open =10mm, clean* *J, 0-20, R, IR, open, sandy veneer* *J, 0, R, P, partly open =10mm, some calcite veneer* *J, 5, R, P-UN, partly open =10mm, sandy veneer*		
6.00 - 7.50		52	25	0	0		23.43	6.69 (0.81)		Weak yellowish brown, reddish brown and orangish brown highly weathered sandy LIMESTONE. Sand is fine to coarse. Heavily iron stained. INFERIOR OOLITE GROUP *J, 0, R, P, tight, some iron staining* *6.69-6.79m Fragmented Core*		
							22.62	7.50		End of Borehole at 7.50m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					7.50	128	1.00	180

Remarks:
Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00-7.50m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
6.00	7.50	Air/Mist	100%-100%	yellow				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH03A**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	18/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507511.2	299911.0	28.59mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES J									Grass over brown slightly clayey gravelly fine to coarse SAND with a low to medium sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. TOPSOIL		
0.20	0ppm ES EW J 0ppm							(0.50)				
0.50	ES J,B 0ppm						28.09	0.50		Weak yellowish brown, grey and light grey moderately to highly weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel and sub-angular cobbles. Weathered INFERIOR OOLITE GROUP .		
								(0.55)		*0.5-1.5m Fragmented Core*		
0.50 - 1.50		55	0	0	0		27.54	1.05		Weak light yellowish brown and light grey slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular cobbles. Dissolution features present with calcareous concretions and structures present. Weathered INFERIOR OOLITE GROUP .		
										Assessed zone of core loss		
										1.5-2.38m Fragmented Core		
2.00	C											
1.50 - 3.00		60	0	0	0			(2.28)				
										Assessed zone of core loss		
2.70	C											
										3-3.33m Fragmented Core		
							25.26	3.33		Weak light yellowish brown and light grey slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel and sub-angular cobbles. INFERIOR OOLITE GROUP		
										No core recovery		
3.00 - 4.50		23	0	0	0							
								(2.05)				
4.50	N=20 (5,6/5,5,5,5)(S)									*4.5-5.38m Fragmented Core*		
5.00	C											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-09-2018	13:00	0.00	0.00	Dry
18-09-2018	15:55	6.00	1.00	Dry
19-09-2018	08:00	6.00	1.00	Dry
19-09-2018	18:00	14.00	12.00	Dry
20-09-2018	08:00	14.00	12.00	Dry
20-09-2018	19:05	15.45	12.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
15.00	128

Casing Diameter

Depth (m)	Dia (mm)
12.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.50	1.50	Air/Mist	100%-100%	yellow
1.50	3.00	Air/Mist	100%-100%	yellow
3.00	4.50	Air/Mist	100%-100%	yellow
4.50	6.00	Air/Mist	100%-100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	12.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-15.45m bgl. Borehole extended from 6.00m bgl to 15.00m bgl under instruction from Mott Macdonald. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.00m bgl, granular response zone 12.00-1.50m bgl. Possible core lost at 10.80-12.00m bgl due to core jamming in spring. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme	Client: Interserve Construction Limited				Hole ID: **BH03A**
	Contract Number: 17076	Date Started: 18/09/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **RC**
	Easting: 507511.2	Northing: 299911.0	Ground Level: 28.59mAOD	Plant Used: Comacchio 450	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Weak light yellowish brown and light grey slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel and sub-angular cobbles. INFERIOR OOLITE GROUP		
4.50 - 6.00												
							23.21	5.38				
		60	23	14	7					Weak light yellowish brown, light grey to light brownish grey slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Some dissolution features present. INFERIOR OOLITE GROUP		
										Assessed zone of core loss		
5.90	C											
										6-6.16m Fragmented Core		
6.17	Core							(1.59)		*J, 10, R, P, Sandy veneer*		
										J, 10, R, P, partly open =5mm, clean		
										J, 20, R, P, partly open =5mm, clean		
										J, 10, R, P-UN, partly open =5mm, clean		
										J, 10, R, P, partly open =5mm, clean		
										J, 10, R, P, partly open =5mm, calcite veneer		
										J, 20, R, P, partly open =5mm, sandy veneer		
6.00 - 7.50		61	61	39	7					*J, 0-10, R, P-CU, partly open =5mm, clean*		
										J, 0, R, P-UN, partly open =5mm, some iron staining and calcite veneer		
										J, 0, R, P-UN, partly open =5mm		
							21.62	6.97		Greyish brown, light grey and brown mottled silty fine and medium SAND. INFERIOR OOLITE GROUP		
										Assessed zone of core loss		
								(0.89)				
7.50	N=33 (11,11/8,8,8,9)(S)											
7.86	ES						20.73	7.86		Stiff light grey and grey mottled with some orange to orangish brown mottling sandy clayey SILT. Sand is fine and medium. Pyritic. INFERIOR OOLITE GROUP		
7.90	EW											
	D						20.58	8.01		Firm indistinctly laminated dark grey silty CLAY. INFERIOR OOLITE GROUP		
							20.50	8.09				
							20.47	8.12		Firm dark grey to black organic CLAY. INFERIOR OOLITE GROUP		
8.20	D							8.15				
7.50 - 9.00		40	0	0			20.44			Dark grey to black with some orangish brown mottling slightly clayey fine and medium organic SAND. INFERIOR OOLITE GROUP		
								(0.31)		Greyish brown with orangish brown and black mottling silty clayey fine to medium SAND. Pyritic. INFERIOR OOLITE GROUP		
										J, 30, R, P, very tight		
							20.13	8.46		Grey with some orangish brown mottling slightly clayey fine and medium SAND. INFERIOR OOLITE GROUP		
							20.07	8.52		Medium dense light grey with orange and orangish brown, dark grey, black and light greyish brown mottling clayey silty fine to coarse SAND. INFERIOR OOLITE GROUP		
										Assessed zone of core los		
9.00	N=18 (3,3/4,4,5,5)(S)											
								(1.05)				
9.20	D											
		52	0	0								
							19.02	9.57		Firm orangish brown to brown slightly gravelly sandy CLAY with a low sub-angular ironstone and ferruginous sandstone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse ironstone and ferruginous sandstone. INFERIOR OOLITE GROUP		
9.00 - 10.50							18.84	9.75		Firm orangish brown to brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse ironstone and ferruginous sandstone.		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.00	128	12.00	180

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-15.45m bgl. Borehole extended from 6.00m bgl to 15.00m bgl under instruction from Mott Macdonald. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.00m bgl, granular response zone 12.00-1.50m bgl. Possible core lost at 10.80-12.00m bgl due to core jamming in spring. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
6.00	7.50	Air/Mist	100%-100%	yellow
7.50	9.00	Air/Mist	100%-100%	yellow
9.00	10.50	Air/Mist	100%-100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	12.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH03A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	18/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507511.2	299911.0	28.59mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Firm orangish brown to brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse ironstone and ferruginous sandstone. INFERIOR OOLITE GROUP		
										Assessed zone of core loss		
								(0.95)				
10.50	N=8 (1,2/2,2,2,2)(S)											
10.70	D						17.89	10.70				
							17.79	10.80		Firm dark grey to dark brownish grey with brown mottling sandy CLAY. Sand is fine. LIAS GROUP		
										No core recovery.		
10.50 - 12.00		20	0	0				(1.20)				
12.00	N=34 (4,5/6,10,9,9)(S)						16.59	12.00		Very stiff indistinctly laminated dark grey with some brownish grey and light yellowish grey mottling CLAY. White shell fragments present. LIAS GROUP		
12.10	D											
12.60	D											
12.00 - 13.50		73	0	0				(2.00)				
										Assessed zone of core loss		
13.50	UT											
							14.59	14.00		Very stiff grey with light yellowish grey mottling CLAY. White shell fragments present. LIAS GROUP		
14.20	D											
14.00 - 15.00		100	0	0				(1.45)				
14.80	D											
15.00	N=41 (2,5/7,12,11,11)(S)											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.00	128	12.00	180

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-15.45m bgl. Borehole extended from 6.00m bgl to 15.00m bgl under instruction from Mott Macdonald. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.00m bgl, granular response zone 12.00-1.50m bgl. Possible core lost at 10.80-12.00m bgl due to core jamming in spring. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.50	12.00	Air/Mist	100%-100%	grey
12.00	13.50	Air/Mist	100%-100%	grey
14.00	15.00	Air/Mist	100%-100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	12.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH03A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	18/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507511.2	299911.0	28.59mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very stiff grey with light yellowish grey mottling CLAY. White shell fragments present. LIAS GROUP		
							13.14	15.45		End of Borehole at 15.45m		

16 17 18 19 20

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
15.00	128

Casing Diameter

Depth (m)	Dia (mm)
12.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	12.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-15.45m bgl. Borehole extended from 6.00m bgl to 15.00m bgl under instruction from Mott Macdonald. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.00m bgl, granular response zone 12.00-1.50m bgl. Possible core lost at 10.80-12.00m bgl due to core jamming in spring. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH04**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	19/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507641.0	299861.9	29.90mAOD	Comacchio 450	01/08/2019	1:25

Weather: Drizzle | Termination: Hole completed | Sheet 1 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES J									Brown slightly clayey gravelly fine to coarse SAND. Gravel is white and light yellowish brown angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
0.20	J							(0.50)				
0.50	B ES EW J						29.40	0.50		Weak yellowish brown and light grey highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as slightly sandy angular and sub-angular fine to coarse gravel with a low to medium sub-angular cobble content. Some calcite. Weathered INFERIOR OOLITE GROUP		
								(0.69)		*0.5-1.04m Fragmented Core*		
0.50 - 1.50		69	0	0	0					*J, 10, R, P, tight*		
							28.71	1.19		Assessed zone of core loss.		
								(0.31)				
							28.40	1.50		Weak light yellowish brown and light greyish brown sandy highly to moderately weathered LIMESTONE. Sand is fine to coarse. Some Calcite. Weathered INFERIOR OOLITE GROUP		
								(0.52)		*J, 30, R, P, tight clay veneer*		
										J, 40, R, P, tight clay infill 5-10mm		
										1.8-1.91m Fragmented Core		
							27.88	2.02		*J, 35, R, P, tight, calcite veneer*		
2.10	D									Stiff to very stiff light grey with orangish brown, dark grey and brownish grey mottling slightly sandy gravelly CLAY. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse siltstone and mudstone. Weathered INFERIOR OOLITE GROUP		
1.50 - 3.00		66	31	22	6							
								(0.96)				
2.70	D											
							26.92	2.98		*J, 90, R, P, tight*		
										Medium strong light yellowish brown and light grey moderately weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
										J, 0, R, P, partly open =10mm sandy veneer		
							26.71	3.19		*J, 0, R, P, partly open =10mm sandy veneer*		
										Weak light yellowish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel. Weathered INFERIOR OOLITE GROUP		
							26.54	3.36		*J, 0, R, P, tight sandy clay veneer*		
										3.19-3.36m Fragmented Core		
										Medium strong light yellowish brown and light grey moderately weathered sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP		
3.60	C									*J, 70, R, P, tight, sandy clay veneer*		
3.00 - 4.50		84	72	72	15							
								(0.91)		*3.58-4.08m Fragmented Core*		
3.90	C											
4.10	D											
							25.63	4.27		Assessed zone of core loss.		
							25.40	4.50		Weak light yellowish brown and light greyish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy sub-angular fine to coarse gravel with a high sub-angular limestone cobble content. Iron staining present. Weathered INFERIOR OOLITE GROUP		
								(1.00)				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
20-09-2018	12:30	0.00	0.00	Dry
20-09-2018	18:00	6.00	1.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
6.00	128

Casing Diameter

Depth (m)	Dia (mm)
1.00	180

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-6.00m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.50	1.50	Air/Mist	100%-100%	yellow
1.50	3.00	Air/Mist	100%-100%	yellow
3.00	4.50	Air/Mist	100%-100%	yellow
4.50	6.00	Air/Mist	100%-100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH04**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	19/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507641.0	299861.9	29.90mAOD	Comacchio 450	01/08/2019	1:25

Weather: Drizzle | Termination: Hole completed | Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		66	66	66	0		24.40	5.50		Weak light yellowish brown and light greyish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy sub-angular fine to coarse gravel with a high sub-angular limestone cobble content. Iron staining present. Weathered INFERIOR OOLITE GROUP *Fragmented Core*		
								(0.50)		Assessed zone of core loss.		
							23.90	6.00		End of Borehole at 6.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
6.00	128	1.00	180

Remarks:
Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-6.00m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH05**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	25/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507646.0	299780.5		Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 1 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J 0ppm							0.15		Firm dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Roots and rootlets present. MADE GROUND		
0.20	2 X D ES J 0ppm							0.40		Firm brown sandy gravelly CLAY with a low angular limestone and bitumen cobble content. Gravel is angular and sub-angular fine to coarse limestone and bitumen. MADE GROUND		
0.50	2 X D B J 0ppm							0.60		Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone and bitumen. MADE GROUND		
								(0.35)		Light brown to brown clayey gravelly fine to coarse SAND with a low sub-angular and angular limestone and bitumen cobble content. Gravel is angular and sub-angular fine to coarse limestone and bitumen. MADE GROUND		
1.00	N=31 (3,7/5,10,9,7)(S) 2 X D J 0ppm							0.95		Light yellowish brown to light brown slightly clayey gravelly fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone and bitumen. MADE GROUND		
1.00 - 1.73		100	0	0				(0.75)				
1.50	2 X D ES EW J 0ppm							1.70		Light yellowish brown to light brown slightly clayey gravelly fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.73 - 2.00 1.88	N=50 (25 for 70mm/50 for 100mm)(S)	100	0	0	0			(0.30)				
2.00	D J 0ppm							2.00		Very weak light grey to grey and pale yellowish brown sandy LIMESTONE. Sand is fine to coarse. Some iron staining. Recovered as slightly sandy angular and sub-angular fine to coarse gravel with a medium to high sub-angular cobble content. Weathered INFERIOR OOLITE GROUP *2-2.68m Fragmented Core*		
2.50	2 X D ES J 0ppm											
2.00 - 3.50		100	100	86	2			(1.50)		*J, 5, R, UN, clean* *J, 0, R, UN, clean* *2.75-2.86m Fragmented Core* *J, 0, R, UN, tight, sandy veneer* *J, 0, R, UN, tight, sandy veneer* *J, 20, R, P/UN, tight, sandy veneer* *2.93-3.5m Fragmented Core*		
3.50	D							3.50		Very weak light grey to grey and light yellowish brown sandy LIMESTONE. Calcite cement and staining on some joint surfaces. Some iron staining. INFERIOR OOLITE GROUP *J, 0, R, P/CU, partly open =10mm calcite veneer* *J, 50, R, P/ST, partly open =10mm clean* *J, 10, R, UN, partly open =10mm sandy veneer* *3.88-4.34 Fragmented Core*		
3.50 - 5.00		100	100	42	5					*J, 70, R, P, sandy veneer* *J, 0, R, UN/IR, tight, sandy veneer* *J, 0, R, UN, tight, sandy veneer* *J, 0, R, UN, tight, sandy veneer* *J, 0, R, UN, tight, clean* *J, 0, R, P, tight, clean* *J, 5, R, P, tight, clean*		
4.78	C											
4.89	C Core											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25-10-2018	22:00	0.00	0.00	Dry	6.50	128	2.00	180
26-10-2018	00:00	6.57	2.00	Dry				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
2.00	3.50	Air/Mist	50%	yellow				
3.50	5.00	Air/Mist	50%	yellow				
5.00	6.50	Air/Mist	50%	yellow				

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m bgl to 2.00m bgl and extended by rotary coring from 2.00m bgl to 6.52m bgl. Roots encountered to 0.15m bgl. Upon completion, borehole was backfilled with bentonite pellets. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH05**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	25/10/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507646.0	299780.5		Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.00 - 6.50		100	84	49	10			(3.07)		Very weak light grey to grey and light yellowish brown sandy LIMESTONE. Calcite cement and staining on some joint surfaces. Some iron staining. INFERIOR OOLITE GROUP *J, 0, R, P, partly open = 5mm sandy veneer* *J, 5, R, P/UN, partly open =5mm clean* *J, 0, R, IR, partly open =10mm sandy veneer* *J, 0, R, P, tight, sandy veneer* *J, 0, R, partly open = 10mm clean* *5.67-5.86m J, 90, R, P, tight sandy veneer* *J, 0, R, P, tight* *J, 0, R, P, tight* *J, 0, R, P, tight* *J, 0, R, P/UN, tight*		
6.26	C									*J, 20, R, P, sandy veneer* *6.04-6.11 Fragmented Core* *J, 40, R, P, very tight* *6.22-6.26m Fragmented Core*		
6.45	N=50 (25 for 50mm/50 for 20mm)(C)							6.57		End of Borehole at 6.57m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					6.50	128	2.00	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m bgl to 2.00m bgl and extended by rotary coring from 2.00m bgl to 6.52m bgl. Roots encountered to 0.15m bgl. Upon completion, borehole was backfilled with bentonite pellets. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH06**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	21/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507790.3	299751.9	29.59mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 2

Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Samples & In Situ Testing / **Strata Details** / **Groundwater**		
0.10	ES J									Brown sandy gravelly CLAY. Gravel is angular and sub-angular fine to coarse limestone. Sand is fine to coarse. Rootlets present. Reworked TOPSOIL		
0.20	0ppm ES EW J 0ppm							(0.50)				
0.50	B J						29.09	0.50		Light brown to brown slightly clayey gravelly fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
0.60	0ppm ES						28.99	0.60		*0.5-2.12m Fragmented core*		
0.50 - 1.50		95	0	0	0			(1.14)		Weak light yellowish brown light grey and brown highly weathered to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel with a low to medium sub-angular cobble content. Weathered INFERIOR OOLITE GROUP		
							27.85	1.74		Weak yellowish brown slightly clayey moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel and sub-angular cobbles. Weathered INFERIOR OOLITE GROUP		
								(0.38)				
							27.47	2.12		Medium strong yellowish brown light greyish brown and light brown moderately weathered to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Some iron staining. Weathered INFERIOR OOLITE GROUP		
2.20	C									*J, 0, R, UN-CU, partly open =10mm, sandy veneer*		
1.50 - 3.00		100	55	19	5					*J, 20, R, P, partly open =5mm, sandy veneer*		
										J, 20, R, P, partly open =5mm, sandy veneer		
										J, 75, R, P, partly open =5mm, sandy veneer (2.39-2.63mm)		
								(0.88)		*2.49-2.63m Fragmented zone*		
										J, 10, R, P-UN, partly open =5mm, sandy veneer		
2.80	C									*2.75-3m Fragmented Core*		
							26.59	3.00		Yellowish brown clayey gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
							26.42	3.17		*3-3.2m Fragmented Core*		
							26.29	3.30		Weak light yellowish brown light grey and light greyish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
										J, 0, R, P, partly open =5mm, sandy veneer		
							26.09	3.50		Weak light yellowish brown light grey and light greyish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy sub-angular fine to coarse gravel with a low sub-angular cobble content. Weathered INFERIOR OOLITE GROUP		
3.57	C									*J, 0, R, P, partly open =5mm, sandy veneer*		
3.71	C									*3.3-3.5m Fragmented Core*		
3.00 - 4.50		62	51	51	16			(0.44)		Weak light yellowish brown light grey and light greyish brown slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
										J, 30, R, P, tight, sandy veneer		
							25.65	3.94		*J, 0, R, P, tight, sandy veneer*		
										J, 0, R, P, partly open =5mm, sandy veneer		
										Assessed zone of core loss.		
								(0.56)		*Assessed zone of core loss.*		
4.50	N=12 (1,1/2,4,3,3)(S)						25.09	4.50		Firm greyish brown with light grey light brown and dark grey mottling sandy gravelly CLAY with a low sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
4.90	D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
21-09-2018	08:00	0.00	0.00	Dry
21-09-2018	14:00	6.45	1.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
6.00	128

Casing Diameter

Depth (m)	Dia (mm)
1.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.50	1.50	Air/Mist	100%-100%	yellow
1.50	3.00	Air/Mist	100%-100%	yellow
3.00	4.50	Air/Mist	100%-100%	yellow
4.50	6.00	Air/Mist	100%-100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	6.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled using rotary coring 0.50-6.00m bgl. Roots encountered to 0.50m bgl. Upon completion, borehole was installed with a slotted standpipe (50mm diam ID HDPE) to 6.00m bgl. Granular response zone 6.00-1.50m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH06**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	21/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507790.3	299751.9	29.59mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 2

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		70	0	0				(1.95)		Firm greyish brown with light grey light brown and dark grey mottling sandy gravelly CLAY with a low sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP *Assessed zone of core loss.*		
6.00	N=7 (2,1/1,2,2,2)(S)						23.14	6.45		End of Borehole at 6.45m		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
6.00	128

Casing Diameter

Depth (m)	Dia (mm)
1.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	6.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled using rotary coring 0.50-6.00m bgl. Roots encountered to 0.50m bgl. Upon completion, borehole was installed with a slotted standpipe (50mm diam ID HDPE) to 6.00m bgl. Granular response zone 6.00-1.50m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH07**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507660.4	299683.8	29.45mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	J,D							(0.30)		Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Reworked TOPSOIL		
0.20	ES EW J,D						29.15	0.30		Weak yellowish brown slightly to moderately weathered sandy LIMESTONE. Sand is fine and medium. Recovered as sub-angular fine to coarse gravel and cobbles. Weathered INFERIOR OOLITE GROUP .		
0.50	ES J,D							(1.10)				
1.00	C											
0.70 - 1.50		87	0	0								
1.30	C											
							28.05	1.40		Assessed zone of core loss.		
							27.95	1.50		Weak yellowish brown slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP .		
								(0.80)				
1.50 - 3.00		100	20	0			27.15	2.30		Very weak yellowish brown weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy angular and sub-angular fine to coarse gravel. Weathered INFERIOR OOLITE GROUP		
							26.90	2.55		Weak yellowish brown slightly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Occasional calcareous staining and cement on exposed faces. Recovered as sub-angular coarse gravel and sub-angular cobbles. Weathered INFERIOR OOLITE GROUP .		
2.65	C							(0.76)				
							26.14	3.31		Weak extremely weathered sandy LIMESTONE. Recovered as orangish brown to brown very gravelly fine to coarse sand. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP .		
							26.01	3.44		Assessed zone of core loss.		
3.00 - 4.50		29	3	0								
								(1.06)				
4.50	N=50 (25 for 105mm/50 for 140mm)(S)						24.95	4.50		Very weak to weak highly weathered orangish brown and yellowish brown sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP .		
								(0.48)				
							24.47	4.98				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
04-09-2018	08:00	0.00	0.00	Dry
04-09-2018	18:00	6.00	0.00	Dry
05-09-2018	08:00	6.00	0.00	Dry
05-09-2018	18:00	6.00	0.00	Dry
06-09-2018	08:00	6.00	4.50	Dry
06-09-2018	13:30	12.00	4.50	Dry

Borehole Diameter

Depth (m)	Dia (mm)
12.00	128

Casing Diameter

Depth (m)	Dia (mm)
4.50	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.70	1.50	Air/Mist	100%	yellow
1.50	3.00	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	10.50	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata. Borehole drilled using rotary coring from 0.70-12.00m bgl. Pure bore drilling fluid was added to the hole at 6.00m bgl to assist drilling. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 10.50m bgl. Granular response zone 10.50-1.50m bgl. One day standing on 5/09/2018, awaiting permits. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. Reworked refers to ploughed ground.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH07**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507660.4	299683.8	29.45mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		38	0	0				(1.02)		Assessed zone of core loss.		
6.00	N=26 (7,7/4,5,8,9)(S) SPT						23.45	6.00		Stiff grey mottled dark grey slightly gravelly sandy silty CLAY with light grey lenses of silt. Sand is fine and course. Gravel is sub-angular and sub-rounded fine to coarse mudstone. INFERIOR OOLITE GROUP .		
6.20	D							(0.44)				
6.40	ES EW						23.01	6.44		Stiff to very stiff grey occasionally mottled orange, orangish brown and light grey slightly sandy silty CLAY. Sand is fine and medium. Rare disseminated pyrite crystals. INFERIOR OOLITE GROUP .		
6.00 - 7.50		68	0	0				(0.59)				
6.80	D											
							22.42	7.03		Assessed zone of core loss.		
								(0.47)				
7.50	N=32 (4,5/4,6,10,12)(S) SPT						21.95	7.50		Stiff to very stiff thinly laminated dark grey slightly sandy CLAY interbedded with orangish brown mottled grey and brown clayey gravelly fine to coarse sand. Gravel is angular and sub-angular fine to coarse sandstone. INFERIOR OOLITE GROUP		
7.80	D											
								(0.94)				
8.20	D											
7.50 - 9.00		89	0	0								
							21.01	8.44		Assessed zone of core loss.		
								(0.56)				
9.00	N=35 (4,4/5,4,12,14)(S)						20.45	9.00		Very stiff dark grey mottled brownish grey and grey sandy CLAY with orangish brown ferruginous staining. Sand is fine and medium. INFERIOR OOLITE GROUP .		
9.10	D											
							20.21	9.24		Weak reddish brown, dark brown and orangish brown fine grained ferruginous SANDSTONE. INFERIOR OOLITE GROUP		
							20.14	9.31		Weak slightly weathered MUDSTONE with ferruginous staining present on joint surfaces. Rare shell fragments. LIAS GROUP		
9.41	C											
		50	9	9				(1.26)				
9.00 - 10.50										*Assessed zone of core loss*		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					12.00	128	4.50	180

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata. Borehole drilled using rotary coring from 0.70-12.00m bgl. Pure bore drilling fluid was added to the hole at 6.00m bgl to assist drilling. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 10.50m bgl. Granular response zone 10.50-1.50m bgl. One day standing on 5/09/2018, awaiting permits. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. Reworked refers to ploughed ground.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
					0.00	1.50	PLAIN	50
					1.50	10.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH07**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507660.4	299683.8	29.45mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Weak slightly weathered MUDSTONE with ferruginous staining present on joint surfaces. Rare shell fragments. LIAS GROUP		
							18.88	10.57		Very stiff dark grey CLAY with occasional white shell fragments. LIAS GROUP		
10.90	D											
10.50 - 12.00		86	0	0				(1.72)				
11.50	D											
										Assessed zone of core loss		
12.00	N=50 (5,8/50 for 285mm) (S) SPT											
							17.16	12.29		End of Borehole at 12.28m		

11 12 13 14 15

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
12.00	128	4.50	180

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata. Borehole drilled using rotary coring from 0.70-12.00m bgl. Pure bore drilling fluid was added to the hole at 6.00m bgl to assist drilling. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 10.50m bgl. Granular response zone 10.50-1.50m bgl. One day standing on 5/09/2018, awaiting permits. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. Reworked refers to ploughed ground.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	10.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH08**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	06/09/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507690.0	299585.0	22.83mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 73% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES J									Yellowish brown slightly clayey gravelly fine to coarse SAND with a low sub-angular sandy limestone cobble content. Gravel is sub-angular fine to coarse limestone. Reworked TOPSOIL		
0.20	J											
0.50	B D ES EW J							(1.00)				
1.00	ES J						21.83	1.00		Very weak yellowish brown to light yellowish brown sandy LIMESTONE recovered as gravelly fine to coarse sand with a low sub-angular limestone cobble content. Gravel is sub-angular fine to coarse sandy limestone. Weathered INFERIOR OOLITE GROUP 1		
1.20	N=50 (11,10/50 for 240mm)(S) B D						21.63	1.20		Very weak yellowish brown to brown sandy LIMESTONE recovered as clayey gravelly fine to coarse sand with a low sub-angular limestone cobble content. Gravel is sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
								(0.70)				
1.90	B						20.93	1.90		Very weak light yellowish brown, light grey and light brownish grey sandy LIMESTONE recovered as sandy sub-angular limestone COBBLES. Weathered INFERIOR OOLITE GROUP 2		
2.00	N=10 (20,10/3,2,3,2)(S) B						20.83	2.00		Very weak yellowish brown and orangish brown sandy LIMESTONE recovered as slightly gravelly clayey silty fine to coarse sand with a moderate sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
3.00	N=41 (2,2/3,13,12,13)(S) D							(2.00)		3		
4.00	N=16 (15,16/5,3,4,4)(S) B D						18.83	4.00		Stiff dark grey mottled light grey and orangish brown clayey silty gravelly fine to coarse SAND with mudstone cobbles. Gravel is fine to coarse mudstone. INFERIOR OOLITE GROUP 4		
								(1.00)				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
10-09-2018	08:00	0.00	0.00	Dry
10-09-2018	15:00	10.95	6.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
6.10	200
10.50	128

Casing Diameter

Depth (m)	Dia (mm)
5.00	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20-6.10m bgl and extended by rotary coring 6.10-10.95m bgl. Chiselling: 0.5hr 1.70-2.00m bgl, 0.75hr 3.30-4.20m bgl, 0.75hr 6.10-6.10m (refusal for cable percussive rig). Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. Reworked refers to ploughed ground.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.15			20	2.00	Slow ingress. Groundwater strike at 2.15m bgl, rising to 2.00m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH08**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	06/09/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507690.0	299585.0	22.83mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 73% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.00	N=14 (3,3/3,4,3,4)(S)						17.83	5.00		Stiff dark grey mottled light grey and orangish brown clayey silty gravelly fine to coarse SAND with mudstone cobbles. Gravel is fine to coarse mudstone. INFERIOR OOLITE GROUP		
5.10	B									Firm dark grey mottled light grey and orangish brown slightly sandy silty CLAY with pockets of light grey silty fine sand and orangish brown fine and medium sand. INFERIOR OOLITE GROUP		
5.60	B UT							(1.00)				
6.00	D						16.83	6.00		Weak dark grey MUDSTONE recovered as sub-angular coarse gravel and sub-angular cobbles. Ferruginous staining on joint surfaces. LIAS GROUP		
6.10	N=50 (25 for 75mm/50 for 75mm)(S) 2 X D									*Fragmented core*		
							16.63	6.20		Medium strong slightly to moderately weathered grey MUDSTONE with white shell fragments. LIAS GROUP		
										J, 80, R, P, Iron staining and sandy cement veneer 2.5mm thick		
										J, 20, R, P, partly open, iron staining		
										J, 5, R, P-CU, partly open, iron staining		
6.00 - 7.50		66	66	56	4			(0.87)				
							15.76	7.07		Very weak highly weathered grey mottled orangish brown and reddish brown MUDSTONE with occasional ferruginous staining. LIAS GROUP		
							15.63	7.20		*Fragmented core*		
7.50	N=19 (2,2/4,3,6,6)(S)									Stiff becoming very stiff thinly laminated dark grey CLAY with white shell fragments. LIAS GROUP		
7.90	D											
7.50 - 9.00		100	0	0								
8.30	D							(3.75)				
										J, 5, R, P-ST		
8.70	D											
9.00	UT											
9.40	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					6.10	200	5.00	180
					10.50	128		

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20-6.10m bgl and extended by rotary coring 6.10-10.95m bgl. Chiselling: 0.5hr 1.70-2.00m bgl, 0.75hr 3.30-4.20m bgl, 0.75hr 6.10-6.10m (refusal for cable percussive rig). Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. Reworked refers to ploughed ground.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
6.00	7.50	Air/Mist	100%	yellow				
7.50	9.00	Air/Mist	100%	grey				
9.00	10.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.15			20	2.00	Slow ingress. Groundwater strike at 2.15m bgl, rising to 2.00m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH08**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	06/09/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507690.0	299585.0	22.83mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 73% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
9.00 - 10.50										Stiff becoming very stiff thinly laminated dark grey CLAY with white shell fragments. LIAS GROUP		
10.00	D	84	0	0								
										Assessed zone of core loss.		
10.50	N=28 (3,4/6,6,8,8)(S)											
							11.88	10.95		End of Borehole at 10.95m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					6.10	200	5.00	180
					10.50	128		

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20-6.10m bgl and extended by rotary coring 6.10-10.95m bgl. Chiselling: 0.5hr 1.70-2.00m bgl, 0.75hr 3.30-4.20m bgl, 0.75hr 6.10-6.10m (refusal for cable percussive rig). Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. Reworked refers to ploughed ground.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.15			20	2.00	Slow ingress. Groundwater strike at 2.15m bgl, rising to 2.00m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH09**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507767.7	299547.1	18.38mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12/73% | Sheet 1 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	J					Grass over brown clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. MADE GROUND		
	PID	0.0ppm						
0.20	J							
	PID	0.1ppm						
0.50	J							
	PID	0.0ppm						
				(1.20)				
1.00	2 X J							
	D							
	ES							
	PID	0.0ppm						
1.20	SPT	N=12 (3,3/3,4,2,3)	17.18	1.20				
1.20 - 1.70	B					Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse flint, brick, concrete, sandstone, limestone and asphalt. MADE GROUND		
				(0.60)				
1.80	D		16.58	1.80		Dark brown clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse flint, brick, concrete, sandstone, limestone and asphalt. MADE GROUND		
2.00	SPT	8 (2,3/2,3,3,)	16.38	2.00		Dark brown clayey silty gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse flint, brick, concrete, sandstone, limestone and asphalt. MADE GROUND		
	2 X J							
	D							
	ES							
	EW							
2.00 - 2.50	B							
2.00	PID	0.0ppm						
				(1.00)				
3.00	SPT	N=12 (2,3/2,3,3,4)	15.38	3.00		Very weak yellowish brown to brown and greyish yellow sandy LIMESTONE recovered as slightly clayey sandy angular and sub-angular fine to coarse limestone GRAVEL with a low to medium sub-angular limestone cobble content. Sand is fine to coarse. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
	2 X J							
	D							
	ES							
3.00 - 3.50	B							
3.00	PID	0.0ppm						
				(1.80)				
4.50	SPT	N=56 (3,4/4,16,17,19)						
4.50 - 4.80	B							
4.80 - 5.00	B		13.58	4.80		Weak yellowish brown to light grey moderately weathered sandy LIMESTONE recovered as angular and sub-angular fine to coarse gravel and cobbles. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
5.00	SPT	N=50 (24 for 75mm/50 for 100mm)	13.38	5.00				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
13-09-2018	09:00	0.00	0.00	Dry
13-09-2018	13:30	10.95	5.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
5.00	200
10.50	128

Casing Diameter

Depth (m)	Dia (mm)
5.00	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Roots not encountered. Borehole drilled 1.20-5.00m bgl using cable percussive methods, followed on by rotary coring to 10.95m bgl. Chiselling: 0.5hr 4.70-5.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 9.00m bgl. Granular response zone 9.00-3.50m bgl. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.50	PLAIN	50
3.50	9.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.90			20	4.90	Groundwater seepage encountered at 4.90m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH09**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507767.7	299547.1	18.38mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12/73% | Sheet 2 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.15	ES EW			(1.00)		Assessed zone of core loss.		
6.00	SPT	N=16 (2,2/2,5,4,5)	12.38	6.00				
6.00 - 6.10	D					Firm to stiff orangish brown, grey, light grey and black sandy silty CLAY. Sand is fine and medium. Occasional partings of black organic material. INFERIOR OOLITE GROUP		
6.30 - 6.40	D			(0.41)				
						Horizon of light grey to grey silty fine and medium SAND.		
			11.97	6.41		Firm dark grey CLAY with black organic material present. INFERIOR OOLITE GROUP		
6.70 - 6.80	D		11.67	(0.30) 6.71		Firm light grey with some dark grey and black mottling sandy CLAY. Sand is fine and medium. Black organic material present. INFERIOR OOLITE GROUP		
			11.45	6.93		Assessed zone of core loss.		
7.50	SPT	N=37 (7,19/15,9,7,6)	10.88	(0.57) 7.50		Light grey to grey, gravelly fine grained SAND. Gravel is angular and sub-angular fine to coarse limestone. Some black relict roots present. INFERIOR OOLITE GROUP		
			10.70	7.68		Yellowish brown to brown and light grey slightly clayey sandy angular and sub-angular fine to coarse limestone and ferruginous sandstone GRAVEL with low sub-angular limestone cobble content. Sand is fine to coarse. INFERIOR OOLITE GROUP		
7.90 - 8.00	D		10.49	7.89		Yellowish brown to brown gravelly fine to coarse SAND with a low sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
			10.20	8.18		Stiff very thinly laminated dark grey to grey with some yellowish grey and brown mottling CLAY locally tending to extremely weak mudstone. LIAS GROUP		
8.40 - 8.50	D					*Assessed zone of core loss.*		
9.00	SPT	N=18 (2,2/4,4,5,5)						
9.10 - 9.20	D			(2.18)				
9.50 - 9.60	D							
10.00 - 10.10	D							

6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter	
Depth (m)	Dia (mm)
5.00	200
10.50	128

Casing Diameter	
Depth (m)	Dia (mm)
5.00	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Roots not encountered. Borehole drilled 1.20-5.00m bgl using cable percussive methods, followed on by rotary coring to 10.95m bgl. Chiselling: 0.5hr 4.70-5.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 9.00m bgl. Granular response zone 9.00-3.50m bgl. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling			
From (m)	To (m)	Duration	Remarks

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	3.50	PLAIN	50
3.50	9.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.90			20	4.90	Groundwater seepage encountered at 4.90m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH09**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	RP	SB	FINAL	**CP+RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507767.7	299547.1	18.38mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12/73% | Sheet 3 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Stiff very thinly laminated dark grey to grey with some yellowish grey and brown mottling CLAY locally tending to extremely weak mudstone. LIAS GROUP		
			8.02	10.36		Assessed zone of core loss.		
10.50	SPT	N=44 (2,3/13,9,10,12)	7.88	10.50		Very stiff very thinly laminated dark grey to grey with some yellowish grey and brown mottling CLAY locally tending to extremely weak mudstone. LIAS GROUP		
						SPT sample recovered.		
				(0.45)				
			7.43	10.95		End of Borehole at 10.95m		

11 12 13 14 15

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
5.00	200
10.50	128

Casing Diameter

Depth (m)	Dia (mm)
5.00	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Roots not encountered. Borehole drilled 1.20-5.00m bgl using cable percussive methods, followed on by rotary coring to 10.95m bgl. Chiselling: 0.5hr 4.70-5.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 9.00m bgl. Granular response zone 9.00-3.50m bgl. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.50	PLAIN	50
3.50	9.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.90			20	4.90	Groundwater seepage encountered at 4.90m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED	Contract Name: A47 Improvements Programme		Client: Interserve Construction Limited		Hole ID: **BH11**
	Contract Number: 17076	Date Started: 10/09/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **CP+RC**
	Easting: 507943.6	Northing: 299634.4	Ground Level: 21.09mAOD	Plant Used: Comacchio 450	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642/9640A Energy Ratio: 65.12/73% | Sheet 1 of 3

Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D ES EW J 0ppm D J 0ppm							(0.50)		Dark brown silty gravelly fine and medium SAND. Gravel is sub-angular fine to course limestone. Occasional rootlets. Weathered INFERIOR OOLITE GROUP		
0.50	D ES J 0ppm						20.59	0.50		Yellow silty gravelly fine and medium SAND. Gravel is sub-angular fine to coarse limestone. Occasional rootlets. Weathered INFERIOR OOLITE GROUP		
1.00	D J 0ppm							(0.70)				
1.20	N=50 (25 for 75mm/50 for 75mm)(C) B						19.89	1.20		Weak light yellowish brown moderately to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel and cobbles. Some calcite present on joint and fracture surfaces. Weathered INFERIOR OOLITE GROUP		
1.40	50 (25 for 75mm/50 for 150mm)(C)									*Fragmented Core*		
1.40 - 2.40 1.90	C	80	5	0				(1.20)		*Assessed zone of core loss.*		
2.40	B						18.69	2.40		Yellowish brown with orange to orangish brown mottling clayey silty fine and medium SAND. INFERIOR OOLITE GROUP		
2.40 - 3.00		100	0	0				(0.34)				
2.82	ES EW						18.35	2.74		Orangish brown to brown slightly gravelly clayey fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is angular to sub-rounded fine to coarse limestone. INFERIOR OOLITE GROUP		
3.00	N=17 (2,2/3,4,5,5)(S)						18.09	3.00		Weak orange, orangish brown and reddish brown mottled fine to coarse grained ferruginous SANDSTONE. Recovered as sub-angular cobbles. INFERIOR OOLITE GROUP		
3.00 - 4.50		12	0	0			17.91	3.18		No core recovery.		
								(1.32)				
4.50	N=14 (4,3/2,4,4,4)(S) D SPT						16.59	4.50		Firm dark grey with light grey and orangish brown mottling sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
								(0.42)				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
10-09-2018	08:00	0.00	0.00	Dry
10-09-2018	18:00	2.40	1.40	Dry
11-09-2018	08:00	2.40	1.40	Dry
11-09-2018	18:00	10.95	8.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
1.40	200
10.50	128

Casing Diameter

Depth (m)	Dia (mm)
8.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
1.40	3.00	Air/Mist	100%-100%	Yellow
3.00	4.50	Air/Mist	100%-100%	Yellow
4.50	6.00	Air/Mist	100%-100%	Grey

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	7.50	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods from 1.20-1.40m bgl followed on by rotary coring 1.40-10.95m bgl. Roots encountered to 0.70m bgl. Chiselling 0.5 hr: 1.20-1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 7.50m bgl. Granular response zone 7.50-1.50m bgl. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme	Client: Interserve Construction Limited				Hole ID: **BH11**
	Contract Number: 17076	Date Started: 10/09/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **CP+RC**
	Easting: 507943.6	Northing: 299634.4	Ground Level: 21.09mAOD	Plant Used: Comacchio 450	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642/9640A Energy Ratio: 65.12/73% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.90	D						16.17	4.92		Firm dark grey with light grey and orangish brown mottling sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
4.50 - 6.00 5.30	D	75	0	0				(0.70)		Firm light grey, yellowish brown to greyish brown, black and orangish brown mottled sandy silty CLAY with rare light grey pockets of silt. Sand is fine and medium. Black organic materials present. INFERIOR OOLITE GROUP		
							15.47	5.62		Firm orange to orangish brown sandy CLAY. Sand is fine to coarse. INFERIOR OOLITE GROUP		
							15.42	5.67		No core recovery.		
								(0.33)				
6.00	N=17 (2,3/3,4,5,5)(S) D						15.09	6.00		Stiff brown sandy gravelly CLAY with a moderate ferruginous sandstone cobble content. Sand is fine to coarse. Gravel is sub-angular fine to coarse ferruginous sandstone. INFERIOR OOLITE GROUP		
							14.93	6.16		Stiff indistinctly laminated dark grey with some orangish-brown and brown mottling CLAY. LIAS GROUP		
6.40	D							(0.34)				
							14.59	6.50		No core recovery.		
6.00 - 7.50		33	0	0				(1.00)				
7.50	N=12 (2,2/3,3,3,3)(S) SPT						13.59	7.50		Firm indistinctly laminated dark grey CLAY. LIAS GROUP		
7.80	D							(1.02)				
8.20 7.50 - 9.00	D	92	0	0								
							12.57	8.52		Stiff to very stiff indistinctly laminated dark grey with some yellowish grey mottling CLAY. LIAS GROUP		
8.70	D							(0.36)				
							12.21	8.88		No core recovery.		
9.00	UT							(0.62)				
							11.59	9.50		Stiff dark grey sandy silty CLAY. Sand is find to coarse. LIAS GROUP		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					1.40	200	8.00	180
					10.50	128		

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
6.00	7.50	Air/Mist	100%-100%	Grey	0.00	1.50	PLAIN	50
7.50	9.00	Air/Mist	100%-100%	Grey	1.50	7.50	SLOTTED	50
9.00	10.50	Air/Mist	100%-100%	Grey				

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods from 1.20-1.40m bgl followed on by rotary coring 1.40-10.95m bgl. Roots encountered to 0.70m bgl. Chiselling 0.5 hr: 1.20-1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 7.50m bgl. Granular response zone 7.50-1.50m bgl. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH11**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	10/09/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507943.6	299634.4	21.09mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642/9640A Energy Ratio: 65.12/73% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
9.00 - 10.50 9.80	D	67	0	0						Stiff dark grey sandy silty CLAY. Sand is find to coarse. LIAS GROUP		
10.20	D							(1.45)				
10.50	N=20 (2,4/3,4,7,6)(S) SPT						10.14	10.95		End of Borehole at 10.95m		

10 11 12 13 14

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					1.40	200	8.00	180
					10.50	128		

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
					0.00	1.50	PLAIN	50
					1.50	7.50	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods from 1.20-1.40m bgl followed on by rotary coring 1.40-10.95m bgl. Roots encountered to 0.70m bgl. Chiselling 0.5 hr: 1.20-1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 7.50m bgl. Granular response zone 7.50-1.50m bgl. Cable percussive SPT hammer energy ratio - 73%. Rotary coring SPT hammer energy ratio - 65%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH12**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507933.0	299677.0	24.66mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D J									Orangish brown to brown clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Reworked INFERIOR OOLITE GROUP		
0.20	0ppm											
0.30	D ES EW J							(0.50)				
0.50	0ppm D B D ES J 0ppm						24.16 24.06	0.50 0.60		Orangish brown slightly clayey gravelly fine to coarse SAND with a low to medium angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
0.60 - 1.50		77	4	0				(0.90)		Weak yellowish brown, greyish brown, and light greyish brown moderately to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular fine to coarse gravel and cobbles. Some calcite and calcareous cement on joint and fracture surfaces. Weathered INFERIOR OOLITE GROUP *Fragmented Zone* *Assessed zone of core loss*		
							23.16 23.11	1.50 1.55		Weak yellowish brown to light brownish grey moderately to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
								(0.56)		Weak yellowish brown, greyish brown, and light greyish brown moderately to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular fine to coarse gravel and cobbles. Some calcite and calcareous cement on joint and fracture surfaces. Weathered INFERIOR OOLITE GROUP *Fragmented Zone* *J, 0, R, P, partly open =10mm sandy clay veneer* *J, 0, R, P, partly open =10mm sandy clay veneer* *J, 0, R, P-UN,partly open =10mm sandy clay veneer* *J, 0, R, IR, open, sandy clay veneer* *J, 0, R, P-UN,partly open =10mm sandy clay veneer* *J, 0, R, P, open sandy clay veneer* *J, 0, R, IR, open*		
1.50 - 3.00		84	84	48	28		22.55	2.11		Weak yellowish brown, greyish brown, and light greyish brown moderately to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular fine to coarse gravel and cobbles. Some iron staining. Weathered INFERIOR OOLITE GROUP *Fragmented zone*		
2.56	C							(0.56)		*J, 0, R, P, tight* *Fragmented core* *J, 10, R, P, tight*		
							21.99 21.83	2.67 2.83		Soft to firm sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse sandy limestone. INFERIOR OOLITE GROUP *Fragmented core*		
								(0.67)		Weak yellowish brown to light brownish grey moderately to slightly weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP *No core recovery* *J, 10, R, P, tight* *J, 0, R, P, partly open =10mm sandy clay veneer* *J, 0, R, P, partly open =10mm sandy clay veneer* *J, 0, R, P, partly open =10mm sandy clay veneer* *Fragmented core* *J, 0-10, R, IR* *J, 0-10, R, IR* *Fragmented Zone*		
3.00 - 3.50		84	24	0								
3.50	B						21.16	3.50		Very dense light grey with orange to orangish brown and brown mottling clayey silty fine and medium SAND locally tending to extremely weak sandstone. INFERIOR OOLITE GROUP		
3.50 - 4.50		90	0	0				(1.93)		*No core recovery*		
4.50	N=50 (6,14/50 for 145mm)(S)											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
12-09-2018	11:00	0.00	0.00	Dry	10.50	128	1.50	180
12-09-2018	18:00	10.95	1.50	Dry				

Remarks:
Hand dug inspection pit terminated at 0.60m bgl on hard strata strata. Borehole drilled using rotary coring 0.60-10.95m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
0.60	1.50	Air/Mist	100%-100%	Yellow				
1.50	3.00	Air/Mist	100%-100%	Yellow				
3.00	3.50	Air/Mist	100%-100%	Yellow				
3.50	4.50	Air/Mist	100%-100%	Yellow				
4.50	6.00	Air/Mist	100%-100%	Orange				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH12**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507933.0	299677.0	24.66mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very dense light grey with orange to orangish brown and brown mottling clayey silty fine and medium SAND locally tending to extremely weak sandstone. INFERIOR OOLITE GROUP		
4.50 - 6.00												
5.30	B											
							19.23	5.43				
		92	0	0						Very weak to weak orangish brown, yellowish brown, and red to reddish brown fine to coarse ferruginous SANDSTONE. Recovered as gravelly fine to coarse sand with a low to medium angular and sub-angular cobble content. Gravel is angular and sub-angular fine to coarse sandstone. INFERIOR OOLITE GROUP		
								(0.37)				
							18.86	5.80		Firm black organic sandy SILT. Sand is fine. Pyritic. INFERIOR OOLITE GROUP		
										No core recovery		
6.00	N=23 (3,5/7,5,5,6)(S)						18.66	6.00		Stiff indistinctly to distinctly laminated light grey with black and light grey mottling silty CLAY with light grey pockets and lenses of silt. Slightly pyritic. INFERIOR OOLITE GROUP		
6.20	D											
								(1.30)				
6.00 - 7.50		100	0	0								
6.90	D									*Pale grey SILTSTONE BAND.*		
7.30	D						17.36	7.30		Dark grey with light grey mottling slightly clayey silty fine and medium SAND. INFERIOR OOLITE GROUP		
							17.24	7.42		Stiff dark grey with light grey mottling sandy silty CLAY with light grey pockets and lenses of silt and sandy silt. Sand is fine and medium. INFERIOR OOLITE GROUP		
7.50	N=22 (1,3/2,4,7,9)(S)											
7.60	D											
								(0.74)				
8.20	D						16.50	8.16		Firm orangish brown, grey, light grey and black mottled very sandy CLAY. Sand is fine to coarse. INFERIOR OOLITE GROUP		
7.50 - 9.00		86	0	0								
							16.26	8.40		Weak grey and light grey with black mottling, fine grained LIMESTONE. Recovered as angular and sub-angular fine to coarse gravel with a medium sub-angular cobble content. Some iron staining. INFERIOR OOLITE GROUP		
								(0.60)				
										No core recovery		
9.00	N=8 (1,1/2,2,2,2)(S)						15.66	9.00		Loose grey with orange to orangish brown mottling slightly sandy sub-angular fine to coarse limestone GRAVEL. Sand is fine and medium. INFERIOR OOLITE GROUP		
							15.54	9.12		Stiff brown sandy CLAY. Sand is fine to coarse. LIAS GROUP		
9.20	D											
		56	0	0								
9.60	D											
9.00 - 10.50												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					10.50	128	1.50	180

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata strata. Borehole drilled using rotary coring 0.60-10.95m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
6.00	7.50	Air/Mist	100%-100%	Orange				
7.50	9.00	Air/Mist	100%-100%	Grey				
9.00	10.50	Air/Mist	100%-100%	Grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH12**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507933.0	299677.0	24.66mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff brown sandy CLAY. Sand is fine to coarse. LIAS GROUP		
10.50	N=28 (1,3/3,7,9,9)(S)							(1.83)				
							13.71	10.95		End of Borehole at 10.95m		

11 12 13 14 15

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					10.50	128	1.50	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata strata. Borehole drilled using rotary coring 0.60-10.95m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH13**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507936.9	299730.6	27.54mAOD	Comacchio 450	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	B						27.39	0.15		Brown sandy gravelly CLAY with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Reworked TOPSOIL		
0.20	ES J 8ppm											
0.30	ES EW J						27.24	0.30		Light brown clayey sandy angular and sub-angular fine to coarse limestone GRAVEL with a low angular and sub-angular limestone cobble content. Reworked INFERIOR OOLITE GROUP		
0.50	4ppm B B ES J 2ppm							(0.40)		Light brown clayey sandy angular and sub-angular fine to coarse limestone GRAVEL with a low angular and sub-angular limestone cobble content. Weathered INFERIOR OOLITE GROUP		
0.90	C						26.84	0.70		Weak yellowish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular fine to coarse gravel and cobbles. Some signs of karst and dissolution features on core - voids, channels individuals and interconnected, 5-10mm in diameter. INFERIOR OOLITE GROUP		
0.70 - 1.70		100	0	0						*1.7-2.1m Fragmented core*		
								(2.50)		*J, 0-5, R, UN, tight* *J, 5, R, P, tight* *2.28-2.53m Fragmented zone*		
1.70 - 3.20		69	69	46	3					*J, 10-20, R, UN/ST, partly open* *J, 20, R, P-ST, open 5mm, iron staining*		
2.66	C									*J, 0, R, UN, sandy clay veneer* *2.77-2.82m Fragmented core* *J, 5, R, P/ST, sandy clay veneer* *Assessed zone of core loss*		
							24.34	3.20		Weak light grey and grey sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP		
								(0.45)				
							23.89	3.65		Light yellowish brown fine and medium SAND. INFERIOR OOLITE GROUP *Assessed zone of core loss*		
3.20 - 4.70		30	12	0								
								(1.28)				
4.70	N=9 (4,2/6,1,1,1)(S) D											
							22.61	4.93		Yellowish brown to orangish brown with some brown mottling clayey silty fine and medium		
5.00	D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
29-08-2018	08:00	0.00	0.00	Dry
29-08-2018	17:30	1.70	1.50	Dry
30-08-2018	08:00	1.70	1.50	Dry
30-08-2018	18:00	14.11	1.50	5.70
31-08-2018	08:00	14.11	1.50	6.40
31-08-2018	18:00	20.00	1.50	6.00

Borehole Diameter

Depth (m)	Dia (mm)
1.70	146
7.70	77
13.70	146
20.00	128

Casing Diameter

Depth (m)	Dia (mm)
1.50	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.70	1.70	Air/Mist	100%-100%	brown
1.70	3.20	Air/Mist	100%-100%	brown
3.20	4.70	Air/Mist	100%-100%	brown

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	6.69	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata strata. Borehole drilled using rotary coring 0.70-4.70m bgl and 7.70-20.00m bgl. Borehole drilled using dynamic sampling 4.70-7.70m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 6.70m bgl. Granular response zone 6.70-1.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH13**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507936.9	299730.6	27.54mAOD	Comacchio 450	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.70 - 6.20		53	0	0				(1.78)		Yellowish brown to orangish brown with some brown mottling clayey silty fine and medium SAND. INFERIOR OOLITE GROUP *Assessed zone of core loss*		
6.20	N=24 (5,3/4,5,8,7)(S) D											
6.60	D											
							20.83	6.71				
6.80	D						20.78	6.76		Firm to stiff orangish brown, yellowish brown, grey, dark grey and black mottled CLAY. INFERIOR OOLITE GROUP		
6.20 - 7.70		90	0	0			20.60	6.94		Light grey with some dark grey mottling slightly clayey fine and medium SAND. INFERIOR OOLITE GROUP		
7.00	D									Very stiff light grey sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
7.30	D							(0.70)				
							19.90	7.64		Very stiff orangish brown, greyish brown, light grey and dark grey mottled slightly sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
7.70	N=34 (4,7/7,9,9,9)(S) D											
7.90	D											
								(0.78)				
8.20	D											
7.70 - 9.20		93	0	0			19.12	8.42		Very stiff dark grey slightly sandy CLAY. Sand is fine and medium. Pyritic. INFERIOR OOLITE GROUP		
8.50	D											
								(0.67)				
8.90	D											
							18.45	9.09		Assessed zone of core loss.		
9.20	N=14 (1,2/3,3,4,4)(S) D						18.34	9.20		Weak light grey, reddish brown and orangish brown, sandy MUDSTONE. Sand is fine. Recovered as sub-angular fine to coarse gravel and cobbles. Iron staining and ferruginous nodules present. INFERIOR OOLITE GROUP		
								(0.33)				
							18.01	9.53		Assessed zone of core loss.		
		20	0	0								
9.20 - 10.70												

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter	
Depth (m)	Dia (mm)
1.70	146
7.70	77
13.70	146
20.00	128

Casing Diameter	
Depth (m)	Dia (mm)
1.50	180

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata strata. Borehole drilled using rotary coring 0.70-4.70m bgl and 7.70-20.00m bgl. Borehole drilled using dynamic sampling 4.70-7.70m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 6.70m bgl. Granular response zone 6.70-1.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
7.70	9.20	Air/Mist	100%-100%	grey
9.20	10.70	Air/Mist	100%-100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	6.69	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH13**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507936.9	299730.6	27.54mAOD	Comacchio 450	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Assessed zone of core loss.		
								(1.17)				
10.70	N=11 (1,2/1,3,2,5)(C)						16.84	10.70				
10.80	D									Firm grey mottled orangish brown, yellowish brown and light grey CLAY. INFERIOR OOLITE GROUP		
								(0.54)				
							16.30	11.24				
11.30	D									Very stiff grey with some light grey and greenish grey mottling sandy silty CLAY locally tending to extremely weak mudstone. Sand is fine and medium. LIAS GROUP		
10.70 - 12.20		100	0	0								
11.80	D											
12.20	N=45 (6,7/9,11,12,13)(S)											
	D							(2.16)				
12.40	D											
12.90	D											
12.20 - 13.70		87	0	0								
13.40	D						14.14	13.40		Brown clayey silty gravelly fine to coarse SAND. Gravel is fine to coarse dub-angular mudstone. LIAS GROUP.		
								(0.30)		*Assessed zone of core loss*		
13.70	N=50 (6,9/50 for 260mm)						13.84	13.70		Stiff to very stiff grey to dark grey CLAY with occasional white shell fragments. LIAS GROUP		
	(S)											
	D							(0.30)				
	ES											
13.90	D											
							13.54	14.00		Very stiff indistinctly laminated grey to dark grey CLAY with occasional white shell fragments. LIAS GROUP		
14.40	D	100	0	0								
13.70 - 15.20												
								(1.16)				
14.80	D											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter	
Depth (m)	Dia (mm)
1.70	146
7.70	77
13.70	146
20.00	128

Casing Diameter	
Depth (m)	Dia (mm)
1.50	180

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata strata. Borehole drilled using rotary coring 0.70-4.70m bgl and 7.70-20.00m bgl. Borehole drilled using dynamic sampling 4.70-7.70m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 6.70m bgl. Granular response zone 6.70-1.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.70	12.20	Air/Mist	100%-100%	grey
12.20	13.70	Air/Mist	100%-100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	6.69	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH13**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507936.9	299730.6	27.54mAOD	Comacchio 450	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
							12.38	15.16		Very stiff indistinctly laminated grey to dark grey CLAY with occasional white shell fragments. LIAS GROUP		
							12.34	15.20		Very weak grey to dark grey MUDSTONE. LIAS GROUP		
15.40	D							(0.50)		Very stiff indistinctly laminated grey to dark grey CLAY with occasional white shell fragments. LIAS GROUP		
							11.84	15.70		Weak grey MUDSTONE. LIAS GROUP		
							11.71	15.83		Assessed zone of core loss.		
15.20 - 16.70		47	0	0				(0.87)				
							10.84	16.70		Very stiff grey to dark grey CLAY with some white shell fragments. LIAS GROUP		
17.00	D							(0.58)				
							10.26	17.28		Weak grey MUDSTONE. LIAS GROUP		
							10.22	17.32		Very stiff indistinctly and distinctly laminated grey to dark grey CLAY with occasional white shell fragments. LIAS GROUP		
16.70 - 18.20		80	0	0								
17.60	D							(0.55)				
							9.67	17.87		Assessed zone of core loss.		
								(0.33)				
							9.34	18.20		Very stiff indistinctly and distinctly laminated grey to dark grey very slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium weakly cemented mudstone. Occasional white shell fragments. Sand is fine. LIAS GROUP		
18.40	D											
18.80	D											
18.20 - 19.70		100	0	0				(1.80)				
19.60	D											
19.70 - 20.00		100	0	0								
							7.54	20.00		End of Borehole at 20.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter	
Depth (m)	Dia (mm)
1.70	146
7.70	77
13.70	146
20.00	128

Casing Diameter	
Depth (m)	Dia (mm)
1.50	180

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata strata. Borehole drilled using rotary coring 0.70-4.70m bgl and 7.70-20.00m bgl. Borehole drilled using dynamic sampling 4.70-7.70m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 6.70m bgl. Granular response zone 6.70-1.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	6.69	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	13/09/2018		SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507966.0	299726.1	26.71mAOD		01/08/2019	1:25

Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 1 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	B J									Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Reworked TOPSOIL		
0.20	0ppm ES J 0ppm							(0.50)				
0.50	B ES EW J 0ppm						26.21	0.50		Orangish brown to brown slightly clayey gravelly fine to coarse SAND with a low to medium sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
								(0.50)				
1.00	B D J 0ppm						25.71	1.00		Loose to medium dense yellowish brown and pale yellowish brown slightly clayey gravelly fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.20	N=20 (2,4/4,5,5,6)(S)											
1.00 - 2.00		80	0	0								
								(1.80)				
2.00	N=7 (1,2/1,2,2,2)(S) D											
2.00 - 2.80		93	0	0								
2.80	N=50 (25 for 75mm/50 for 75mm)(S) D						23.91	2.80		Medium strong light greyish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP *2.8-3.14 Fragmented core* *J, 0, R, P, partly open, sandy veneer* *J, 0, R, P, partly open =5mm, sandy veneer* *J, 0, R, P, tight, sandy veneer* *J, 10, R, P,M partly open =10mm, sandy veneer* *J, 0, R, P-UN, sandy veneer* *3.39-3.44m Fragmented Core* *J, 0, R, P-UN, sandy veneer* *Assessed zone of core loss*		
2.80 - 4.00		60	60	16	5			(1.20)				
4.00	N=24 (3,5/5,6,6,7)(C) B						22.71	4.00		Medium dense light grey with some orangish brown, brown, yellowish brown and grey mottling clayey silty fine and medium SAND. INFERIOR OOLITE GROUP		
								(0.63)				
4.00 - 5.00		100	0	0								
4.63	B						22.08	4.63		Light grey orange and orangish brown mottled fine and medium SAND. INFERIOR OOLITE GROUP		
								(0.47)				
5.00	N=28 (5,6/5,7,7,9)(C)											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
13-09-2018	14:30	0.00	0.00	Dry
13-09-2018	18:00	2.80	0.00	Dry
14-09-2018	00:00	2.80	2.80	Dry
14-09-2018	18:00	6.45	5.00	Dry
17-09-2018	08:00	6.45	6.00	Dry
17-09-2018	18:00	12.12	7.90	Dry

Borehole Diameter

Depth (m)	Dia (mm)
25.30	128

Casing Diameter

Depth (m)	Dia (mm)
8.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
2.80	4.00	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole Dynamic Sampled from 1.00m-8.00m bgl, followed on by Rotary Coring to 25.75m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.00	7.50		20	6.80	Fast inflow. Groundwater strike at 10.00m bgl, rising to 6.80m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	13/09/2018		SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507966.0	299726.1	26.71mAOD		01/08/2019	1:25

Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% |

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.10	B						21.61	5.10		Light grey orange and orangish brown mottled fine and medium SAND. INFERIOR OOLITE GROUP		
5.00 - 6.00		100	0	0				(0.90)		Light grey, brown, orangish brown and grey mottled clayey silty fine and medium SAND. INFERIOR OOLITE GROUP		
6.00	N=17 (5,6/6,3,4,4)(C)						20.71	6.00		Light grey with brown, greyish brown and orangish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
6.30	B						20.51	6.20		Yellowish brown and greyish brown mottled clayey silty fine and medium SAND. INFERIOR OOLITE GROUP		
6.00 - 7.00		100	0	0				(0.60)				
7.00	N=14 (2,2/2,3,5,4)(C)						19.91	6.80		Yellowish brown, greyish brown, reddish brown and orangish brown mottled slightly gravelly fine and medium SAND. Gravel is sub-angular fine to coarse ferruginous sandstone. INFERIOR OOLITE GROUP		
							19.78	6.93				
							19.71	7.00		Soft light grey, grey and orangish brown silty sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
7.30	D							(0.50)		Stiff light grey, dark grey and orangish brown mottled with some black mottling slightly sandy silty CLAY. Sand is fine and medium. Pyritic. INFERIOR OOLITE GROUP		
7.00 - 8.00		100	0	0			19.21	7.50		Light grey with grey and dark grey mottling SILT. INFERIOR OOLITE GROUP		
7.80	D						19.01	7.70		Firm to stiff dark grey to black with light grey mottling silty CLAY with lenses of light grey silt. INFERIOR OOLITE GROUP		
								(0.30)				
8.00	N=18 (2,3/4,4,5,5)(S) D						18.71	8.00		Stiff dark grey with some grey mottling silty CLAY with bands of grey silty clay. INFERIOR OOLITE GROUP		
8.30	D							(0.50)				
8.00 - 9.00		100	0	0			18.21	8.50		Stiff grey with dark grey and yellowish brown mottling sandy silty CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
8.70	D							(0.30)				
							17.91	8.80		Light grey with grey and orangish brown mottling clayey fine to coarse SAND. INFERIOR OOLITE GROUP		
9.00	UT						17.71	9.00		Soft to firm yellowish brown with dark greyish brown and orangish brown mottling slightly gravelly sandy CLAY with a low sub-angular ferruginous sandstone cobble content. Gravel is sub-angular fine to coarse ferruginous sandstone. INFERIOR OOLITE GROUP		
								(0.30)				
							17.41	9.30		Assessed zone of core loss.		
9.40	D											
9.00 - 10.00		30	0	0								
10.00	N=11 (2,2/2,2,3,4)(S) D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-09-2018	08:00	12.12	7.50	7.60
18-09-2018	18:00	17.20	8.00	8.20
19-09-2018	08:00	17.20	8.00	7.50
19-09-2018	18:00	20.65	8.00	7.90
20-09-2018	08:00	20.65	8.00	7.50
20-09-2018	18:00	25.75	8.00	8.10

Borehole Diameter

Depth (m)	Dia (mm)
25.30	128

Casing Diameter

Depth (m)	Dia (mm)
8.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole Dynamic Sampled from 1.00m-8.00m bgl, followed on by Rotary Coring to 25.75m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.00	7.50		20	6.80	Fast inflow. Groundwater strike at 10.00m bgl, rising to 6.80m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	13/09/2018		SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507966.0	299726.1	26.71mAOD		01/08/2019	1:25

Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 3 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.00 - 11.00		0	0	0				(1.70)		Assessed zone of core loss.		
							15.71	11.00		Stiff dark grey with some light grey mottling slightly gravelly CLAY locally tending to extremely weak mudstone. LIAS GROUP		
								(0.60)				
11.50	D											
11.00 - 12.20		50	0	0			15.11	11.60		Assessed zone of core loss.		
11.67	N=31 (2,4/6,6,9,10)(S) D											
								(0.60)				
12.20	D UT						14.51	12.20		Stiff to very stiff indistinctly to distinctly laminated dark grey mottled yellowish grey and light grey CLAY with rare fragments of white shell. Pyritic. LIAS GROUP		
12.40	D											
12.20 - 13.20		100	0	0								
13.00	D											
13.20	N=21 (3,4/2,5,6,8)(S) D											
								(2.58)				
13.60	D											
13.20 - 14.20		100	0	0								
14.10	D											
14.20	D UT									*Band of mudstone recovered as sub-angular gravel and cobbles*		
14.50	D											
14.20 - 15.20		58	0	0								
							11.93	14.78		Assessed zone of core loss.		
								(0.42)				

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.30	128	8.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole Dynamic Sampled from 1.00m-8.00m bgl, followed on by Rotary Coring to 25.75m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
11.00	12.20	Air/Mist	100%	grey
12.20	13.20	Air/Mist	100%	grey
14.20	15.20	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.00	7.50		20	6.80	Fast inflow. Groundwater strike at 10.00m bgl, rising to 6.80m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	13/09/2018		SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507966.0	299726.1	26.71mAOD		01/08/2019	1:25

Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 4 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Assessed zone of core loss.		
15.20	N=38 (4,5/4,6,13,15)(S)						11.51	15.20				
	D									Stiff to very stiff indistinctly to distinctly laminated dark grey mottled yellowish grey and light grey slightly sandy gravelly silty CLAY locally tending to extremely weak mudstone recovered as fine to coarse sub-angular gravel. Rare fragments of white shell. Pyritic. LIAS GROUP		
15.20 - 16.20	D	100	0	0				(1.00)				
15.70												
15.95	D									*J, 0, R, P-UN, tight*		
										J, 0, R, P, tight		
16.20	N=44 (5,6/7,9,14,14)(S)						10.51	16.20		Very stiff dark grey CLAY with rare fragments of white shell. LIAS GROUP		
	D											
16.60	D											
16.20 - 17.20		100	0	0								
17.00	D											
17.20	UT									*17.2-17.4m Dark grey with light grey and orangish brown mottling sub-angular cobbles of Mudstone*		
17.40	D											
17.20 - 18.20		100	0	0								
										J, 0, R, P-UN, tight		
18.10	D							(6.00)				
18.20	N=31 (5,6/5,8,8,10)(C)											
	D											
18.40	D											
18.50	D											
18.20 - 19.20		100	0	0								
										18.88-18.93m Band of mudstone recovered as angular and sub-angular fine to coarse gravel and sub-angular cobbles.		
19.00	D											
19.20	D											
	UT											
19.20 - 20.20		100	0	0								
19.90	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.30	128	8.00	180

Remarks:
Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole Dynamic Sampled from 1.00m-8.00m bgl, followed on by Rotary Coring to 25.75m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
15.20	16.20	Air/Mist	100%	grey				
16.20	17.20	Air/Mist	100%	grey				
17.40	18.20	Air/Mist	100%	grey				
18.20	19.20	Air/Mist	100%	grey				
19.20	20.20	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.00	7.50		20	6.80	Fast inflow. Groundwater strike at 10.00m bgl, rising to 6.80m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	13/09/2018		SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507966.0	299726.1	26.71mAOD		01/08/2019	1:25

Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 5 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.20	N=45 (5,5/6,9,10,20)(S)									Very stiff dark grey CLAY with rare fragments of white shell. LIAS GROUP		
20.30	D									*20.31-20.35m Band of mudstone recovered as angular and sub-angular fine to coarse gravel and sub-angular cobbles.*		
20.20 - 21.20		100	0	0								
20.90	D											
21.20	D											
21.30	N=34 (7,6/7,8,9,10)(S)											
21.50	D											
21.20 - 22.20		100	0	0								
22.10	D											
							4.51	22.20		Very stiff indistinctly to distinctly laminated dark grey mottled yellowish grey and light grey CLAY with rare fragments of white shell. Pyritic. LIAS GROUP		
22.30	N=55 (6,5/9,13,16,17)(S)											
22.50	D											
22.20 - 23.30		100	0	0								
23.10	D											
23.30	N=67 (6,5/9,13,15,30)(S)											
								(3.55)				
23.30 - 24.30	D	100	0	0								
23.80												
24.20	D											
24.30	N=48 (7,10/12,13,11,12)(S)											
24.50	D											
24.30 - 25.30		100	0	0								
25.00	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.30	128	8.00	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole Dynamic Sampled from 1.00m-8.00m bgl, followed on by Rotary Coring to 25.75m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.00	7.50		20	6.80	Fast inflow. Groundwater strike at 10.00m bgl, rising to 6.80m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH14**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	13/09/2018		SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507966.0	299726.1	26.71mAOD		01/08/2019	1:25

Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18/82% | Sheet 6 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
25.30	N=46 (9,15/10,13,11,12) (S) D									Very stiff indistinctly to distinctly laminated dark grey mottled yellowish grey and light grey CLAY with rare fragments of white shell. Pyritic. LIAS GROUP		
							0.96	25.75		End of Borehole at 25.75m		

26 27 28 29 30

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.30	128	8.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole Dynamic Sampled from 1.00m-8.00m bgl, followed on by Rotary Coring to 25.75m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.00	7.50		20	6.80	Fast inflow. Groundwater strike at 10.00m bgl, rising to 6.80m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH14A**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/11/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507970.7	299725.5	26.64mAOD	Comacchio 305	01/08/2019	1:25

Weather: Sunny and showers | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 1 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
								(0.50)		Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Reworked TOPSOIL		
							26.14	0.50				
								(0.70)		Orangish brown to brown slightly clayey gravelly fine to coarse SAND with a low to medium sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
							25.44	1.20		Open Hole - No Data		
								(3.80)				
5.00	N=19 (4,4/4,4,5,6)(S) D						21.64	5.00				

1 2 3 4 5

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
26-11-2018	07:30	0.00		Dry	25.00	128	8.00	180
26-11-2018	16:00	0.00		Dry				
27-11-2018	08:00	0.00		Dry				
27-11-2018	16:15	5.00	5.00	4.10				
28-11-2018	07:45	5.00	5.00	4.10				
28-11-2018	17:10	14.50	8.00	4.20				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
0.00	5.00	Air/Mist	100%-100%	brown				

Remarks:

Re-drill of BH14 to obtain undisturbed samples. Hand dug inspection pit to 1.20m bgl. Borehole open-holed 1.20-5.00m bgl. Borehole drilled by dynamic sampling 5.00-9.00m bgl followed on by rotary coring 9.00-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. 'U' samples have been sub-sampled from the recovered core as agreed with the SI.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/11/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507970.7	299725.5	26.64mAOD	Comacchio 305	01/08/2019	1:25

Weather: Sunny and showers | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 2 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Assessed zone of core loss - Fall in and disturbed material from SPT		
								(0.50)				
5.50	B						21.14	5.50		Light brown fine and medium SAND. INFERIOR OOLITE GROUP		
							20.90	5.74				
							20.81	5.83		Light brown and orangish brown mottled fine and medium SAND. INFERIOR OOLITE GROUP		
										Light brown to pale greyish brown fine and medium SAND. INFERIOR OOLITE GROUP		
6.00	N=26 (4,3/5,6,7,8)(S)						20.64	6.00		Assessed zone of core loss - Fall in from running casing		
	D						20.54	6.10		Light brown to light greyish brown mottled with some dark brown, dark grey, black and light orangish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
6.30	D							(0.41)				
6.50	B						20.13	6.51		Orange to orangish brown and light yellowish brown mottled fine and medium slightly gravelly SAND. Gravel is sub-angular fine and medium ferruginous sandstone. INFERIOR OOLITE GROUP		
								(0.49)				
7.00	N=26 (8,12/8,5,6,7)(S)						19.64	7.00		Orange to orangish brown, reddish brown, and light yellowish brown mottled slightly gravelly fine and medium SAND. Gravel is angular and sub-angular fine to coarse ferruginous sandstone. INFERIOR OOLITE GROUP		
	D							(0.30)				
7.20	D											
7.30	ES						19.34	7.30		Firm dark grey, light grey, light yellowish brown and orange to orangish brown mottled silty sandy CLAY interbedded with dark grey clay, light grey silt and yellowish brown and orangish brown sand. Sand is fine and medium. INFERIOR OOLITE GROUP		
							19.24	7.40				
							19.16	7.48		Firm black organic silty sandy CLAY. Sand is fine to coarse. Slightly pyritic. INFERIOR OOLITE GROUP		
7.70	D						18.99	7.65		Firm grey with light grey and black mottling silty CLAY with pockets and lenses of light grey silt and rare fragments of black organic material. Pyritic. INFERIOR OOLITE GROUP		
										Firm grey to dark grey with some black and light grey mottling slightly silty CLAY. Black organic material present. Pyritic. INFERIOR OOLITE GROUP		
							18.75	7.89		Stiff dark grey to grey with light grey and black mottling silty CLAY with pockets and lenses of light grey silt. Black organic material present. Pyritic. INFERIOR OOLITE GROUP		
							18.68	7.96				
							18.64	8.00				
							18.54	8.10		Firm black with some light grey mottling slightly sandy silty organic CLAY with lenses and pockets of light grey silt. Sand is fine. INFERIOR OOLITE GROUP		
8.25	D						18.41	8.23		No core recovery - possibly compressed		
							18.32	8.32		Firm dark grey and grey mottled with some black mottling CLAY. Black organic material present. INFERIOR OOLITE GROUP		
								(0.32)		Stiff to very stiff indistinctly to distinctly laminated light grey with grey and dark grey mottling clayey SILT. INFERIOR OOLITE GROUP		
							18.00	8.64		Firm grey to dark grey with light grey mottling silty CLAY with lenses and pockets of light grey silt. Rare black organic material. Slightly pyritic. INFERIOR OOLITE GROUP		
8.80	D						17.87	8.77		Stiff to very stiff dark grey with light grey mottling slightly silty CLAY with lenses and pockets of light grey silt. INFERIOR OOLITE GROUP		
										Light grey silty fine and medium sand.		
							17.72	8.92		Stiff to very stiff dark grey CLAY with rare lenses and pockets of light grey silt. INFERIOR OOLITE GROUP		
9.00	UT						17.64	9.00		Stiff light grey, grey and dark grey mottled sandy silty CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
										Stiff grey slightly silty CLAY. INFERIOR OOLITE GROUP		
								(0.38)				
							17.26	9.38		Orange to orangish brown slightly gravelly clayey fine to coarse SAND. Gravel is sub-angular fine to coarse sandstone and ironstone. INFERIOR OOLITE GROUP		
9.00 - 10.00	D	100					17.12	9.52		Stiff to very stiff light grey to grey and yellowish brown mottled slightly gravelly sandy CLAY with a low sub-rounded limestone cobble content. Sand is fine to coarse. Gravel is sub-rounded coarse limestone. Rare fragments of black lignite. INFERIOR OOLITE GROUP		
9.50												
								(0.48)				
9.90	D											
10.00	N=23 (2,3/3,6,7,7)(S)						16.64	10.00				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
29-11-2018	07:45	14.50	8.00	4.10
29-11-2018	17:15	25.45	8.00	4.10

Borehole Diameter

Depth (m)	Dia (mm)
25.00	128

Casing Diameter

Depth (m)	Dia (mm)
8.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
9.00	10.00	Air/Mist	100%-100%	grey
10.00	11.50	Air/Mist	100%-100%	grey

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Re-drill of BH14 to obtain undisturbed samples. Hand dug inspection pit to 1.20m bgl. Borehole open-holed 1.20-5.00m bgl. Borehole drilled by dynamic sampling 5.00-9.00m bgl followed on by rotary coring 9.00-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. 'U' samples have been sub-sampled from the recovered core as agreed with the SI.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/11/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507970.7	299725.5	26.64mAOD	Comacchio 305	01/08/2019	1:25

Weather: Sunny and showers | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 3 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										No core recovery.		
								(0.70)				
10.00 - 11.50		53					15.94	10.70		Light grey to grey slightly clayey slightly sandy angular and sub-angular fine to coarse limestone GRAVEL with a low sub-angular limestone cobble content. Sand is fine to coarse. INFERIOR OOLITE GROUP		
							15.78	10.86		*10.82-11.36m J, 90 R, P / UN, Iron Stained*		
										Weak grey with orange iron staining fossiliferous MUDSTONE. LIAS GROUP		
								(0.50)		*J, 20, R, P, partly opened =10mm Iron stained*		
11.40	D						15.28	11.36		Stiff grey to dark brownish grey slightly sandy CLAY. Sand is fine and medium. LIAS GROUP		
							15.14	11.50		Firm to stiff indistinctly laminated dark grey CLAY. LIAS GROUP		
11.70	D											
12.05	U											
11.50 - 13.00		100						(1.50)				
12.80	D											
							13.64	13.00		Stiff, slightly friable, dark grey CLAY. LIAS GROUP		
13.30	D											
13.00 - 14.50		77						(1.50)				
14.00	D											
										Assessed zone of core loss		
14.50	N=24 (3,4/4,6,6,8)(S)						12.14	14.50		Stiff indistinctly laminated grey to dark grey CLAY locally tending to extremely weak mudstone. Rare shell fragments. LIAS GROUP		
	D											
14.70	D											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.00	128	8.00	180

Remarks:

Re-drill of BH14 to obtain undisturbed samples. Hand dug inspection pit to 1.20m bgl. Borehole open-holed 1.20-5.00m bgl. Borehole drilled by dynamic sampling 5.00-9.00m bgl followed on by rotary coring 9.00-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. 'U' samples have been sub-sampled from the recovered core as agreed with the SI.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
11.50	13.00	Air/Mist	100%-100%	grey
13.00	14.50	Air/Mist	100%-100%	grey
14.50	16.00	Air/Mist	100%-100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH14A**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/11/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507970.7	299725.5	26.64mAOD	Comacchio 305	01/08/2019	1:25

Weather: Sunny and showers | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 4 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
15.20 14.50 - 16.00	D	96								Stiff indistinctly laminated grey to dark grey CLAY locally tending to extremely weak mudstone. Rare shell fragments. LIAS GROUP		
15.70	D											
								(2.80)				
16.30	D											
16.00 - 17.50 16.80	U	100								*Mudstone recovered as sub-angular fine to coarse gravel.* *Mudstone recovered as a sub-angular cobble.*		
17.20	D											
							9.34	17.30		Weak grey to dark grey MUDSTONE. LIAS GROUP		
							9.25	17.39		Stiff indistinctly laminated grey to dark grey CLAY locally tending to extremely weak mudstone. Rare fragments of white shell. LIAS GROUP		
17.50	N=43 (3,5/6,8,12,17)(S)						9.14	17.50		Very stiff indistinctly to distinctly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. Rare laminae of fine sand and a low sub-angular mudstone cobble content. LIAS GROUP		
18.00	D											
17.50 - 19.00 18.30	D	100										
								(3.00)				
18.80	D											
										Mudstone recovered as sub-angular Fine to coarse gravel.		
19.20	D											
		100										
19.00 - 20.50 19.84	U											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.00	128	8.00	180

Remarks:

Re-drill of BH14 to obtain undisturbed samples. Hand dug inspection pit to 1.20m bgl. Borehole open-holed 1.20-5.00m bgl. Borehole drilled by dynamic sampling 5.00-9.00m bgl followed on by rotary coring 9.00-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. 'U' samples have been sub-sampled from the recovered core as agreed with the SI.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
16.00	17.50	Air/Mist	100%-100%	grey				
17.50	19.00	Air/Mist	100%-100%	grey				
19.00	20.50	Air/Mist	100%-100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH14A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/11/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507970.7	299725.5	26.64mAOD	Comacchio 305	01/08/2019	1:25

Weather: Sunny and showers | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 5 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.40	D						6.14	20.50		Very stiff indistinctly to distinctly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. Rare laminae of fine sand and a low sub-angular mudstone cobble content. LIAS GROUP		
20.90	D									Stiff to very stiff indistinctly to distinctly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. LIAS GROUP		
20.50 - 22.00		100						(1.50)				
21.30	U											
21.80	D											
22.00	N=30 (4,6/6,6,8,10)(S)						4.64	22.00		Very stiff indistinctly to distinctly laminated dark grey fossiliferous CLAY. LIAS GROUP		
22.50	D											
22.00 - 23.50		90										
22.90	D											
23.30	D											
								(3.45)				
24.00	D											
23.50 - 25.00		100										
24.26	U											
24.80	D											
25.00	N=50 (4,7/8,11,14,17)(S) D											

21 22 23 24 25

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.00	128	8.00	180

Remarks:
Re-drill of BH14 to obtain undisturbed samples. Hand dug inspection pit to 1.20m bgl. Borehole open-holed 1.20-5.00m bgl. Borehole drilled by dynamic sampling 5.00-9.00m bgl followed on by rotary coring 9.00-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. 'U' samples have been sub-sampled from the recovered core as agreed with the SI.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
20.50	22.00	Air/Mist	100%-100%	grey				
22.00	23.50	Air/Mist	100%-100%	grey				
23.50	25.00	Air/Mist	100%-100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH14A**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/11/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507970.7	299725.5	26.64mAOD	Comacchio 305	01/08/2019	1:25

Weather: Sunny and showers | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 6 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very stiff indistinctly to distinctly laminated dark grey fossiliferous CLAY. LIAS GROUP		
							1.19	25.45		End of Borehole at 25.45m		

26 27 28 29 30

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.00	128	8.00	180

Remarks:

Re-drill of BH14 to obtain undisturbed samples. Hand dug inspection pit to 1.20m bgl. Borehole open-holed 1.20-5.00m bgl. Borehole drilled by dynamic sampling 5.00-9.00m bgl followed on by rotary coring 9.00-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. 'U' samples have been sub-sampled from the recovered core as agreed with the SI.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH15**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	03/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507937.6	299757.9	27.93mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 6

Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Groundwater: Water Strike	Groundwater: Backfill/ Installation
0.10	B ES									Brown sandy gravelly CLAY with a low sub-angular limestone cobble content. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. TOPSOIL		
0.20	J 0ppm B J 0ppm							(0.50)				
0.50	B ES J 0ppm						27.43	0.50		Dense orangish brown slightly clayey gravelly fine to coarse SAND with a low sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP .		
1.00	N=44 (6,7/13,15,7,9)(S) B J 0ppm							(1.20)				
1.00 - 1.50		100	0	0								
1.40	D											
1.50 - 1.70		100	0	0								
							26.23	1.70		Weak light grey and yellowish brown moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as angular and sub-angular fine to coarse gravel and cobbles. Weathered INFERIOR OOLITE GROUP		
2.48 1.70 - 3.30 2.59	C C	73	0	0				(1.66)		*Assessed zone of core loss.*		
							24.57	3.36		Assessed zone of core loss.		
3.30 - 4.80		6	0	0				(1.44)				
4.80	N=50 (7,13/50 for 235mm)(S) D ES						23.13	4.80 (0.34)		Very dense light brownish grey and brown mottled slightly gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
01-09-2018	15:00	0.00	0.00	Dry
01-09-2018	17:00	1.70	0.00	Dry
04-09-2018	08:00	1.70	0.00	Dry
04-09-2018	18:00	8.70	5.20	Dry
05-09-2018	08:00	8.70	7.70	Dry
05-09-2018	18:00	11.50	7.70	Dry

Borehole Diameter

Depth (m)	Dia (mm)
25.00	128

Casing Diameter

Depth (m)	Dia (mm)
7.70	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m-1.70m bgl and 4.80-8.70m bgl. Borehole drilled by rotary coring from 1.70-4.80m bgl and from 8.70-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Casing advanced to 7.70m bgl as the ground conditions would not allow for it to go further. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00			20	1.00	Very Slow. Groundwater seepage encountered at 1.00m bgl, no rise after 20 minutes.
22.50			20	22.50	Very Slow. Groundwater seepage

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme	Client: Interserve Construction Limited				Hole ID: **BH15**
	Contract Number: 17076	Date Started: 03/09/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **RC**
	Easting: 507937.6	Northing: 299757.9	Ground Level: 27.93mAOD	Plant Used: Comacchio 205	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
							22.79	5.14		Very dense light brownish grey and brown mottled slightly gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
										Dense to very dense light brown, brown, and orangish brown mottled clayey silty fine and coarse SAND. INFERIOR OOLITE GROUP		
4.80 - 5.85												
5.40	D	100	0	0								
5.85	N=31 (3,5/8,8,8,7)(S)											
5.90	D											
5.85 - 7.20		100	0	0				(2.76)				
6.60	B											
	D											
7.00	D											
7.20	N=50 (8,17/50 for 125mm)(S)											
7.90	D						20.03	7.90				
7.20 - 8.70		100	0	0						Orangish brown to reddish brown slightly silty fine and medium SAND. Gravel is orangish brown to reddish brown sub-angular fine to coarse ironstone. INFERIOR OOLITE GROUP		
							19.83	8.10		Very stiff grey to greyish brown with light yellowish brown and grey mottling sandy silty CLAY. INFERIOR OOLITE GROUP		
8.20	D											
8.50	D											
										indistinct to distinct very thin horizontal laminations, with occasional pockets of silt		
								(1.86)				
8.70 - 9.50	D	100	0	0								
9.10												
9.40	D											
9.50	N=32 (3,3/6,6,9,11)(S)											
9.70	D											
							17.97	9.96				
9.50 - 10.50												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
06-09-2018	08:00	11.50	7.70	9.60	25.00	128	7.70	180
06-09-2018	18:00	16.95	7.70	10.20				
07-09-2018	08:00	16.95	7.70	9.40				
07-09-2018	18:00	20.50	7.70	11.60				
10-09-2018	08:00	20.50	7.70	7.00				
10-09-2018	16:00	22.75	7.70	7.40				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
8.70	9.50	Air/Mist	100%	grey				
9.50	10.50	Air/Mist	100%	grey				

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m-1.70m bgl and 4.80-8.70m bgl. Borehole drilled by rotary coring from 1.70-4.80m bgl and from 8.70-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Casing advanced to 7.70m bgl as the ground conditions would not allow for it to go further. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00			20	1.00	Very Slow. Groundwater seepage encountered at 1.00m bgl, no rise after 20 minutes.
22.50			20	22.50	Very Slow. Groundwater seepage

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH15**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	03/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507937.6	299757.9	27.93mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very stiff dark grey slightly sandy CLAY with rare pockets of light grey fine and medium sand. Sand is fine and medium. INFERIOR OOLITE GROUP		
10.25	D	87	0	0			17.69	10.24		Very stiff grey to dark grey sandy CLAY. Sand is fine and medium. Black organic material and lignite present. INFERIOR OOLITE GROUP		
10.50	UT									*Assessed zone of core loss.*		
								(1.03)				
10.50 - 11.50		100	0	0						*Light grey sub-rounded coarse siltstone gravel.*		
11.10	D											
							16.66	11.27		Weak light grey fine grained moderately to slightly weathered fossiliferous LIMESTONE. Black lignite and roots present. INFERIOR OOLITE GROUP		
11.66	C											
								(0.92)				
11.50 - 12.50		100	0	0						*Ferrugineous staining on joint surfaces.*		
12.20	D						15.74	12.19		Very stiff indistinctly laminated dark grey slightly sandy silty CLAY with occasional pale grey to grey pockets of fine sand. Sand is fine. LIAS GROUP		
12.50	N=48 (4,4/8,10,15,15)(S)											
12.50 - 13.50		100	0	0						*Coarse gravel size clast of Mudstone.*		
13.20	D											
13.40	D											
13.50	UT									*Occasional white shell fragments and siltstone lenses*		
								(5.31)				
13.70	D											
13.50 - 14.50	D	100	0	0								
14.00												
14.50	N=31 (4,5/5,7,9,10)(S)											
14.50 - 15.50												

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.00	128	7.70	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m-1.70m bgl and 4.80-8.70m bgl. Borehole drilled by rotary coring from 1.70-4.80m bgl and from 8.70-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Casing advanced to 7.70m bgl as the ground conditions would not allow for it to go further. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.50	11.50	Air/Mist	100%	grey
11.50	12.50	Air/Mist	100%	grey
12.50	13.50	Air/Mist	100%	grey
13.50	14.50	Air/Mist	100%	grey
14.50	15.50	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00			20	1.00	Very Slow. Groundwater seepage encountered at 1.00m bgl, no rise after 20 minutes.
22.50			20	22.50	Very Slow. Groundwater seepage

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH15**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	03/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507937.6	299757.9	27.93mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 4 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
15.10	B	90	0	0						Very stiff indistinctly laminated dark grey slightly sandy silty CLAY with occasional pale grey to grey pockets of fine sand. Sand is fine. LIAS GROUP		
15.50	D ES UT											
15.50 - 16.50		100	0	0								
16.10	D											
16.50	N=32 (4,7/7,7,8,10)(S)											
16.90	D											
16.50 - 17.50		100	0	0								
17.50	D UT						10.43	17.50		Very stiff indistinctly to distinctly laminated dark grey CLAY locally tending to extremely weak mudstone. Occasional white shell fragments. LIAS GROUP		
17.50 - 18.50 18.00	D	100	0	0								
18.50	N=45 (4,6/9,10,12,14)(S)							(2.00)				
18.50 - 19.50		100	0	0								
19.40	D											
19.50	N=28 (6,6/5,7,8,8)(S)						8.43	19.50		Stiff to very stiff indistinctly to distinctly laminated dark grey silty CLAY. Occasional white shell fragments. LIAS GROUP		
19.50 - 20.50												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.00	128	7.70	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m-1.70m bgl and 4.80-8.70m bgl. Borehole drilled by rotary coring from 1.70-4.80m bgl and from 8.70-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Casing advanced to 7.70m bgl as the ground conditions would not allow for it to go further. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
15.50	16.50	Air/Mist	100%	grey				
16.50	17.50	Air/Mist	100%	grey				
17.50	18.50	Air/Mist	100%	grey				
18.50	19.50	Air/Mist	100%	grey				
19.50	20.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00			20	1.00	Very Slow. Groundwater seepage encountered at 1.00m bgl, no rise after 20 minutes.
22.50			20	22.50	Very Slow. Groundwater seepage

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH15**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	03/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507937.6	299757.9	27.93mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 5 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.20	D	100	0	0						Stiff to very stiff indistinctly to distinctly laminated dark grey silty CLAY. Occasional white shell fragments. LIAS GROUP		
20.50	UT											
20.50 - 21.50		100	0	0								
21.40	D											
21.50	D											
21.50 - 22.50		100	0	0								
22.10	D											
								(5.95)				
22.60	D											
										Assessed zone of core loss.		
22.50 - 23.50		30	0	0								
23.50	N=50 (10,11/50 for 250mm)(S)											
23.90	D											
23.50 - 24.50		100	0	0								
24.45	D											
25.00	N=46 (7,9/9,10,13,14) (SPT)											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.00	128	7.70	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m-1.70m bgl and 4.80-8.70m bgl. Borehole drilled by rotary coring from 1.70-4.80m bgl and from 8.70-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Casing advanced to 7.70m bgl as the ground conditions would not allow for it to go further. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
20.50	21.50	Air/Mist	100%	grey				
21.50	22.50	Air/Mist	100%	grey				
22.50	23.50	Air/Mist	100%	grey				
23.50	25.00	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00			20	1.00	Very Slow. Groundwater seepage encountered at 1.00m bgl, no rise after 20 minutes.
22.50			20	22.50	Very Slow. Groundwater seepage

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH15**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	03/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507937.6	299757.9	27.93mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 6 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff to very stiff indistinctly to distinctly laminated dark grey silty CLAY. Occasional white shell fragments. LIAS GROUP		
							2.48	25.45		End of Borehole at 25.45m		

26 27 28 29 30

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.00	128	7.70	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling from 1.00m-1.70m bgl and 4.80-8.70m bgl. Borehole drilled by rotary coring from 1.70-4.80m bgl and from 8.70-25.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Casing advanced to 7.70m bgl as the ground conditions would not allow for it to go further. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.00			20	1.00	Very Slow. Groundwater seepage encountered at 1.00m bgl, no rise after 20 minutes.
22.50			20	22.50	Very Slow. Groundwater seepage

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH16**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.7	299755.8	27.61mAOD	Comacchio 205	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: 1814 Energy Ratio: 73.14% | Sheet 1 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	B									Firm brown sandy gravelly CLAY with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Reworked TOPSOIL		
	ES											
0.20	J						27.41	0.20				
	3ppm									Light brown mottled light grey clayey sandy angular and sub-angular fine to coarse limestone GRAVEL with a low angular and sub-angular limestone cobble content. Weathered INFERIOR OOLITE GROUP		
	B											
	ES											
	EW											
0.50	J											
	2ppm											
	B							(0.75)				
	ES											
	J											
	3ppm											
							26.66	0.95		Yellowish brown and orangish brown fine to coarse SAND. Weathered INFERIOR OOLITE GROUP		
												1
							26.51	1.10		Yellowish brown, orangish brown and light grey gravelly fine to coarse SAND with a low to medium sub-angular and sub-rounded limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.20	D											
								(0.90)				
1.60	D											
1.90	D											
2.00	D						25.61	2.00				
												2
2.10	D									Very weak orangish brown to brown sandy LIMESTONE recovered as slightly clayey slightly gravelly fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
								(0.54)				
2.40	D											
							25.07	2.54				
2.60	D									Very weak orangish brown and yellowish brown sandy LIMESTONE recovered as slightly gravelly sandy CLAY with a low sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
2.80	D							(0.46)				
3.00	N=7 (1,1/2,2,2,1)(S)						24.61	3.00				
	D											3
3.10	D									Loose brown slightly clayey gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
							24.33	3.28				
										Dense light grey with dark grey and orange to orangish brown mottling slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. INFERIOR OOLITE GROUP		
3.50	D											
3.90	D											
												4
4.26	D											
4.40	D											
4.90	D											
												5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
29-08-2018	08:00	0.00	0.00	Dry
29-08-2018	18:00	5.52	0.00	Dry
30-08-2018	08:00	4.26	0.00	Dry
30-08-2018	18:00	12.50	7.50	Dry
31-08-2018	07:00	12.50	7.50	9.20
31-08-2018	17:00	20.00	7.50	8.70

Borehole Diameter

Depth (m)	Dia (mm)
20.00	128

Casing Diameter

Depth (m)	Dia (mm)
7.50	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	8.50	PLAIN	50
8.50	20.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling 1.00m-7.10m bgl followed on by rotary coring 7.10-20.45m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 20.00m bgl. Granular response zone 8.50-20.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH16**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.7	299755.8	27.61mAOD	Comacchio 205	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: 1814 Energy Ratio: 73.14% | Sheet 2 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.30	D									Dense light grey with dark grey and orange to orangish brown mottling slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. INFERIOR OOLITE GROUP		
5.50	N=39 (6,8/10,10,10,9)(S)											
	D											
5.60	D											
								(3.82)				
6.10	D									*Pocket of Brown silty fine to medium SAND*		
6.40	D											
6.80	D											
7.10	N=25 (6,5/3,7,8,7)(S)						20.51	7.10		Stiff indistinctly to distinctly laminated dark grey with light grey and grey mottling sandy silty CLAY. Sand is fine and medium. LIAS GROUP		
	D									*Assessed zone of core loss*		
7.50 - 8.00		60	0	0				(1.46)				
										J, 20, R, UN, very tight		
8.20	D											
8.36	ES									*J, 0, R, P, very tight*		
	EW									*Mudstone layer 20mm thick recovered as fine to coarse gravel size clast of very weak thinly laminated mudstone.*		
										Mudstone layer 20mm thick recovered as fine to coarse gravel size clast of very weak thinly laminated mudstone.		
							19.05	8.56		*J, 0, R, P-UN, very tight*		
										Very stiff friable dark grey to black CLAY. LIAS GROUP		
8.00 - 9.50		87	0	0			18.87	8.74				
8.80	D									Light grey to grey clayey fine and medium SAND. LIAS GROUP		
							18.67	8.94				
9.00	D									Stiff indistinctly laminated dark grey sandy CLAY with occasional light grey bands of sand. Sand is fine and medium. LIAS GROUP		
										Undulating interface between clay and mudstone		
9.40	D											
								(1.25)				
9.50	N=24 (3,3/4,5,7,8)(S)											
	D											
9.90	D											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
20.00	128	7.50	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling 1.00m-7.10m bgl followed on by rotary coring 7.10-20.45m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 20.00m bgl. Granular response zone 8.50-20.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
7.50	8.00	Air/Mist	100%-100%	brown
8.00	9.50	Air/Mist	100%-100%	brown
9.50	11.00	Air/Mist	100%-100%	brown

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	8.50	PLAIN	50
8.50	20.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH16**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.7	299755.8	27.61mAOD	Comacchio 205	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: 1814 Energy Ratio: 73.14% | Sheet 3 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff indistinctly laminated dark grey sandy CLAY with occasional light grey bands of sand. Sand is fine and medium. LIAS GROUP		
							17.42	10.19				
9.50 - 11.00										Weak grey moderately weathered MUDSTONE. Occasional shell fragments and burrows. LIAS GROUP		
										J, 0-5, R, UN tight w clay veneer - interface between clay and mudstone		
10.40	C											
		80	53	50						*J, 0, R, P, partly open, iron staining*		
										Assessed zone of core loss		
								(1.19)				
										J, 0, R, P, partly open		
										J, 5, R, UN, partly open, clay veneer		
11.40	D						16.23	11.38		Very stiff indistinctly laminated dark grey CLAY. LIAS GROUP		
										J, 10, R, P-ST, partly open, clay veneer		
11.00 - 12.50		100	25	10								
										J, 0, R, UN, tight		
								(1.12)				
12.20	D											
12.50	N=48 (5,6/9,12,13,14)(S) D SPT						15.11	12.50		Very stiff indistinctly laminated friable dark grey to black CLAY locally tending to extremely weak mudstone. Occasional white shell fragments. LIAS GROUP		
13.10	D											
12.50 - 14.00		100	0	0								
13.70	D											
14.00	N=44 (6,7/10,11,11,12) (S) D SPT											
		83	0	0								
14.70	D											
14.00 - 15.50												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					20.00	128	7.50	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling 1.00m-7.10m bgl followed on by rotary coring 7.10-20.45m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 20.00m bgl. Granular response zone 8.50-20.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
11.00	12.50	Air/Mist	100%-100%	brown	0.00	8.50	PLAIN	50
12.50	14.00	Air/Mist	100%	brown	8.50	20.00	SLOTTED	50
14.00	15.50	Air/Mist	100%-100%	brown				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH16**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.7	299755.8	27.61mAOD	Comacchio 205	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: 1814 Energy Ratio: 73.14% | Sheet 4 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
15.20	D									Very stiff indistinctly laminated friable dark grey to black CLAY locally tending to extremely weak mudstone. Occasional white shell fragments. LIAS GROUP		
										Assessed zone of core loss		
15.50	N=39 (5,7/9,9,10,11)(S)											
	D											
	SPT											
15.80	D											
15.50 - 17.00		100	0	0								
16.40	D											
								(5.71)				
16.90	D											
17.00	N=40 (6,7/7,10,10,13)(S)											
	SPT											
17.50	D											
17.00 - 18.50		100	0	0								
17.90	D											
							9.40	18.21				
18.30	D									Very stiff indistinctly laminated grey CLAY locally tending to extremely weak mudstone. LIAS GROUP		
18.50	N=46 (6,7/8,10,14,14)(S)											
18.70	D											
								(2.24)				
18.50 - 20.00		100	0	0								
19.30	D											
19.70	D											
20.00	N=57 (8,8/13,14,15,15)(S)											

16 17 18 19 20

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
20.00	128	7.50	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling 1.00m-7.10m bgl followed on by rotary coring 7.10-20.45m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 20.00m bgl. Granular response zone 8.50-20.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
15.50	17.00	Air/Mist	100%-100%	brown
17.00	18.50	Air/Mist	100%-100%	brown
18.50	20.00	Air/Mist	100%-100%	brown

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	8.50	PLAIN	50
8.50	20.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH16**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.7	299755.8	27.61mAOD	Comacchio 205	01/08/2019	1:25

Weather: Cloudy+Sunny | Termination: Hole completed | SPT Hammer: 1814 Energy Ratio: 73.14% | Sheet 5 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	D									Very stiff indistinctly laminated grey CLAY locally tending to extremely weak mudstone. LIAS GROUP		
							7.16	20.45		End of Borehole at 20.45m		

21 22 23 24 25

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
20.00	128	7.50	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by dynamic sampling 1.00m-7.10m bgl followed on by rotary coring 7.10-20.45m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 20.00m bgl. Granular response zone 8.50-20.00m bgl. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	8.50	PLAIN	50
8.50	20.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH17**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.0	299827.0	28.08mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J									Firm light yellowish brown and light brown with orangish brown mottling slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse mudstone, ironstone and limestone. Rootlets present. Reworked TOPSOIL		
0.20	0ppm											
0.30	2 X D J 0ppm J							(0.50)				
0.50	2 X D D J 0ppm						27.58	0.50		Yellowish brown to brown slightly clayey gravelly fine to coarse SAND with a low angular limestone cobble content. Gravel is sub-angular fine to coarse limestone. Rootlets present. Weathered INFERIOR OOLITE GROUP		
								(0.50)		*0.8-1.5m Fragmented Core*		
1.00	B D J						27.08	1.00		Very weak yellowish brown, brownish grey and orangish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy sub-angular and sub-rounded fine to coarse gravel with a medium to high angular and sub-angular limestone cobble content. INFERIOR OOLITE GROUP		
0.80 - 1.50	0ppm	93	0	0						*Assessed zone of core loss*		
								(1.06)		*1.5-2.06m Fragmented Core*		
							26.02	2.06		Very weak yellowish brown, orangish brown, and light brownish grey moderately weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
1.50 - 3.00		90	90	40	6					*J, 0, R, UN-IR, Sandy veneer* *J, 0, R, P, partly open =5mm, sandy veneer* *2.31-2.53m Fragmented Core*		
										J, 0, R, P, sandy veneer *J, 70, R, P, sandy veneer* *J, 0, R, UN, sandy veneer*		
								(1.38)		*2.71-3m Fragmented Core*		
										3-3.44m Fragmented Core		
3.44	C						24.64	3.44		Very weak light grey to grey with some light brown mottling slightly weathered sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
3.61	C									*J, 0, R, P, right, sandy veneer* *J, 0, R, P, partly open =5mm, sandy veneer*		
3.00 - 4.50		93	93	80	11					*J, 0, R, P-CU* *3.81-3.84m Fragmented Core* *J, 0, R, P, UN-IR* *J, 0, R, P* *3.89-3.91m Fragmented Core* *J, 0, R, P* *J, 0, R, UN, partly open =5mm, sandy veneer* *J, 0, R, UN, partly open =5mm, sandy veneer* *J, 0, R, P, sandy veneer* *4.17-4.21m Fragmented Core* *J, 20, R, P, sandy veneer* *J, 0, R, P, partly open =5mm, clean* *J, 0, R, P, tight*		
								(0.98)				
							23.66	4.42		Assessed zone of core loss.		
							23.58	4.50		Weak light grey to grey with some light brown mottling slightly weathered sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP		
								(0.32)		*J, 0-10, R, P, partly open =5mm, sandy veneer* *J, 0, R, P, sandy clay veneer*		
4.50 - 5.00		64	64	64	6							
							23.26	4.82		Assessed zone of core loss.		
5.00	B						23.08	5.00				

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
24-09-2018	08:00	0.00	0.00	Dry
24-09-2018	18:00	13.95	12.00	Dry
25-09-2018	08:00	13.95	12.00	12.50
25-09-2018	12:00	15.45	12.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
20.00	128

Casing Diameter

Depth (m)	Dia (mm)
12.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.80	1.50	Air/Mist	100%-100%	yellow
1.50	3.00	Air/Mist	100%-100%	yellow
3.00	4.50	Air/Mist	100%-100%	yellow
4.50	5.00	Air/Mist	100%-100%	yellow
5.00	6.00	Air/Mist	100%-100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled using rotary coring 0.80m-15.00m bgl. Possible core scrubbed at 7.50m bgl due to core jamming in spring. Roots encountered to 1.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH17**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.0	299827.0	28.08mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Orange to orangish brown with reddish brown to dark brown and grey mottling slightly gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse ironstone. INFERIOR OOLITE GROUP		
								(0.80)				
5.00 - 6.00		75	0	0								
							22.28	5.80		Assessed zone of core loss.		
6.00	N=50 (4,14/50 for 145mm)(S) B D						22.08	6.00		Very dense yellowish brown to brown, with orange to orangish brown and light grey mottling silty fine to coarse SAND. INFERIOR OOLITE GROUP		
								(1.17)				
6.00 - 7.50		77	0	0								
							20.91	7.17		Assessed zone of core loss.		
								(0.33)				
7.50	N=23 (2,2/4,6,7,6)(S) D ES						20.58	7.50		Stiff dark grey, light grey, black and orangish brown slightly sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
7.70	D						20.39	7.69		Soft to firm dark grey and grey mottled with some black mottling silty CLAY with rare pockets of black organic material. Pyritic. INFERIOR OOLITE GROUP		
							20.27	7.81		Assessed zone of core loss.		
7.50 - 9.00		20	0	0								
								(1.19)				
9.00	N=26 (2,4/5,5,6,10)(S) D						19.08	9.00		Stiff dark grey with grey and black mottling slightly sandy slightly gravelly silty CLAY. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse sandstone and siltstone. INFERIOR OOLITE GROUP		
9.20	D											
9.30	ES											
								(0.83)				
		60	0	0								
9.60	D											
9.00 - 10.50												
							18.25	9.83		Light grey silty fine and medium SAND. INFERIOR OOLITE GROUP		
							18.16	9.92		Assessed zone of core loss.		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
20.00	128	12.00	180

Remarks:

Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled using rotary coring 0.80m-15.00m bgl. Possible core scrubbed at 7.50m bgl due to core jamming in spring. Roots encountered to 1.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
6.00	7.50	Air/Mist	100%-100%	orange
7.50	9.00	Air/Mist	100%-100%	orange
9.00	10.50	Air/Mist	100%-100%	grey

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH17**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.0	299827.0	28.08mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Assessed zone of core loss.		
								(0.58)				
10.50	N=44 (5,7/10,8,11,15)(S)						17.58	10.50				
10.60	D									Very stiff dark grey with light grey, orangish brown and brownish grey mottling sandy CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
10.90	D							(0.71)				
	ES											
11.10	D											
10.50 - 12.00		87	0	0			16.87	11.21		Orangish brown and light grey to grey mottled slightly gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse ironstone and ferruginous sandstone. Pyritic. INFERIOR OOLITE GROUP		
							16.69	11.39		Firm light grey with black mottling organic CLAY. INFERIOR OOLITE GROUP		
11.50	D											
							16.47	11.61		Very weak, light grey with some black mottling, highly weathered MUDSTONE. Recovered as sandy sub-angular fine to coarse gravel with a moderate sub-angular mudstone cobble content. INFERIOR OOLITE GROUP		
11.70	D									*11.61-11.84m Fragmented Core*		
	ES						16.24	11.84		Assessed zone of core loss.		
							16.08	12.00		Extremely weak to very weak light grey with some black mottling moderately to highly weathered fossiliferous MUDSTONE. Rare fragments of black relict roots and wood present. Recovered as sandy angular and sub-angular fine to coarse gravel with moderate sub-angular cobble content. INFERIOR OOLITE GROUP		
								(0.62)		*12-12.62m Fragmented Core*		
							15.46	12.62		Very stiff dark grey CLAY. LIAS GROUP		
12.00 - 13.50		60	0	0								
12.80	D							(0.42)				
							15.04	13.04		Assessed zone of core loss.		
								(0.46)				
13.50	N=37 (4,5/8,8,10,11)(S)						14.58	13.50		Very stiff friable, dark grey with occasional yellowish grey mottling fossiliferous CLAY. LIAS GROUP		
	D											
13.70	D											
	ES											
14.20	D											
13.50 - 15.00		100	0	0				(1.95)				
14.70	D											
15.00	N=47 (5,6/9,8,14,16)(S)											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
20.00	128	12.00	180

Remarks:

Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled using rotary coring 0.80m-15.00m bgl. Possible core scrubbed at 7.50m bgl due to core jamming in spring. Roots encountered to 1.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.50	12.00	Air/Mist	100%-100%	grey
12.00	13.50	Air/Mist	100%-100%	grey
13.50	15.00	Air/Mist	100%-100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH17**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507967.0	299827.0	28.08mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny+Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
							12.63	15.45		End of Borehole at 15.45m		

16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					20.00	128	12.00	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled using rotary coring 0.80m-15.00m bgl. Possible core scrubbed at 7.50m bgl due to core jamming in spring. Roots encountered to 1.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH18**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	26/09/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507968.3	299875.7	26.32mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J									Brown slightly sandy gravelly SILT with a moderate sub-angular and sub-rounded limestone cobble content. Gravel is sub-angular and sub-rounded fine and medium limestone. Frequent rootlets. TOPSOIL		
0.20	0ppm 2 X D J 0ppm							(0.45)				
							25.87	0.45		Stiff light yellow mottled grey slightly gravelly silty CLAY with rare burrows infilled with light brown fine sand. Gravel is sub-angular and sub-rounded fine and medium mudstone. INFERIOR OOLITE GROUP		
0.50	2 X D J 0ppm							(0.35)				
0.70	D											
0.80	D						25.52	0.80		Assessed zone of core loss.		
1.00	2 X D B J 0ppm							(0.70)				
1.00 - 1.50		33	0	0								
1.50	D						24.82	1.50		Very stiff grey mottled brown with rare black specks sandy silty CLAY. Sand is fine and medium. Weathered INFERIOR OOLITE GROUP		
								(0.50)				
							24.32	2.00		Weak light yellow LIMESTONE recovered as sub-angular and sub-rounded COBBLES. INFERIOR OOLITE GROUP		
1.50 - 3.00		75	0	0								
2.43	Core											
2.50	D											
2.55	C									*Assessed zone of core loss*		
3.00	D											
3.50	D							(3.50)				
3.00 - 4.50 3.76	Core	70	0	0								
										Assessed zone of core loss		
4.50	D											
4.50 - 5.50 5.00	D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
25-09-2018	08:00	0.00	0.00	Dry
25-09-2018	18:00	7.95	1.00	Dry
26-09-2018	08:00	7.95	1.00	Dry
26-09-2018	18:00	13.95	1.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
13.95	128

Casing Diameter

Depth (m)	Dia (mm)
1.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
1.00	1.50	Air/Mist	100%	yellow
1.50	3.00	Air/Mist	100%	yellow
3.00	4.50	Air/Mist	100%	yellow
4.50	5.50	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	10.50	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-13.95m bgl. Roots encountered to 0.45m bgl. Upon completion, a slotted standpipe (50mm) was installed to 10.50m, granular response zone 10.50-1.50m. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH18**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	26/09/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507968.3	299875.7	26.32mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% |

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.10	C	57	0	0						Weak light yellow LIMESTONE recovered as sub-angular and sub-rounded COBBLES. INFERIOR OOLITE GROUP		
5.50	D						20.82	5.50				
5.50 - 6.00		70	0	0				(0.50)		Light yellow mottled grey slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse mudstone. GREAT OOLITE GROUP		
6.00	N=21 (2,3/5,4,6,6)(SPT)						20.32	6.00		Assessed zone of core loss.		
6.34	ES EW											
6.00 - 7.50		0	0	0				(1.50)				
7.50	N=14 (3,3/4,3,3,4)(SPT)						18.82	7.50		Medium dense yellowish brown silty fine and medium SAND. GREAT OOLITE GROUP		
							18.67	7.65		Firm grey mottled black sandy CLAY with rare pockets of fine brown sand locally tending to extremely weak mudstone. Sand is fine to coarse. GREAT OOLITE GROUP		
7.50 - 8.50	ES	100	0	0								
8.00								(0.85)				
8.50	D U						17.82	8.50		Assessed zone of core loss.		
								(0.50)				
9.00	D						17.32	9.00		Firm grey mottled black with rare black specks slightly sandy CLAY locally tending to extremely weak mudstone. Sand is fine to coarse. GREAT OOLITE GROUP		
9.00 - 9.65		100	0	0				(0.63)				
9.50	D											
							16.69	9.63		Weak light grey LIMESTONE with frequent black speckling recovered as sub-angular and sub-rounded COBBLES. GREAT OOLITE GROUP		
10.00	D											

6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
13.95	128	1.00	180

Remarks:
Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-13.95m bgl. Roots encountered to 0.45m bgl. Upon completion, a slotted standpipe (50mm) was installed to 10.50m, granular response zone 10.50-1.50m. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
5.50	6.00	Air/Mist	100%	yellow
6.00	7.50	Air/Mist	100%	yellow
7.50	9.00	Air/Mist	100%	grey
9.00	9.65	Air/Mist	100%	grey
9.65	10.50	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	10.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH18**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	26/09/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
507968.3	299875.7	26.32mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
9.65 - 10.50		94	0	0				(0.87)		Weak light grey LIMESTONE with frequent black speckling recovered as sub-angular and sub-rounded COBBLES. GREAT OOLITE GROUP		
10.50	D						15.82	10.50		Very stiff thinly laminated grey slightly gravelly silty CLAY with rare foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
10.50 - 11.20		100	0	0								
11.00	D											
11.50	D											
11.20 - 12.00		100	0	0				(3.45)				
12.50	D											
12.70	Core											
12.00 - 13.50	U	100	0	0								
13.50	N=48 (4,4/9,9,15,15) (SPT)						12.37	13.95		End of Borehole at 13.95m		

11 12 13 14 15

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
13.95	128	1.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-13.95m bgl. Roots encountered to 0.45m bgl. Upon completion, a slotted standpipe (50mm) was installed to 10.50m, granular response zone 10.50-1.50m. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.50	11.20	Air/Mist	100%	grey
11.20	12.00	Air/Mist	100%	grey
12.00	13.50	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	10.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH19**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	01/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508068.2	299721.2	24.88mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	B									Firm brown sandy gravelly CLAY with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Reworked TOPSOIL		
0.20	ES							(0.35)				
0.30	J 3ppm ES EW J						24.53	0.35		Light brown clayey sandy angular and sub-angular fine to coarse limestone GRAVEL with a low angular and sub-angular limestone cobble content. INFERIOR OOLITE GROUP		
0.50	2ppm B						24.38	0.50		Weak light yellowish brown and light grey moderately weathered sandy LIMESTONE. Sand is fine and medium. Recovered as slightly clayey sandy sub-angular fine to coarse gravel with a moderate sub-angular cobble content. INFERIOR OOLITE GROUP		
	B ES J 3ppm									*0.5m-0.86m Fragmented core*		
0.50 - 1.50		86	86	86	4							
										Assessed zone of core los		
1.50	N=17 (5,3/3,2,4,8)(CPT)									*1.5-2.2 Fragmented core*		
								(2.96)				
1.50 - 3.00		100	100	64								
2.34	C									*J, 0, R, UN, tight* *J, 5, R, IR, partly open 5-10mm* *J, 45, R, P, partly open 5-10mm, sandy veneer* *J, 5, R, P/UN, very tight* *J, 5, R, , P/UN, tight* *J, 10, R, P, very tight* *J, 20, R, P, partly open <10mm, sandy veneer* *J, 20, R, ST, partly open 5mm sandy veneer* *J, 10, R, UN, open, sandy veneer*		
										J, 10, R, P/IR, partly open 10mm clean *J, 10, R, P/IR, partly open 10mm clean* *J, 5, R, P, partly open 5-10mm* *J, 5, R, P, open 10mm* *J, 0-5, P/UN, open 5-10mm, clayey sand veneer*		
3.16	C											
3.50	B						21.42	3.46		Dense yellowish brown with brown and orangish brown mottling slightly gravelly fine and medium SAND with a low angular and sub-angular ferruginous sandstone cobble content. Gravel is angular fine to coarse ferruginous sandstone. INFERIOR OOLITE GROUP		
3.00 - 4.50		45	31	0						*Assessed zone of core loss*		
								(1.34)				
4.50	N=49 (7,11/12,10,12,15) (SPT) D											
4.80	B						20.08	4.80		Medium dense orangish brown, yellowish brown and brown mottled with some grey mottling slightly clayey slightly silty sandy angular and sub-angular fine to coarse ferruginous sandstone GRAVEL with a low sub-angular ferruginous sandstone cobble		

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
29-08-2018	11:00	0.00	0.00	Dry
29-08-2018	18:00	10.50	1.50	Dry
03-09-2018	08:00	10.50	1.50	6.40
03-09-2018	18:00	12.00	1.50	Dry

Borehole Diameter

Depth (m)	Dia (mm)
12.00	128

Casing Diameter

Depth (m)	Dia (mm)
1.50	180

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-6.00m bgl and 9.00-12.00m bgl. Borehole drilled by dynamic sampling 6.00-9.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.50	1.50	Air/Mist	100%	yellow
1.50	3.00	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.40	1.50		20	10.40	Very slow. Groundwater seepage encountered at 10.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH19**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	01/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508068.2	299721.2	24.88mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		36	0	0						Medium dense orangish brown, yellowish brown and brown mottled with some grey mottling slightly clayey slightly silty sandy angular and sub-angular fine to coarse ferruginous sandstone GRAVEL with a low sub-angular ferruginous sandstone cobble content. Sand is fine to coarse. INFERIOR OOLITE GROUP *Assessed zone of core loss*		
6.00	N=24 (4,5/5,5,6,8)(SPT) D							(2.19)				
6.40	B											
6.00 - 7.50		69	0	0								
6.99	B						17.89	6.99		Firm dark grey to black organic CLAY. Faint organic odour. INFERIOR OOLITE GROUP		
							17.79	7.09		Medium dense dark orangish brown fine and medium SAND. INFERIOR OOLITE GROUP *Assessed zone of core los*		
7.50	N=21 (4,5/4,4,6,7)(SPT) D							(0.93)				
7.70	B											
8.10	B						16.86	8.02		Stiff to very stiff dark grey and black clayey SILT with light grey lenses of silt and fine and medium sand. INFERIOR OOLITE GROUP		
8.20	B											
7.50 - 9.00		92	0	0				(0.47)				
							16.39	8.49		Very stiff grey sandy CLAY locally tending to very weak MUDSTONE. Sand is fine and medium. INFERIOR OOLITE GROUP		
8.60	B						16.31	8.57		Very stiff slightly sandy silty CLAY with rare pockets of light grey mottled orangish brown silty fine and medium sand. INFERIOR OOLITE GROUP		
								(0.43)		*Assessed zone of core loss*		
9.00	N=26 (4,4/5,5,8,8)(SPT)						15.88	9.00		Stiff grey sandy silty CLAY with rare pockets of black organic material, fragments of decomposed wood and rare lenses and pockets of light grey mottled orangish brown fine and medium sand. INFERIOR OOLITE GROUP		
9.40	B											
		100	0	0				(0.91)				
9.70	B											
9.00 - 10.50												
9.90	B						14.97	9.91		Very weak orangish brown to brown MUDSTONE. Highly fractured. INFERIOR OOLITE		
							14.91	9.97				

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					12.00	128	1.50	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-6.00m bgl and 9.00-12.00m bgl. Borehole drilled by dynamic sampling 6.00-9.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.40	1.50		20	10.40	Very slow. Groundwater seepage encountered at 10.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH19**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	01/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508068.2	299721.2	24.88mAOD	Comacchio 450	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU1642 Energy Ratio: 65.12% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.10	B									Very weak orangish brown to brown MUDSTONE. Highly fractured. INFERIOR OOLITE GROUP		
							14.65	10.23		Very stiff grey, light grey and dark grey mottled sandy silty CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
								(0.42)		Weak grey sandy fossiliferous LIMESTONE. Sand is fine and medium. Frequent infilled burrows. INFERIOR OOLITE GROUP		
							14.23	10.65		Very stiff dark grey silty CLAY with occasional light grey pockets and lenses of silty fine and medium sand with shell fragments. LIAS GROUP		
10.80	B											
10.50 - 12.00		63	0	0								
11.35	B							(1.35)		*Clast of Mudstone* / *Assessed zone of core loss*		
							12.88	12.00		End of Borehole at 12.00m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					12.00	128	1.50	180

Remarks:
Hand dug inspection pit terminated at 0.50m bgl on hard strata. Borehole drilled by rotary coring 0.50-6.00m bgl and 9.00-12.00m bgl. Borehole drilled by dynamic sampling 6.00-9.00m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.40	1.50		20	10.40	Very slow. Groundwater seepage encountered at 10.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH20**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	10/09/18 - 11/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508176.0	299709.0	22.32mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES EW J			(0.50)		Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse flint and sandy limestone. Frequent rootlets. TOPSOIL		
	PID	9.0ppm						
0.20	J							
	PID	26.0ppm						
0.50	D ES J		21.82	0.50		Firm light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
	PID	8.0ppm		(0.30)				
0.80	D		21.52	0.80		Firm greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.00	D ES J		21.32	1.00		Orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse sandy limestone. Weathered INFERIOR OOLITE GROUP		
1.00 - 1.20	B		21.12	1.20		Medium dense yellowish brown slightly gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine and medium sandy limestone. Weathered INFERIOR OOLITE GROUP		
1.00	PID	0.0ppm						
1.20	SPT	N=17 (7,4/3,4,3,7)						
1.20 - 1.70	B							
2.00	SPT D	N=15 (3,3/4,4,3,4)						
2.00 - 2.50	B							
				(3.40)				
3.50	SPT D	N=16 (2,2/3,4,4,5)						
3.50 - 4.00	B							
4.55	ES EW		17.72	4.60		Soft black organic sandy CLAY. Sand is fine and medium. Pyritic. INFERIOR OOLITE GROUP		
4.60	D		17.62	4.70		Soft to firm dark grey with light grey and grey mottling sandy silty CLAY with rare lenses and pockets of light grey silt. Sand is fine and medium. INFERIOR OOLITE GROUP		
4.70	ES							
4.70 - 5.20	B							

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
11-09-2018	13:00	0.00	0.00	Dry
12-09-2018	14:00	6.50	6.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
10.00	200

Casing Diameter

Depth (m)	Dia (mm)
7.00	200

Chiselling

From (m)	To (m)	Duration	Remarks
1.20	2.70	02:30	
6.50	6.70	00:20	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.50	PLAIN	50
1.50	7.50	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Roots encountered to 0.60m bgl. Borehole drilled by cable percussive methods 1.20-10.00m bgl. 200mm diameter casing installed to 7.00m bgl. Chiselling: 2.5 hr 1.70-2.40m. 0.3hr 6.50-6.70m. Upon completion, borehole was installed with a slotted standpipe (50mm diam ID HDPE) to 7.50m bgl. Granular response zone 7.50-1.50m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
6.40			0	0.00	Very slow. Groundwater seepage encountered at 6.40m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH20**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	10/09/18 - 11/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508176.0	299709.0	22.32mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Soft to firm dark grey with light grey and grey mottling sandy silty CLAY with rare lenses and pockets of light grey silt. Sand is fine and medium. INFERIOR OOLITE GROUP		
5.20	SPT D	N=8 (2,2/2,2,2,2)						
5.20 - 5.70	B			(1.70)				
6.30	D							
6.40	D		15.92	6.40		Firm orangish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse ironstone and ferruginous sandstone. INFERIOR OOLITE GROUP		
6.60	SPT D ES	N=10 (15,13/3,2,3,2)	15.72	6.60		Firm dark grey and light grey mottled slightly sandy silty CLAY with rare lenses and pockets of light grey silt. Sand is fine and medium. INFERIOR OOLITE GROUP		
7.50 - 7.95	UT	Ublow = 120		(1.35)				
7.95	D		14.37	7.95		Stiff to very stiff dark grey CLAY with occasional white shell fragments. LIAS GROUP		
8.50	D							
9.00	SPT D ES	N=30 (4,5/6,8,9,7)		(2.05)				
9.00 - 9.50	B							
9.50 - 9.95	UT	Ublow = 120						
9.85	D							
			12.32	10.00		End of Borehole at 10.00m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					10.00	200	7.00	200

Remarks:
Hand dug inspection pit to 1.20m bgl. Roots encountered to 0.60m bgl. Borehole drilled by cable percussive methods 1.20-10.00m bgl. 200mm diameter casing installed to 7.00m bgl. Chiselling: 2.5 hr 1.70-2.40m. 0.3hr 6.50-6.70m. Upon completion, borehole was installed with a slotted standpipe (50mm diam ID HDPE) to 7.50m bgl. Granular response zone 7.50-1.50m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
1.20	2.70	02:30		0.00	1.50	PLAIN	50
6.50	6.70	00:20		1.50	7.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
6.40			0	0.00	Very slow. Groundwater seepage encountered at 6.40m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH21**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	02/10/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508047.6	299652.3	22.03mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73.14% | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J									Light brown gravelly fine and medium SAND with fragments of tarmacadam. Gravel is angular and sub-angular fine to coarse limestone. MADE GROUND		
0.20	0ppm 2 X D J											
0.50	0ppm 2 X D B							(1.00)				
0.60	D J											
0.60 - 1.00	0ppm B	100	0	0								
1.00	N=18 (4,12/5,3,4,6)(S) 2 X D J						21.03	1.00		Brown slightly gravelly fine to coarse SAND with fragments of brick. Gravel is angular and sub-angular fine and medium limestone and flint. MADE GROUND.		
1.00 - 1.70	0ppm	100	0	0								
1.70	50 (1,3/50 for 120mm)(S) D							(1.30)				
2.00	2 X D						19.73	2.30		Yellowish brown slightly sandy gravelly clayey SILT. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse limestone and sandstone. Rare rootlets. Weathered INFERIOR OOLITE GROUP		
2.00 - 3.50		70	0	0								
2.80	2 X D D							(1.20)		*Assessed zone of core loss*		
							18.53	3.50		Very weak light grey mottled brown rarely speckled black LIMESTONE recovered as clayey gravelly fine to coarse sand. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
3.50 - 5.00		23	0	0				(1.50)				
4.50	D											
5.00	N=34 (2,7/8,8,9,9)(S) D						17.03	5.00				

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
02-10-2018	08:00	0.00	0.00	Dry
02-10-2018	18:00	1.97	0.00	Dry
03-10-2018	08:00	1.97	2.00	Dry
03-10-2018	17:30	10.00	2.00	4.75
04-10-2018	08:00	10.00	2.00	Dry
04-10-2018	13:30	14.95	2.00	10.50

Borehole Diameter

Depth (m)	Dia (mm)
14.50	128

Casing Diameter

Depth (m)	Dia (mm)
2.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
2.00	3.50	Air/Mist	100%	yellow
3.50	5.00	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled by dynamic sampling 0.60-2.00m bgl and 5.00-10.00m bgl. Borehole drilled by rotary coring 2.00m-5.00m bgl and 10.00-14.95m bgl. Upon completion, borehole backfilled with bentonite pellets. Roots encountered to 3.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
6.00			20	5.70	Moderate rate of inflow. Groundwater strike encountered at 6.00m bgl, rising to 5.70m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme	Client: Interserve Construction Limited				Hole ID: **BH21**
	Contract Number: 17076	Date Started: 02/10/2018	Logged By: EK	Checked By: SB	Status: FINAL	Hole Type: **RC**
	Easting: 508047.6	Northing: 299652.3	Ground Level: 22.03mAOD	Plant Used: Comacchio 205	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73.14% | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very weak brown LIMESTONE recovered as slightly gravelly silty fine to coarse sand. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
5.50	D											
5.00 - 6.50		65	0	0				(1.50)				
6.00	D									Assessed zone of core loss		
6.50	N=13 (2,2/5,4,2,2)(S) D						15.53	6.50		Medium dense brown silty fine and medium SAND. INFERIOR OOLITE GROUP		
7.00	D							(0.90)				
6.50 - 8.00		100	0	0								
							14.63	7.40		Soft becoming firm dark grey rarely speckled black sandy CLAY. Sand is fine to coarse. Rare burrows infilled with green fine sand. LIAS GROUP		
7.50	D											
8.00	N=6 (2,2/2,2,1,1)(S) D											
8.50	D ES											
8.00 - 9.50		50	0	0				(2.60)		Assessed zone of core loss		
9.50	N=16 (5,4/4,4,4,4)(S) D											
							12.03	10.00				

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					14.50	128	2.00	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled by dynamic sampling 0.60-2.00m bgl and 5.00-10.00m bgl. Borehole drilled by rotary coring 2.00m-5.00m bgl and 10.00-14.95m bgl. Upon completion, borehole backfilled with bentonite pellets. Roots encountered to 3.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
6.00			20	5.70	Moderate rate of inflow. Groundwater strike encountered at 6.00m bgl, rising to 5.70m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH21**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	02/10/2018	EK	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508047.6	299652.3	22.03mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73.14% | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff grey slightly silty CLAY with rare white foraminifera, locally tending to extremely weak mudstone. LIAS GROUP		
10.50	D											
10.00 - 11.50		80	0	0				(1.50)				
11.00	N=18 (2,4/3,5,5,5)(S) D									*Assessed zone of core loss*		
11.50	D						10.53	11.50		Stiff brown fissured sandy very gravelly SILT/CLAY locally tending to extremely weak MUDSTONE. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse mudstone. Rare white foraminifera and rare burrows infilled with brown fine sand. LIAS GROUP		
12.00	D											
11.50 - 13.00 12.25	U	53	0	0								
13.00	N=31 (3,3/5,12,8,6)(S) D									*Assessed zone of core loss*		
								(3.45)				
13.50	D											
13.00 - 14.50		83	0	0								
14.00	D											
14.50	N=31 (4,5/7,7,8,9)(S) D ES											
							7.08	14.95		End of Borehole at 14.95m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
14.50	128	2.00	180

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled by dynamic sampling 0.60-2.00m bgl and 5.00-10.00m bgl. Borehole drilled by rotary coring 2.00m-5.00m bgl and 10.00-14.95m bgl. Upon completion, borehole backfilled with bentonite pellets. Roots encountered to 3.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
6.00			20	5.70	Moderate rate of inflow. Groundwater strike encountered at 6.00m bgl, rising to 5.70m bgl after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH21A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	19/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508043.3	299648.5	21.62mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 1 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D ES J 2ppm						21.52	0.10		Firm dark brown sandy gravelly CLAY with fragments of brick, bitumen and plastic. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse flint and limestone. Roots and rootlets. Mild hydrocarbon odour. MADE GROUND		
0.20	2 X D ES J 3ppm							(0.50)		Firm brown sandy gravelly CLAY with a moderate sub-angular limestone cobble content and fragments of brick, asphalt and plastic. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone and flint. Mild hydrocarbon odour. MADE GROUND		
0.50	2 X D J 0ppm						21.02	0.60		Light yellowish brown gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. MADE GROUND		
								(0.50)				
1.00	2 X D J 0ppm						20.52	1.10		Light yellowish brown and grey to dark grey sandy angular and sub-angular fine to coarse limestone and tarmacadam GRAVEL. Sand is fine to coarse. Mild hydrocarbon odour. MADE GROUND		
								(0.60)				
1.50	2 X D ES EW J 1ppm						19.92	1.70		MADE GROUND comprising TARMACADAM. Recovered as grey to dark grey sandy angular and sub-angular fine to coarse GRAVEL. Sand is fine to coarse. Mild hydrocarbon odour. MADE GROUND		
1.80	2 X D ES J 16ppm							(0.30)				
							19.62	2.00		Weak, yellowish brown sandy LIMESTONE. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
								(1.00)				
							18.62	3.00		No core recovery - Borehole open holed.		
3.00 - 4.50		67										

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
19-10-2018	09:00	0.00	0.00	Dry	3.00	200	8.50	180
19-10-2018	13:30	10.60	5.00	Dry	15.00	128		
23-10-2018	09:00	10.60	8.50	4.30				
23-10-2018	14:00	15.00	8.50	14.30				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
0.80	3.00	Air/Mist	100%	yellow				
3.00	4.50	Air/Mist	80%	yellow				
4.50	6.00	Air/Mist	0%					

Remarks:

Re-drill of BH21 to obtain undisturbed samples from 10.00m bgl to 15.00m bgl. Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled by rotary coring 0.80m-3.00m bgl. Borehole was drilled by open holing from 3.00m-10.00m bgl. Roots encountered to 0.10m bgl. Upon completion, borehole backfilled with bentonite pellets.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH21A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	19/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508043.3	299648.5	21.62mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 2 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		0								No core recovery - Borehole open holed.		
6.00 - 7.50		7						(7.00)				
7.50 - 9.00		73										
9.00 - 10.00		0										
							11.62	10.00				

6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
3.00	200
15.00	128

Casing Diameter

Depth (m)	Dia (mm)
8.50	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
6.00	7.50	Air/Mist	0%	
7.50	9.00	Air/Mist	0%	
9.00	10.00	Air/Mist	0%	
10.00	10.60	Air/Mist	0%	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Re-drill of BH21 to obtain undisturbed samples from 10.00m bgl to 15.00m bgl. Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled by rotary coring 0.80m-3.00m bgl. Borehole was drilled by open holing from 3.00m-10.00m bgl. Roots encountered to 0.10m bgl. Upon completion, borehole backfilled with bentonite pellets.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH21A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	19/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508043.3	299648.5	21.62mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 3 of 3

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
								(0.60)		Assessed zone of core loss.		
							11.02	10.60		Firm to stiff dark grey with occasional yellowish grey to greenish grey mottling CLAY. Pyritic. LIAS GROUP		
10.60 - 12.00		57	0					(1.90)		*Assessed zone of core los*		
12.52	U						9.12	12.50		Firm to stiff dark grey slightly fossiliferous CLAY locally tending to extremely weak mudstone. LIAS GROUP		
12.00 - 13.50		100	0									
13.80	U							(2.50)				
13.50 - 15.00		74	0							*Mudstone recovered as sub-angular fine and medium gravel.*		
										Mudstone recovered as sub-angular fine and medium gravel.		
										Assessed zone of core loss		
							6.62	15.00		End of Borehole at 15.00m		

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
3.00	200	8.50	180
15.00	128		

Remarks:

Re-drill of BH21 to obtain undisturbed samples from 10.00m bgl to 15.00m bgl. Hand dug inspection pit terminated at 0.80m bgl on hard strata. Borehole drilled by rotary coring 0.80m-3.00m bgl. Borehole was drilled by open holing from 3.00m-10.00m bgl. Roots encountered to 0.10m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.60	12.00	Air/Mist	0%	
12.00	13.50	Air/Mist	0%	
13.50	15.00	Air/Mist	0%	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH22**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	11/10/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508114.9	299671.6	20.64mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D B									Light brown gravelly fine and medium SAND. Gravel is angular and sub-angular fine to coarse limestone. Fragments of tarmacadam. MADE GROUND		
0.20	ES J 0ppm									*Rootlets present.*		
0.40	2 X D J											
0.50	0ppm							(1.00)				
0.60	2 X D											
1.00	2 X D ES						19.64	1.00		Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.10	J 0ppm D											
1.30	D							(0.60)				
1.50	D											
							19.04	1.60		Assessed zone of core loss.		
2.00	D							(0.90)				
2.50	N=0 (25 for 130mm/0 for 0mm)(S) D						18.14	2.50		Weak light yellowish brown and light greyish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular fine to coarse gravel and cobbles. INFERIOR OOLITE GROUP		
										SPT refusal during seating blows.		
2.80	D						17.90	2.74		Assessed zone of core loss.		
3.00	D						17.64	3.00		Weak light yellowish brown and light greyish brown sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP		
							17.42	3.22		Orangish brown slightly gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
3.50	D						17.14	3.50		Assessed zone of core loss.		
								(1.00)				
4.50	N=18 (2,3/4,4,5,5)(S) D						16.14	4.50		Light grey, yellowish brown and orangish brown mottled fine to coarse SAND. INFERIOR OOLITE GROUP		
							15.91	4.73		Orangish brown with some brownish grey to light grey mottling slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular fine to coarse ferruginous sandstone. GREAT OOLITE GROUP		
5.00	D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
11-10-2018	08:00	0.00	0.00	Dry
11-10-2018	18:00	2.63	0.00	0.60
12-10-2018	09:00	2.30	0.00	Dry
12-10-2018	13:00	7.95	0.00	Dry
15-10-2018	08:00	7.95	0.00	Dry
15-10-2018	15:45	15.45	0.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
15.00	128

Casing Diameter

Depth (m)	Dia (mm)

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
1.00	2.50	Air/Mist	100%	yellow
2.50	3.00	Air/Mist	100%	yellow
3.00	4.50	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 7.50-15.00m bgl. Borehole drilled by dynamic sampling 4.50-7.50m bgl. Roots encountered to 0.30m bgl. No casing used. Upon completion, borehole backfilled with bentonite pellets. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. SPT undertaken at 2.50m bgl has been classified as a refusal, 25 blows for 130mm. Full test not undertaken.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
12.75			20	7.65	Fast inflow. Water strike encountered in core run 12.00-13.50m bgl. Groundwater strike at 12.75m bgl, rising to

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH22**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	11/10/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508114.9	299671.6	20.64mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 2 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
								(0.62)		Orangish brown with some brownish grey to light grey mottling slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular fine to coarse ferruginous sandstone. GREAT OOLITE GROUP		
							15.29	5.35		Assessed zone of core loss.		
5.50	D							(0.65)				
6.00	N=30 (2,1/4,6,9,11)(S) B D						14.64	6.00		Dark orangish brown to orangish brown with some brownish grey mottling fine to coarse SAND. GREAT OOLITE GROUP		
							14.44	6.20		Yellowish brown with orangish brown mottling fine to coarse SAND. GREAT OOLITE GROUP		
								(0.31)				
6.50	D ES						14.13	6.51		Reddish brown to brown fine to coarse SAND. GREAT OOLITE GROUP		
6.61	D ES						14.03 13.97	6.61 6.67		Soft black slightly sandy silty organic CLAY. Sand is fine and medium. INFERIOR OOLITE GROUP		
6.80	D							(0.37)		Firm dark grey with grey and light grey mottling silty CLAY. INFERIOR OOLITE GROUP		
7.00	D						13.60	7.04		Assessed zone of core loss.		
								(0.46)				
7.50	N=12 (2,1/2,3,3,4)(S) D						13.14	7.50		Firm dark brownish grey with some black mottling slightly sandy CLAY. Sand is fine to coarse. INFERIOR OOLITE GROUP		
7.80	D ES							(0.50)				
							12.64	8.00		Stiff dark brownish grey with yellowish brown and black mottling sandy CLAY. Sand is fine to coarse. INFERIOR OOLITE GROUP		
8.20 7.50 - 9.00	D ES	70	4	0				(0.32)				
							12.32 12.22	8.32 8.42		Stiff yellowish brown, brownish grey, light grey and black mottled slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse ironstone and sandstone. INFERIOR OOLITE GROUP		
							12.09	8.55		Weak light grey LIMESTONE with black lignified structures present. LIAS GROUP		
								(0.45)		Assessed zone of core loss.		
							11.64	9.00		Grey slightly gravelly clayey fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. LIAS GROUP		
								(0.30)				
9.30	D						11.34	9.30		Stiff and very stiff indistinctly laminated dark grey fossiliferous CLAY. LIAS GROUP		
9.50	U	100	0	0								
9.00 - 10.50												

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter	
Depth (m)	Dia (mm)
15.00	128

Casing Diameter	
Depth (m)	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 7.50-15.00m bgl. Borehole drilled by dynamic sampling 4.50-7.50m bgl. Roots encountered to 0.30m bgl. No casing used. Upon completion, borehole backfilled with bentonite pellets. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. SPT undertaken at 2.50m bgl has been classified as a refusal, 25 blows for 130mm. Full test not undertaken.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
7.50	9.00	Air/Mist	100%	grey
9.00	10.50	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
12.75			20	7.65	Fast inflow. Water strike encountered in core run 12.00-13.50m bgl. Groundwater strike at 12.75m bgl, rising to

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH22**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	11/10/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508114.9	299671.6	20.64mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.10	D									Stiff and very stiff indistinctly laminated dark grey fossiliferous CLAY. LIAS GROUP		
10.50	N=21 (3,4/4,5,6,6)(S)											
10.90	D											
10.50 - 12.00		100	0	0								
11.40	D											
11.80	D											
12.40	D							(6.15)				
12.60	U											
12.00 - 13.50		100	0	0								
13.10	D											
13.50	N=24 (2,3/4,3,7,10)(S) D											
13.80	D											
13.50 - 15.00		100	0	0								
14.30	D									*Mudstone recovered as sub-angular fine to coarse gravel.*		
14.70	D											
15.00	N=24 (3,5/5,6,7,6)(S) D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.00	128		

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 7.50-15.00m bgl. Borehole drilled by dynamic sampling 4.50-7.50m bgl. Roots encountered to 0.30m bgl. No casing used. Upon completion, borehole backfilled with bentonite pellets. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. SPT undertaken at 2.50m bgl has been classified as a refusal, 25 blows for 130mm. Full test not undertaken.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
10.50	12.00	Air/Mist	100%	grey				
12.00	13.50	Air/Mist	100%	grey				
13.50	15.00	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
12.75			20	7.65	Fast inflow. Water strike encountered in core run 12.00-13.50m bgl. Groundwater strike at 12.75m bgl, rising to

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH22**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	11/10/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508114.9	299671.6	20.64mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff and very stiff indistinctly laminated dark grey fossiliferous CLAY. LIAS GROUP		
							5.19	15.45		End of Borehole at 15.45m		

16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.00	128		

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 7.50-15.00m bgl. Borehole drilled by dynamic sampling 4.50-7.50m bgl. Roots encountered to 0.30m bgl. No casing used. Upon completion, borehole backfilled with bentonite pellets. Please note that the SPT 'N' values presented have not been corrected for rig efficiency. SPT undertaken at 2.50m bgl has been classified as a refusal, 25 blows for 130mm. Full test not undertaken.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
12.75			20	7.65	Fast inflow. Water strike encountered in core run 12.00-13.50m bgl. Groundwater strike at 12.75m bgl, rising to

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/09/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508260.9	299630.0	12.32mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D									Firm brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is angular and sub-angular fine to coarse limestone. Roots and rootlets present. TOPSOIL		
0.20	D											
							12.05	0.27		Yellowish brown gravelly clayey fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
							11.87	0.45		Weak light yellowish brown and light greyish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular coarse gravel and sub-angular cobbles. Weathered INFERIOR OOLITE GROUP		
0.70	N=50 (16,25/50 for 150mm)(S) D											
								(2.20)				
2.50	N=5 (4,2/2,1,1,1)(S) D											
							9.67	2.65		Soft brown mottled grey sandy gravelly CLAY with occasional black specks. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
3.00	D ES											
								(0.85)				
3.16	ES EW											
2.50 - 4.00		90	0	0								
3.50	D						8.82	3.50		Soft brown mottled grey sandy gravelly CLAY with rare plant debris (< 5mm x 5mm), and black specks. Sand is fine and medium. INFERIOR OOLITE GROUP		
								(0.50)				
										Assessed zone of core loss		
4.00	N=7 (1,1/1,2,2,2)(S) D						8.32	4.00		Soft brown mottled grey slightly gravelly sandy CLAY with rare black specks and rare borrows infilled with fine brown sand. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse mudstone. INFERIOR OOLITE GROUP		
								(0.60)				
4.00 - 5.00	D	100	0	0								
4.50							7.72	4.60		Soft blueish grey mottled brown slightly gravelly sandy CLAY with rare black specks and rare borrows infilled with fine brown sand. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse mudstone. INFERIOR OOLITE GROUP		
5.00	D											

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
27-09-2018	08:00	0.00	0.00	Dry
27-09-2018	18:00	4.45	0.00	Dry
01-10-2018	08:00	4.45	4.00	Dry
01-10-2018	17:45	12.45	4.00	Dry
02-10-2018	08:00	12.45	4.00	Dry
02-10-2018	18:00	15.45	4.00	13.30

Borehole Diameter

Depth (m)	Dia (mm)
15.00	128

Casing Diameter

Depth (m)	Dia (mm)
4.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.95	2.50	Air/Mist	100%	yellow

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	6.50	PLAIN	50
6.50	15.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.40m bgl on hard strata with limestone gravel. Borehole drilled by dynamic sampling 0.40m-0.70m bgl and 2.50m-6.50m bgl. Borehole drilled by rotary coring 0.70m-2.50m bgl and 6.50m-15.00m bgl. Roots encountered to 0.27m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-6.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/09/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508260.9	299630.0	12.32mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% |

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
								(0.90)		Soft blueish grey mottled brown slightly gravelly sandy CLAY with rare black specks and rare borrows infilled with fine brown sand. Sand is fine and medium. Gravel is sub-angular and sub-rounded fine to coarse mudstone. INFERIOR OOLITE GROUP		
5.50	U						6.82	5.50				
										Soft grey mottled brown gravelly silty CLAY with rare white foraminifera and rare borrows infilled with brown fine sand. Gravel is sub-angular and sub-rounded fine to coarse mudstone. INFERIOR OOLITE GROUP		
5.00 - 6.50		75	0	0				(0.60)				
							6.22	6.10		Very stiff thinly laminated grey mottled brown silty CLAY with rare white foraminifera. LIAS GROUP		
6.50	N=50 (8,11/50 for 290mm)(S) D ES U							(0.90)		*Clean out run.*		
6.80	U											
7.00	D						5.32	7.00		Firm bluish grey thinly laminated slightly gravelly silty CLAY with rare white foraminifera and rare pockets of brown fine sand. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
										Assessed zone of core loss		
7.00 - 8.00 7.50	D	30	0									
8.00	N=13 (2,3/3,2,3,5)(S)							(2.00)				
										Assessed zone of core loss		
8.00 - 9.00 8.50	D	30	0	0								
9.00	N=15 (2,2/3,3,4,5)(S)						3.32	9.00		Firm to stiff thinly laminated fissured bluish grey silty CLAY with rare white foraminifera. Locally tending to extremely weak mudstone. LIAS GROUP		
		97	0	0				(1.50)				
9.00 - 10.50												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.00	128	4.00	180

Remarks:

Hand dug inspection pit terminated at 0.40m bgl on hard strata with limestone gravel. Borehole drilled by dynamic sampling 0.40m-0.70m bgl and 2.50m-6.50m bgl. Borehole drilled by rotary coring 0.70m-2.50m bgl and 6.50m-15.00m bgl. Roots encountered to 0.27m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-6.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
7.00	8.00	Air/Mist	100%	grey	0.00	6.50	PLAIN	50
8.00	9.00	Air/Mist	100%	grey	6.50	15.00	SLOTTED	50
9.00	10.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/09/2018	EK	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508260.9	299630.0	12.32mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Firm to stiff thinly laminated fissured bluish grey silty CLAY with rare white foraminifera. Locally tending to extremely weak mudstone. LIAS GROUP		
10.50	N=12 (2,2/2,3,3,4)(S)						1.82	10.50				
										Firm thinly laminated fissured bluish grey silty CLAY with rare white foraminifera (3mm x 1mm) and rare lenses of silty fine sand. LIAS GROUP		
10.50 - 12.00		100	0	0				(1.50)				
12.00	N=22 (2,2/4,4,8,6)(S)						0.32	12.00				
										Stiff thinly laminated fissured bluish grey silty CLAY with rare white foraminifera, rare burrows infilled with silt and rare partings of grey silt and silty fine sand. LIAS GROUP		
12.00 - 13.50		100	0	0				(1.50)				
13.50	N=24 (3,3/5,6,8,5)(S) D						-1.18	13.50				
										Stiff thinly laminated fissured bluish grey silty CLAY with rare foraminifera and rare partings of silty fine sand. LIAS GROUP		
14.00	D											
13.50 - 15.00		100	0	0				(1.95)				
14.50	U											
15.00	N=20 (3,3/3,5,5,7)(S) D											

11 12 13 14 15

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
15.00	128

Casing Diameter

Depth (m)	Dia (mm)
4.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.50	12.00	Air/Mist	100%	grey
12.00	13.50	Air/Mist	100%	grey
13.50	15.00	Air/Mist	100%	grey

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	6.50	PLAIN	50
6.50	15.00	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 0.40m bgl on hard strata with limestone gravel. Borehole drilled by dynamic sampling 0.40m-0.70m bgl and 2.50m-6.50m bgl. Borehole drilled by rotary coring 0.70m-2.50m bgl and 6.50m-15.00m bgl. Roots encountered to 0.27m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-6.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH24**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	27/09/2018	EK	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508260.9	299630.0	12.32mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff thinly laminated fissured bluish grey silty CLAY with rare foraminifera and rare partings of silty fine sand. LIAS GROUP		
							-3.13	15.45		End of Borehole at 15.45m		

16 17 18 19 20

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.00	128	4.00	180

Remarks:

Hand dug inspection pit terminated at 0.40m bgl on hard strata with limestone gravel. Borehole drilled by dynamic sampling 0.40m-0.70m bgl and 2.50m-6.50m bgl. Borehole drilled by rotary coring 0.70m-2.50m bgl and 6.50m-15.00m bgl. Roots encountered to 0.27m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-6.50m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	6.50	PLAIN	50
6.50	15.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	16/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508257.3	299632.5	12.46mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D ES									Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular and sub-angular fine to coarse limestone. Roots and rootlets present. TOPSOIL		
0.20	J 0ppm						12.19	0.27				
0.30	2 X D J 0ppm						12.06	0.40		Yellowish brown clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. Rare rootlets. Weathered INFERIOR OOLITE GROUP		
0.50	2 X D ES J ES 0ppm									LIMESTONE. Open holed		
	0ppm							(2.30)				
							9.76	2.70		Grey CLAY/MUDSTONE. Open holed.		
								(3.80)				

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
16-10-2018	08:00	0.00	0.00	Dry
16-10-2018	17:30	9.50	5.00	Dry
17-10-2018	08:00	9.50	5.00	Dry
17-10-2018	12:00	15.50	5.00	Dry

Borehole Diameter

Depth (m)	Dia (mm)
15.50	128

Casing Diameter

Depth (m)	Dia (mm)
5.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
0.40	5.00	Air/Mist	100%	yellow
5.00	6.50	Air/Mist	100%	grey

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Additional borehole location instructed by client to obtain undisturbed samples. Hand dug inspection pit terminated at 0.40m bgl on hard strata. Roots encountered to 0.30m bgl. Borehole drilled by open-holing 0.40m-5.00m bgl followed on by rotary coring from 5.00m-15.50m bgl. Upon completion, borehole backfilled with bentonite pellets.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	16/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508257.3	299632.5	12.46mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 2 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Grey CLAY/MUDSTONE. Open holed.		
							5.96	6.50		Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
6.80	U											
6.50 - 8.00		100	0	0				(5.00)				
8.00 - 9.50		100	0	0								
10.00	U											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.50	128	5.00	180

Remarks:
Additional borehole location instructed by client to obtain undisturbed samples. Hand dug inspection pit terminated at 0.40m bgl on hard strata. Roots encountered to 0.30m bgl. Borehole drilled by open-holing 0.40m-5.00m bgl followed on by rotary coring from 5.00m-15.50m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
6.50	8.00	Air/Mist	100%	grey				
8.00	9.50	Air/Mist	100%	grey				
9.50	11.00	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	16/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508257.3	299632.5	12.46mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
9.50 - 11.00		100	0	0						Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
							0.96	11.50		Very stiff indistinctly to distinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
11.70	U											
11.00 - 12.50		86	0	0						*Assessed zone of core loss*		
										Mudstone recovered as sub-angular fine to coarse gravel.		
12.50 - 14.00		100	0	0				(4.00)				
14.50	U	100	0	0								
14.00 - 15.50												

11 12 13 14 15

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.50	128	5.00	180

Remarks:
Additional borehole location instructed by client to obtain undisturbed samples. Hand dug inspection pit terminated at 0.40m bgl on hard strata. Roots encountered to 0.30m bgl. Borehole drilled by open-holing 0.40m-5.00m bgl followed on by rotary coring from 5.00m-15.50m bgl. Upon completion, borehole backfilled with bentonite pellets.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
11.00	12.50	Air/Mist	100%	grey				
12.50	14.00	Air/Mist	100%	grey				
14.00	15.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH24A**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	16/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508257.3	299632.5	12.46mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Very stiff indistinctly to distinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
							-3.04	15.50		End of Borehole at 15.50m		

16 17 18 19 20

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.50	128	5.00	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Additional borehole location instructed by client to obtain undisturbed samples. Hand dug inspection pit terminated at 0.40m bgl on hard strata. Roots encountered to 0.30m bgl. Borehole drilled by open-holing 0.40m-5.00m bgl followed on by rotary coring from 5.00m-15.50m bgl. Upon completion, borehole backfilled with bentonite pellets.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH25**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/18 - 13/09/18	RP	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508286.9	299704.7	18.21mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00	D					Orangish brown to brown gravelly fine to coarse SAND. Gravel is sub-angular to sub-rounded fine to coarse flint, mudstone and limestone. TOPSOIL		
0.10	ES J							
	PID	0.2ppm						
0.20	J							
	PID	0.0ppm						
0.50	D ES EW J			(1.20)				
	PID	0.0ppm						
1.00	2 X J D ES							
	PID	0.0ppm	17.01	1.20				
1.20	SPT D	N=8 (1,1/2,2,2,2)				Loose orangish brown to brown clayey silty gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone, ironstone and flint. RIVER TERRACE DEPOSITS 1		
1.20 - 1.70	B							
				(1.30)				
2.00	SPT 2 X J D	N=11 (1,2/2,2,3,4)						
2.00 - 2.50	B							
2.50 - 2.70	B		15.71	2.50		Orangish brown clayey silty sandy angular and sub-angular fine to coarse limestone, ironstone and flint GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 1		
				(0.30)				
2.80	D		15.41	2.80		Stiff brownish grey with light brown to brown mottling CLAY. LIAS GROUP		
3.00	2 X J							
				(1.15)				
3.50 - 3.95	U							
3.95	D		14.26	3.95		Stiff to very stiff dark grey with greenish grey to yellow mottling CLAY locally tending to extremely weak mudstone. Rare pockets of greenish grey to yellow silt. LIAS GROUP		
4.20	D		14.01	4.20		Firm dark grey with yellowish grey and brown mottling CLAY. LIAS GROUP		
4.20 - 4.70	B							
				(1.30)				
4.80	D							
5.00	SPT D	N=14 (2,2/3,3,4,4)						

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
12-09-2018	16:00	0.00	0.00	Dry
13-09-2018	14:00	10.00	3.70	Dry

Borehole Diameter

Depth (m)	Dia (mm)
10.00	200

Casing Diameter

Depth (m)	Dia (mm)
3.70	200

Chiselling

From (m)	To (m)	Duration	Remarks
2.50	2.80	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20m-9.50m bgl. UT sample attempted at 9.50m bgl - Sample sheared. 200mm diameter casing installed to 3.70m bgl. Chiselling: 1hr 8.70-8.80m, 0.5hr 2.50-2.80m. 0.5hr spent trying to recover UT at 9.50m. Upon completion, borehole backfilled with bentonite pellets. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH25**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	12/09/18 - 13/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508286.9	299704.7	18.21mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.00 - 5.50	B					Firm dark grey with yellowish grey and brown mottling CLAY. LIAS GROUP		
5.50	D		12.71	5.50				
5.50 - 6.00	B					Very stiff indistinctly to distinctly laminated dark grey with some yellowish grey mottling CLAY. LIAS GROUP		
				(0.50)				
6.00	D		12.21	6.00				
6.00 - 6.50	B					Very stiff indistinctly to distinctly laminated dark grey with some yellowish grey mottling CLAY locally tending to extremely weak mudstone. Fragments of white shell present. LIAS GROUP		
				(0.90)				
6.50 - 6.80	UT	Ublow = 120						
6.90	D		11.31	6.90				
6.90 - 7.40	B					Very stiff light grey CLAY locally tending to extremely weak mudstone. Fragments of white shell present. LIAS GROUP		
7.40	D							
7.40 - 8.00	B							
				(2.10)				
8.00	SPT	N=50 (12,25/50 for 75mm)						
	D							
8.00 - 8.70	B							
8.90	D							
9.00	D		9.21	9.00				
9.00 - 9.50	B					Very stiff dark grey slightly gravelly CLAY locally tending to extremely weak mudstone. Fragments of white shell present. LIAS GROUP		
				(0.50)				
			8.71	9.50		*UT sheared off. Remained in-situ.*		
						End of Borehole at 10.00m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					10.00	200	3.70	200

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
2.50	2.80	00:30					

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by cable percussive methods 1.20m-9.50m bgl. UT sample attempted at 9.50m bgl - Sample sheared. 200mm diameter casing installed to 3.70m bgl. Chiselling: 1hr 8.70-8.80m, 0.5hr 2.50-2.80m. 0.5hr spent trying to recover UT at 9.50m. Upon completion, borehole backfilled with bentonite pellets. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH26**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508445.9	299675.0	15.66mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 1 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D									Dark brown gravelly clayey SILT. Gravel is sub-angular fine and medium limestone and flint. Frequent rootlets. TOPSOIL		
0.20	ES J 0ppm							(0.60)				
0.50	D J											
0.60	0ppm B						15.06	0.60		Dense orangish brown to brown sandy angular and sub-angular fine to coarse flint and limestone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 2		
1.20	N=33 (5,9/9,10,7,7)(S) D							(1.75)				
1.65	D											
2.20	N=27 (3,6/5,5,7,10)(S)											
							13.31	2.35		Brown, light brown, reddish brown and orangish brown mottled slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse ironstone, ferruginous sandstone and limestone. INFERIOR OOLITE GROUP		
								(0.35)				
							12.96	2.70		Yellowish brown, slightly clayey slightly sandy angular and sub-angular fine to coarse limestone GRAVEL with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. INFERIOR OOLITE GROUP		
							12.89	2.77				
							12.80	2.86		Brown, light brown, reddish brown and orangish brown mottled slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse ironstone, ferruginous sandstone and limestone. INFERIOR OOLITE GROUP		
								(0.49)		Firm indistinctly to distinctly very thinly laminated light grey with reddish brown, yellowish brown, yellowish grey and light grey mottling CLAY. LIAS GROUP		
3.30	D											
							12.31	3.35		Firm dark grey CLAY. Pyritic. LIAS GROUP		
3.70	N=12 (2,1/2,3,3,4)(S)							(0.77)				
3.80	D											
3.93	ES EW											
							11.54	4.12		Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey with brown, yellowish brown and light grey mottling CLAY. Pyritic. LIAS GROUP		
4.30	D							(0.58)				
							10.96	4.70		Firm to stiff indistinctly to distinctly very thinly laminated dark grey with brown, yellowish brown and light grey mottling CLAY. Pyritic. Occasional white and clear glassy anhydrite minerals present. LIAS GROUP		
5.00	D											

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
24-09-2018	08:00	0.00	0.00	Dry
24-09-2018	18:00	5.70	3.70	Dry
25-09-2018	08:00	5.70	3.70	Dry
25-09-2018	18:00	14.15	3.70	Dry
26-09-2018	08:00	14.15	3.70	Dry
26-09-2018	18:00	15.50	3.70	Dry

Borehole Diameter

Depth (m)	Dia (mm)
15.50	128

Casing Diameter

Depth (m)	Dia (mm)
3.70	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	3.30	PLAIN	50
3.30	15.00	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by dynamic sampling 1.20m-5.70m bgl and followed on by rotary coring 5.70-15.40m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole installed with slotted standpipe (50mm diam ID HDPE) to 15.00m bgl, granular response zone 15.00-3.30m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH26**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508445.9	299675.0	15.66mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 2 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.20	D UT									Firm to stiff indistinctly to distinctly very thinly laminated dark grey with brown, yellowish brown and light grey mottling CLAY. Pyritic. Occasional white and clear glassy anhydrite minerals present. LIAS GROUP		
5.50	D							(1.50)				
5.70 - 6.20		100	0	0								
							9.46	6.20		Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey CLAY locally tending to extremely weak mudstone. Occasional white shell fragments. Pyritic. LIAS GROUP		
6.40	D											
6.80	D											
6.20 - 7.70		100	0	0								
7.40	D											
7.70	N=17 (3,3/3,4,4,6)(S)											
8.10	D							(6.00)				
7.70 - 9.20		100	0	0						*8.35-8.45m Mudstone band recovered as sandy gravelly clay.*		
8.60	D ES									*Gravel sized mudstone.*		
9.00	D											
9.20	D UT											
9.70	D	100	0	0								
9.20 - 10.70												

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.50	128	3.70	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by dynamic sampling 1.20m-5.70m bgl and followed on by rotary coring 5.70-15.40m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole installed with slotted standpipe (50mm diam ID HDPE) to 15.00m bgl, granular response zone 15.00-3.30m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
5.70	6.20	Air/Mist	100%	grey
6.20	7.70	Air/Mist	100%	grey
7.70	9.20	Air/Mist	100%	grey
9.20	10.70	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	3.30	PLAIN	50
3.30	15.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme	Client: Interserve Construction Limited				Hole ID: **BH26**
	Contract Number: 17076	Date Started: 24/09/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **RC**
	Easting: 508445.9	Northing: 299675.0	Ground Level: 15.66mAOD	Plant Used: Comacchio 205	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 3 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.10	D									Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey CLAY locally tending to extremely weak mudstone. Occasional white shell fragments. Pyritic. LIAS GROUP		
										J, 0, 45, R, P		
10.60	D											
10.70	N=24 (3,4/4,5,6,9)(S)											
11.20	D											
10.70 - 12.20		94	0	0								
11.70	D											
12.00	D											
12.20	D UT						3.46	12.20		Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
12.40	D											
12.90	D											
12.20 - 13.70		94	0	0								
13.40	D ES											
								(3.20)				
13.70	N=29 (5,4/5,7,7,10)(S)											
14.10	D											
										J, 0, R, UN-IR		
13.70 - 15.00		75	0	0						J, 0-20, R, ST, tight J,0, R, P-UN, tight		
14.70	D									Assessed zone of core loss		
15.00	D UT											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.50	128	3.70	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by dynamic sampling 1.20m-5.70m bgl and followed on by rotary coring 5.70-15.40m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole installed with slotted standpipe (50mm diam ID HDPE) to 15.00m bgl, granular response zone 15.00-3.30m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
10.70	12.20	Air/Mist	100%	grey
12.20	13.70	Air/Mist	100%	grey
13.70	15.00	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	3.30	PLAIN	50
3.30	15.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH26**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	24/09/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508445.9	299675.0	15.66mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 82.18% | Sheet 4 of 4

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff to very stiff indistinctly to distinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
							0.26	15.40		End of Borehole at 15.40m		

16 17 18 19 20

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.50	128	3.70	180

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled by dynamic sampling 1.20m-5.70m bgl and followed on by rotary coring 5.70-15.40m bgl. Roots encountered to 0.60m bgl. Upon completion, borehole installed with slotted standpipe (50mm diam ID HDPE) to 15.00m bgl, granular response zone 15.00-3.30m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	3.30	PLAIN	50
3.30	15.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH27**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	18/09/18 - 20/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508661.0	299641.9	14.07mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X J ES					Dark brown slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint and limestone. TOPSOIL		
	PID	0.1ppm	13.87	0.20				
0.20	2 X J PID	0.1ppm				Dark brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone and flint. RIVER TERRACE DEPOSITS 1		
0.50	2 X J ES							
	PID	0.1ppm		(0.80)				
1.00	2 X J PID	0.1ppm	13.07	1.00		Stiff light grey mottled brown slightly gravelly sandy silty CLAY. Sand is fine and medium. Gravel is sub-angular fine limestone. RIVER TERRACE DEPOSITS 1		
1.20	SPT 2 X D	N=20 (2,3/4,6,5,5)						
1.20 - 1.70	B							
2.00	SPT 2 X D 2 X J D	N=21 (3,4/4,5,6,6)		(2.00)				
2.00 - 2.50	B							
2.50	D ES							
2.50 - 3.00	B							
3.00	SPT 2 X D 2 X J	N=8 (1,1/1,2,2,3)	11.07	3.00		Soft to firm dark grey mottled reddish brown slightly gravelly CLAY. Gravel is angular and sub-angular fine to coarse limestone. Iron staining present. LIAS GROUP		
3.00 - 3.50	B							
3.50	D			(0.90)				
3.50 - 4.00	B							
			10.17	3.90				
4.00	D					Medium dense light brown clayey silty sandy angular and sub-angular fine to coarse limestone GRAVEL with rare iron staining. Sand is fine to coarse. LIAS GROUP		
4.00 - 4.50	B							
				(1.10)				
4.50	SPT 2 X D	N=24 (4,5/7,7,6,4)						
4.50 - 5.00	B							
4.66	ES EW							
5.00	D		9.07	5.00				
5.00 - 5.50	B							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
18-09-2018	10:00	0.00	0.00	Dry
19-09-2018	16:00	5.50	4.00	Dry
20-09-2018	13:00	15.00	5.60	Dry

Borehole Diameter

Depth (m)	Dia (mm)
15.00	200

Casing Diameter

Depth (m)	Dia (mm)
4.00	200
5.60	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 4.00m bgl. Roots not encountered. UT attempted at 14.00m bgl - sample not recovered. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-5.00m bgl. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	5.00	PLAIN	50
5.00	15.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH27**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	18/09/18 - 20/09/18	RP	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508661.0	299641.9	14.07mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.50)		Firm dark grey gravelly CLAY with a high sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. LIAS GROUP		
5.50 5.50 - 6.00	D B		8.57	5.50		Stiff becoming very stiff fissured dark grey slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is sub-rounded and rounded fine limestone. Fissures are very closely spaced and polished. Occasional belemnite fossils and shell fragments present. LIAS GROUP		
6.00 - 6.45	UT	Ublow = 80						
6.45 6.50 6.50 - 7.00	D D B							
7.00 7.00 - 7.50	D B							
7.50 7.50 - 8.00	SPT 2 X D B	N=25 (2,4/5,6,6,8)						
8.00 8.00 - 8.50	D ES B							
8.50 8.50 - 9.00	D B							
9.00 - 9.45	UT	Ublow = 110						
9.45 9.50 9.50 - 10.00	D D B							
10.00 10.00 - 10.50	D B							

6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter	
Depth (m)	Dia (mm)
15.00	200

Casing Diameter	
Depth (m)	Dia (mm)
4.00	200
5.60	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 4.00m bgl. Roots not encountered. UT attempted at 14.00m bgl - sample not recovered. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-5.00m bgl. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling			
From (m)	To (m)	Duration	Remarks

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	5.00	PLAIN	50
5.00	15.00	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH27**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	18/09/18 - 20/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508661.0	299641.9	14.07mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 3 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Stiff becoming very stiff fissured dark grey slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is sub-rounded and rounded fine limestone. Fissures are very closely spaced and polished. Occasional belemnite fossils and shell fragments present. LIAS GROUP		
10.50	SPT	N=38 (10,17/10,8,9,11)						
11.00	SPT 2 X D	N=34 (3,4/7,1,12,14)						
11.00 - 11.50	B							
11.50	D							
11.50 - 12.00	B							
12.00	D							
12.00 - 12.50	B							
12.50	SPT	N=50 (25 for 75mm/50 for 75mm)		(9.50)				
12.60	D ES							
13.00	D							
13.50	D							
13.50 - 14.00	B							
14.00 - 14.50	UT	Ublow = 120						
14.45	D							
			-0.93	15.00		End of Borehole at 15.00m		

11 12 13 14 15

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
15.00	200

Casing Diameter

Depth (m)	Dia (mm)
4.00	200
5.60	200

Chiselling

From (m)	To (m)	Duration	Remarks

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	5.00	PLAIN	50
5.00	15.00	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 4.00m bgl. Roots not encountered. UT attempted at 14.00m bgl - sample not recovered. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 15.00m bgl. Granular response zone 15.00-5.00m bgl. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH28**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	17/09/18 - 18/09/18	RP	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508743.6	299620.6	12.26mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES			(0.30)		Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. Rootlets present. Reworked TOPSOIL		
	J							
	PID	0.1ppm						
0.20	J		11.96	0.30		Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. Rootlets present. Reworked RIVER TERRACE DEPOSITS 1		
	PID	0.1ppm						
0.30	D							
0.50	D							
	ES							
	EW			(0.70)				
	J							
	PID	0.0ppm						
1.00	D		11.26	1.00		Yellowish brown to light brown slightly clayey gravelly fine to coarse SAND with a low to medium angular and sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. Weathered LIAS GROUP		
	ES							
	J							
1.00 - 1.20	B		11.06	1.20		Loose to medium dense brown slightly clayey gravelly fine to coarse SAND. Gravel is angular and sub-rounded fine to coarse flint and limestone. LIAS GROUP		
1.00	PID	0.0ppm						
1.20	SPT	N=12 (2,2/3,2,3,4)						
	D							
1.20 - 1.60	B							
				(1.30)				
2.00	SPT	N=23 (2,4/4,5,7,7)						
	D							
2.00 - 2.50	B							
2.50	D		9.76	2.50		Firm light grey to grey mottled light brown and brown sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse mudstone. LIAS GROUP		
2.50 - 3.00	B							
				(0.50)				
2.90	D							
3.00	SPT	N=15 (2,3/3,4,4,4)	9.26	3.00		Firm to stiff dark grey, grey and light grey mottled with light brown and brown mottling slightly sandy silty CLAY. Sand is fine and medium. LIAS GROUP		
	2 X D							
	D							
3.00 - 3.50	B							
				(0.50)				
3.40	D							
3.50	D		8.76	3.50		Firm dark grey and light grey with some light brown to yellowish brown mottling slightly sandy clayey SILT interbedded with dark grey clay. Sand is fine and medium. LIAS GROUP		
3.50 - 4.00	B							
4.00	D			(1.00)				
4.00 - 4.50	B							
4.50 - 4.80	U		7.76	4.50		Stiff to very stiff light grey with some dark grey mottling clayey SILT. LIAS GROUP		
				(0.40)				
4.90	D		7.36	4.90		Stiff light grey with some black mottling slightly sandy silty CLAY. Sand is fine and medium. Slightly		
5.00	D							
5.00 - 5.50	B							

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
17-09-2018	10:00	0.00	0.00	0.00	5.70	200	5.60	200
18-09-2018	15:00	5.70	5.60	5.60				

Chiselling			
From (m)	To (m)	Duration	Remarks
2.30	2.70	00:30	
5.60	5.70	00:30	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit to 1.20m bgl. Hole drilled using cable percussive methods 1.20m-5.70m bgl. Hole terminated at 5.70m bgl after 1hour of chiselling due to impenetrable strata. 200mm diameter casing installed to 5.60m bgl. Chiselling: 1/2hr 2.30-2.70m, 1hr 5.60-5.70m. Upon completion, borehole backfilled with bentonite pellets. Roots encountered to 1.00m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.60			0	0.00	Groundwater seepage encountered at 5.60m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH28**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	17/09/18 - 18/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508743.6	299620.6	12.26mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
				(0.70)		Stiff light grey with some black mottling slightly sandy silty CLAY. Sand is fine and medium. Slightly pyritic. LIAS GROUP		
5.60 5.60 - 5.70 5.70	D B SPT	50 (25 for 25mm/50 for 75mm)	6.66 6.56	5.60 5.70		Extremely weak light grey to grey, reddish brown and orangish brown MUDSTONE. Recovered as angular and sub-angular fine to coarse gravel and cobbles. Iron staining present. LIAS GROUP		
						End of Borehole at 5.70m		

6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
5.70	200	5.60	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Hole drilled using cable percussive methods 1.20m-5.70m bgl. Hole terminated at 5.70m bgl after 1hour of chiselling due to impenetrable strata. 200mm diameter casing installed to 5.60m bgl. Chiselling: 1/2hr 2.30-2.70m, 1hr 5.60-5.70m. Upon completion, borehole backfilled with bentonite pellets. Roots encountered to 1.00m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling			
From (m)	To (m)	Duration	Remarks
2.30	2.70	00:30	
5.60	5.70	00:30	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.60			0	0.00	Groundwater seepage encountered at 5.60m bgl, no rise after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH29**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	14/09/18 - 17/09/18	EL	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508825.0	299595.7	9.87mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D					Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone. Reworked TOPSOIL		
	J							
	PID	0.1ppm						
0.20	D							
	ES			(0.70)				
	J							
	PID	0.1ppm						
0.50	D							
	ES							
	EW							
	J		9.17	0.70				
	PID	0.1ppm				Firm orangish brown to brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
0.70	D			(0.30)				
	J							
1.00	2 X J		8.87	1.00				
1.00 - 1.20	B					Loose orangish brown to brown clayey silty sandy angular and sub-angular fine to coarse limestone GRAVEL. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
	D							
1.00	PID	0.0ppm						
1.20	SPT	N=9 (1,2/2,2,2,3)						
	D							
1.20 - 1.60	B							
1.60 - 1.90	B							
1.69	ES							
	EW							
2.00	2 X J							
	D			(2.10)				
2.00 - 2.45	UT	Ublow = 50						
2.45	D							
2.55	D							
2.55 - 3.00	B							
3.00	2 X J							
			6.77	3.10				
3.20	SPT	N=10 (1,1/1,2,3,4)				Firm to stiff grey and dark grey mottled CLAY. LIAS GROUP		
	2 X D							
	D							
3.20 - 3.70	B							
3.70 - 4.30	B							
3.80	D							
				(1.90)				
4.50 - 4.95	UT	Ublow = 75						
4.85	D							
5.00	D		4.87	5.00				
5.00 - 5.50	B							

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
14-09-2018	11:00	0.00	0.00	Dry
14-09-2018	16:00	11.50	4.00	2.50
17-09-2018	09:00	11.50	4.00	Dry
17-09-2018	14:00	15.00	4.00	

Borehole Diameter

Depth (m)	Dia (mm)
15.00	200

Casing Diameter

Depth (m)	Dia (mm)
4.00	200

Chiselling

From (m)	To (m)	Duration	Remarks
2.45	2.70	00:30	
7.00	7.15	00:15	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	3.10	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 5.60m bgl. Chiselling: 1/2hr 2.45-2.70m, 1/2hr 7.00-7.15m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 3.10m bgl. Granular response zone 3.10-1.00m bgl. Roots not encountered. Reworked refers to ploughed ground. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.60			20	2.50	Moderate rate of inflow. Groundwater strike encountered at 2.60m bgl, rising to 2.50m bgl after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH29**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	14/09/18 - 17/09/18	EL	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508825.0	299595.7	9.87mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Stiff dark grey slightly gravelly CLAY with a low sub-angular mudstone cobble content. Gravel is sub-angular fine to coarse mudstone. Rare fragments of white shell. LIAS GROUP		
5.50	D							
5.50 - 6.00	B							
6.00	SPT	N=19 (3,3/4,4,4,7)		(2.00)				
	2 X D							
	SPT							
6.00 - 6.50	B							
6.50	D							
6.50 - 7.00	B							
6.80	D							
7.00	SPT	N=28 (2,2/11,5,6,6)	2.87	7.00		Stiff indistinctly laminated dark grey with some brown and yellowish grey mottling slightly gravelly CLAY. Gravel is angular and sub-angular fine to coarse mudstone. Rare fragments of white shell. LIAS GROUP		
	D							
7.00 - 7.50	B							
7.50	D							
7.50 - 8.00	B							
8.40 - 8.75	UT	Ublow = 120		(3.00)				
8.75	D							
8.90	D							
8.90 - 9.40	B							
9.40	D							
9.40 - 10.00	B							
10.00	SPT	N=43 (6,6/9,9,12,13)	-0.13	10.00				
	2 X D							

6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.00	200	4.00	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 5.60m bgl. Chiselling: 1/2hr 2.45-2.70m, 1/2hr 7.00-7.15m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 3.10m bgl. Granular response zone 3.10-1.00m bgl. Roots not encountered. Reworked refers to ploughed ground. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling			
From (m)	To (m)	Duration	Remarks
2.45	2.70	00:30	
7.00	7.15	00:15	

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	1.00	PLAIN	50
1.00	3.10	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.60			20	2.50	Moderate rate of inflow. Groundwater strike encountered at 2.60m bgl, rising to 2.50m bgl after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH29**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	14/09/18 - 17/09/18	EL	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508825.0	299595.7	9.87mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 3 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	SPT					Stiff becoming very stiff dark grey with some light grey and yellowish grey mottling slightly gravelly CLAY. Gravel is angular and sub-angular fine to coarse mudstone. Rare fragments of white shell. LIAS GROUP		
10.00 - 10.50	B							
10.50	D							
10.50 - 11.00	B							
11.00	D							
11.00 - 11.50	B							
11.50 - 11.95	UT	Ublow = 120						
11.95	D							
12.10	D							
12.10 - 12.50	B							
12.50	D			(5.00)				
12.50 - 13.00	B							
13.00	SPT	N=49 (6,6/9,11,13,16)						
	2 X D SPT							
13.00 - 13.50	B							
13.50	D							
13.50 - 14.00	B							
14.00	D							
14.00 - 14.50	B							
14.50 - 14.95	UT	Ublow = 120						
14.90	D							
			-5.13	15.00		End of Borehole at 15.00m		

11 12 13 14 15

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.00	200	4.00	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 5.60m bgl. Chiselling: 1/2hr 2.45-2.70m, 1/2hr 7.00-7.15m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 3.10m bgl. Granular response zone 3.10-1.00m bgl. Roots not encountered. Reworked refers to ploughed ground. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
2.45	2.70	00:30		0.00	1.00	PLAIN	50
7.00	7.15	00:15		1.00	3.10	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
2.60			20	2.50	Moderate rate of inflow. Groundwater strike encountered at 2.60m bgl, rising to 2.50m bgl after 20 minutes.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH30**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	09/10/18 - 10/10/18	WN	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508911.8	299547.2	12.06mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D ES J			(0.30)		Dark brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent sub-angular and sub-rounded fine to coarse gravel sized fragments of brick. Frequent 2mm rootlets. MADE GROUND		
0.20	PID D ES EW J	0.0ppm	11.76	0.30		Light brown gravelly fine and medium SAND with a low sub-angular limestone cobble content. Gravel is angular to sub-rounded fine to coarse flint. ALLUVIUM		
0.50	PID D ES J	0.0ppm		(0.90)				
1.00	PID 2 X D 2 X J D	0.0ppm						
1.00 - 1.10	B		10.86	1.20		Medium dense to dense light brown clayey silty gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.00 1.20	PID SPT D	0.0ppm N=17 (2,2/3,4,5,5)						
1.20 - 1.70	B							
2.00	SPT 2 X J D	N=40 (4,5/7,9,10,14)						
2.00 - 2.50	B							
2.60	SPT 2 X D	N=24 (3,4/4,7,6,7)		(2.70)				
2.60 - 3.00	B							
3.00	2 X J D							
3.50	SPT 2 X D	N=8 (2,3/2,2,2,2)				*Becoming loose.*		
3.50 - 3.90	B							
			8.16	3.90		Light brown gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
4.00	D							
4.10	D		7.96	4.10		Soft to firm dark brown slightly sandy very gravelly CLAY. Sand is fine and medium. Gravel is angular to sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
4.30	D		7.76	4.30		Brown slightly sandy angular to sub-rounded fine to coarse limestone GRAVEL. Sand is fine and medium. Weathered INFERIOR OOLITE GROUP		
4.40	D ES		7.66	4.40		Firm to stiff dark grey slightly sandy slightly gravelly silty CLAY. sand is fine to coarse. Gravel is sub-rounded and rounded fine to medium limestone. LIAS GROUP		
				(1.20)				
4.80	D							
4.80 - 5.10	B							

1 2 3 4 5

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
09-10-2018	09:00	0.00	0.00		15.00	200	9.30	200
10-10-2018	15:00	15.00	9.50					

Chiselling			
From (m)	To (m)	Duration	Remarks
1.90	2.50	01:00	
12.10	12.40	00:30	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 9.50m bgl. Chiselling: 1/2hr 1.90m-2.50m bgl and 1/2 hr 12.10-12.40m bgl. Roots encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00	4.00		20	3.80	Moderate rate of inflow. Groundwater strike at 4.00m bgl, rising to 3.80m bgl after 20 minutes

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH30**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	09/10/18 - 10/10/18	WN	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508911.8	299547.2	12.06mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.10	SPT 2 X D	N=17 (4,4/4,4,4,5)				Firm to stiff dark grey slightly sandy slightly gravelly silty CLAY. sand is fine to coarse. Gravel is sub-rounded and rounded fine to medium limestone. LIAS GROUP		
5.10 - 5.60	B							
5.60	D		6.46	5.60		Stiff becoming very stiff fissured dark grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is sub-rounded and rounded fine limestone. Fissures are very closely spaced and polished. Rare shell fragments and belemnites. LIAS GROUP		
6.00	D							
6.50	D							
6.60 - 7.05	UT	Ublow = 70						
7.05	D							
7.50	D							
8.00	SPT D SPT	N=24 (4,4/5,6,7,6)						
8.50 - 9.00	B							
9.10	SPT	N=25 (12,5/4,5,7,9)						
9.50	D							
10.00 - 10.45	UT	Ublow = 70						

6 7 8 9 10

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15.00	200	9.30	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 9.50m bgl. Chiselling: 1/2hr 1.90m-2.50m bgl and 1/2 hr 12.10-12.40m bgl. Roots encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling

From (m)	To (m)	Duration	Remarks
1.90	2.50	01:00	
12.10	12.40	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00	4.00		20	3.80	Moderate rate of inflow. Groundwater strike at 4.00m bgl, rising to 3.80m bgl after 20 minutes

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH30**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	09/10/18 - 10/10/18	WN	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508911.8	299547.2	12.06mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 3 of 3

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
10.45	D					Stiff becoming very stiff fissured dark grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is sub-rounded and rounded fine limestone. Fissures are very closely spaced and polished. Rare shell fragments and belemnites. LIAS GROUP		
11.00	D							
11.50	SPT	N=50 (5,7/50 for 255mm)						
	D							
11.50 - 12.00	B							
12.00	D							
12.10	ES					*Coarse limestone gravel.*		
12.10 - 12.40	D			(9.40)				
12.60	D							
13.45	D							
14.00	D							
14.50	SPT	N=48 (6,8/48 for 260mm)						
	2 X D							
	D							
14.50 - 15.00	B							
			-2.94	15.00		End of Borehole at 15.00m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					15.00	200	9.30	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-15.00m bgl. 200mm diameter casing installed to 9.50m bgl. Chiselling: 1/2hr 1.90m-2.50m bgl and 1/2 hr 12.10-12.40m bgl. Roots encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. SPT hammer energy ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
1.90	2.50	01:00					
12.10	12.40	00:30					

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00	4.00		20	3.80	Moderate rate of inflow. Groundwater strike at 4.00m bgl, rising to 3.80m bgl after 20 minutes

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH31**
Contract Number:	**Date Started:**	**Logged By:**	**Checked By:**	**Status:**	**Hole Type:**
17076	02/10/2018	EK	SB	FINAL	**CP+RC**
Easting:	**Northing:**	**Ground Level:**	**Plant Used:**	**Print Date:**	**Scale:**
508960.0	299559.8	14.89mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73/82.18% | Sheet 1 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D J									Dark brown gravelly SILT. Gravel is sub-angular fine and medium flint and limestone. Frequent rootlets. TOPSOIL		
0.20	D J							(0.40)				
							14.49	0.40		Dark brown slightly gravelly fine to coarse SAND. Gravel is sub-angular fine and medium flint and limestone. Frequent rootlets. RIVER TERRACE DEPOSITS		
0.50	D J											
								(0.80)				
1.00	2 X J D											1
1.20	N=29 (14,15/8,7,8,6)(S) B D						13.69	1.20		Medium dense brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
								(0.60)				
							13.09	1.80		Medium dense brown clayey gravelly SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
2.00	N=29 (6,6/5,4,5,15)(S) 2 X J B D											2
								(0.70)				
2.50	B D						12.39	2.50		Brown gravelly SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
								(0.50)				
3.00	2 X J B D						11.89	3.00		Medium dense becoming dense and very dense brown slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		3
3.50	N=28 (6,7/8,8,5,7)(S) 2 X D B										▼	
4.00	D										▽	4
4.50	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
10-10-2017	08:00	12.45	9.30	6.40	9.80	200	9.50	200
04-10-2018	00:00	9.80	9.30	Dry	21.00	128		
04-10-2018	08:00	0.00	0.00	Dry				
05-10-2018	07:50	9.80	9.30	8.20				
05-10-2018	13:00	12.45	9.30	6.30				
10-10-2018	18:00	21.45	9.30	7.00				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-9.80m bgl followed on by rotary coring 9.80m-21.00m bgl. Chiselling: 1hr 3.00-3.10m. Roots encountered to 1.20m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable Percussive SPT hammer energy ratio - 66%. Rotary coring SPT hammer ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00			20	3.80	Moderate inflow. Groundwater strike encountered at 4.00m bgl, rising to 3.80m after 20 minutes.
8.00	7.00		20	5.40	Fast inflow. Groundwater strike

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH31**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	02/10/2018	EK	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508960.0	299559.8	14.89mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73/82.18% | Sheet 2 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.00	N=41 (8,7/8,10,10,13)(S) D									Medium dense becoming dense and very dense brown slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
5.50	D							(3.80)				
6.00	50 (9,10/50 for 200mm) (S) 2 X D B											
6.50	D											
6.90	D ES						8.09	6.80		Very stiff light grey mottled dark grey slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine and medium limestone. Weathered INFERIOR OOLITE GROUP		
7.50	N=39 (5,5/7,10,11,11)(S) 2 X D B D							(2.20)				
8.00	D											
8.50	D											
8.60	B D											
9.00	N=27 (5,5/6,7,7,7)(S) B D						5.89	9.00 (0.80)		Medium dense grey mottled brown clayey silty sandy sub-angular and sub-rounded fine to coarse limestone GRAVEL with a low sub-angular and sub-rounded limestone cobble content. Weathered INFERIOR OOLITE GROUP		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					9.80 21.00	200 128	9.50	200

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-9.80m bgl followed on by rotary coring 9.80m-21.00m bgl. Chiselling: 1hr 3.00-3.10m. Roots encountered to 1.20m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable Percussive SPT hammer energy ratio - 66%. Rotary coring SPT hammer ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00			20	3.80	Moderate inflow. Groundwater strike encountered at 4.00m bgl, rising to 3.80m after 20 minutes.
8.00	7.00		20	5.40	Fast inflow. Groundwater strike

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH31**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	02/10/2018	EK	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508960.0	299559.8	14.89mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73/82.18% | Sheet 3 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
							5.09	9.80		Medium dense grey mottled brown clayey silty sandy sub-angular and sub-rounded fine to coarse limestone GRAVEL with a low sub-angular and sub-rounded limestone cobble content. Weathered INFERIOR OOLITE GROUP		
								(0.70)		Stiff grey silty CLAY locally tending to extremely weak mudstone. Occasional black specks. LIAS GROUP		
							4.39	10.50		Firm to very stiff grey silty CLAY locally tending to extremely weak mudstone. Rare burrows infilled with brown fine sand. LIAS GROUP		
11.00	D											
10.50 - 12.00 11.25	U	100	0	0				(1.50)				
12.00	N=32 (3,5/5,8,10,9)(S) D ES						2.89	12.00		Very stiff grey silty CLAY locally tending to extremely weak mudstone. Occasional ironstone nodules and rare burrows infilled with fine brown sand. LIAS GROUP		
12.50	D											
12.00 - 13.50		100	0	0				(1.50)				
13.50	D						1.39	13.50		Stiff becoming very stiff thinly laminated fissured bluish-grey silty gravelly CLAY locally tending to extremely weak mudstone. Rare white foraminifera. LIAS GROUP		
14.00	D	100	0	0								
13.50 - 15.00												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					9.80	200	9.50	200
					21.00	128		

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
9.80	10.50	Air/Mist	100%	grey				
10.50	12.00	Air/Mist	100%	grey				
12.00	13.50	Air/Mist	100%	grey				
13.50	15.00	Air/Mist	100%	grey				

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-9.80m bgl followed on by rotary coring 9.80m-21.00m bgl. Chiselling: 1hr 3.00-3.10m. Roots encountered to 1.20m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable Percussive SPT hammer energy ratio - 66%. Rotary coring SPT hammer ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00			20	3.80	Moderate inflow. Groundwater strike encountered at 4.00m bgl, rising to 3.80m after 20 minutes.
8.00	7.00		20	5.40	Fast inflow. Groundwater strike

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH31**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	02/10/2018	EK	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508960.0	299559.8	14.89mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73/82.18% | Sheet 4 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
14.50	D									Stiff becoming very stiff thinly laminated fissured bluish-grey silty gravelly CLAY locally tending to extremely weak mudstone. Rare white foraminifera. LIAS GROUP		
15.00	N=30 (3,4/6,6,8,10)(S) D											
15.00 - 16.50		93	0	0								
16.00	D											
16.50	D									*Low subrounded mudstone cobble content*		
								(6.00)				
17.00	D											
16.50 - 18.00		100	0	0								
17.50	D											
18.00	N=48 (5,8/9,11,12,16)(S) D									*No core recovery*		
18.50	D ES											
18.00 - 19.50		80	0	0								
19.00	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					9.80	200	9.50	200
					21.00	128		

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-9.80m bgl followed on by rotary coring 9.80m-21.00m bgl. Chiselling: 1hr 3.00-3.10m. Roots encountered to 1.20m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable Percussive SPT hammer energy ratio - 66%. Rotary coring SPT hammer ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
15.00	16.50	Air/Mist	100%	grey				
16.50	18.00	Air/Mist	100%	grey				
18.00	19.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00			20	3.80	Moderate inflow. Groundwater strike encountered at 4.00m bgl, rising to 3.80m after 20 minutes.
8.00	7.00		20	5.40	Fast inflow. Groundwater strike

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH31**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	02/10/2018	EK	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508960.0	299559.8	14.89mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: EQU2069 Energy Ratio: 73/82.18% | Sheet 5 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff becoming very stiff thinly laminated fissured bluish-grey silty gravelly CLAY locally tending to extremely weak mudstone. Rare white foraminifera. LIAS GROUP		
19.50	D						-4.61	19.50		Very stiff thinly laminated fissured grey slightly gravelly silty CLAY with rare foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
20.00	D											
19.50 - 21.00		100	0	0								
20.50	D							(1.95)				
21.00	N=46 (7,9/7,10,12,17)(S) D											
							-6.56	21.45		End of Borehole at 21.45m		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					9.80	200	9.50	200
					21.00	128		

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
19.50	21.00	Air/Mist	100%	grey				

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-9.80m bgl followed on by rotary coring 9.80m-21.00m bgl. Chiselling: 1hr 3.00-3.10m. Roots encountered to 1.20m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable Percussive SPT hammer energy ratio - 66%. Rotary coring SPT hammer ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.00			20	3.80	Moderate inflow. Groundwater strike encountered at 4.00m bgl, rising to 3.80m after 20 minutes.
8.00	7.00		20	5.40	Fast inflow. Groundwater strike

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH32**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/10/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508976.6	299537.5	15.94mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575/EQU2069 Energy Ratio: 73/82.18% | Sheet 1 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D									Dark brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent fragments of sub-angular and sub-rounded fine to coarse gravel sized brick. Frequent rootlets. MADE GROUND		
	J							(0.30)				
0.20	D											
	ES											
	J						15.64	0.30				
								(0.30)		Light brown gravelly fine and medium SAND with a low sub-angular and sub-rounded limestone cobble content. Gravel is angular to sub-rounded fine to coarse flint and limestone. Frequent fragments of angular to sub-rounded fine to coarse gravel sized brick. MADE GROUND		
0.50	D											
	ES											
	EW						15.34	0.60				
	J									Soft light brown sandy gravelly CLAY. Sand is fine and medium. Gravel is sub-angular to rounded fine and medium limestone. Weathered INFERIOR OOLITE GROUP		
								(0.40)				
1.00	2 X J						14.94	1.00		Very dense brown clayey silty sandy sub-angular to rounded fine to coarse limestone GRAVEL. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
	B											
	D											
	ES											
1.20	68 (16,13/68 for 150mm)											
	(S)											
	D											
1.50	D							(1.00)				
	J											
2.00	N=26 (3,5/5,7,7,7)(S)						13.94	2.00		Medium dense light brown slightly gravelly fine and medium SAND. Gravel is sub-angular to rounded fine limestone. Weathered INFERIOR OOLITE GROUP		
	2 X J											
	B											
	D											
								(1.10)				
3.00	N=24 (6,5/5,6,6,7)(C)											
	2 X J											
	B						12.84	3.10				
	D									Dark brown slightly gravelly fine and medium SAND. Gravel is sub-angular to rounded fine limestone. Weathered INFERIOR OOLITE GROUP		
3.50	D											
								(1.10)				
							11.74	4.20		Medium dense becoming dense and very dense light brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weather INFERIOR OOLITE GROUP		
4.50	N=18 (4,4/4,5,4,5)(S)											
	B											
	D											
	ES											

1 2 3 4

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
04-10-2018	08:00	0.00	0.00	Dry
04-10-2018	18:00	9.60	0.00	Dry
05-10-2018	08:00	9.60	0.00	Dry
05-10-2018	18:00	11.70	11.70	Dry
09-10-2018	08:00	11.70	11.70	7.10
09-10-2018	17:00	15.50	11.70	7.10

Borehole Diameter

Depth (m)	Dia (mm)
11.70	200
25.50	128

Casing Diameter

Depth (m)	Dia (mm)
11.70	200

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-11.70m bgl followed on by rotary coring 11.70m-25.50m bgl. Chiselling 0.5hr 11.40-11.70m bgl. Rootlets encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT Hammer Energy Ratio - 66%. Rotary Coring SPT hammer energy ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.50			870	5.10	Water level rose overnight from 10.50m bgl on 4/10/18 to 5.10m bgl on 5/10/18.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH32**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/10/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508976.6	299537.5	15.94mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575/EQU2069 Energy Ratio: 73/82.18% | Sheet 2 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.00	D									Medium dense becoming dense and very dense light brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse limestone. Weather INFERIOR OOLITE GROUP		
5.50	B D											
								(2.80)				
6.00	N=50 (25 for 75mm/50 for 75mm)(C)											
6.50	N=49 (5,5/6,13,15,15)(S) B D											
7.00	D						8.94	7.00		Dark brown slightly fine SAND. Occasional fine organic material. LOWER LINCONLSHIRE LIMESTONE		
								(0.50)				
7.50	B D						8.44	7.50		Dense dark grey slightly clayey slightly silty slightly gravelly fine to coarse SAND. Gravel is fine and medium sub-angular mudstone. Occasional fine organic material. INFERIOR OOLITE GROUP		
7.80	D											
8.00	N=36 (5,5/7,8,9,12)(S) D							(1.10)				
8.60	D						7.34	8.60		Dark grey slightly clayey sandy sub-rounded and rounded fine to coarse limestone GRAVEL. Sand is fine and medium. LOWER LINCOLNSHIRE LIMESTON		
9.00	D							(0.90)				
9.50	D						6.44	9.50		Dark grey very gravelly clayey SILT. Gravel is sub-rounded and rounded fine and		
9.60	50 (5,7/50 for 225mm)(C)						6.34	9.60				

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
10-10-2018	08:00	15.50	11.70	7.10	11.70	200	11.70	200
10-10-2019	17:00	25.94	11.70	23.70	25.50	128		

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-11.70m bgl followed on by rotary coring 11.70m-25.50m bgl. Chiselling 0.5hr 11.40-11.70m bgl. Rootlets encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT Hammer Energy Ratio - 66%. Rotary Coring SPT hammer energy ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.50			870	5.10	Water level rose overnight from 10.50m bgl on 4/10/18 to 5.10m bgl on 5/10/18.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH32**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/10/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508976.6	299537.5	15.94mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575/EQU2069 Energy Ratio: 73/82.18% | Sheet 3 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	D									Dark grey very gravelly clayey SILT. Gravel is sub-rounded and rounded fine and medium limestone. LOWE LINCOLNSHIRE LIMESTONE		
								(0.60)		Very weak dark grey sandy LIMESTONE recovered as slightly clayey very sandy sub-rounded and rounded fine to coarse limestone gravel. Sand is fine and medium. INFERIOR OOLITE GROUP		
10.10	D						5.74	10.20		Very weak dark grey sandy LIMESTONE recovered as slightly gravelly silty fine and medium sand. Gravel is sub-rounded and rounded fine limestone. LOWE LINCOLNSHIRE LIMESTONE		
								(0.30)				
10.40	D											
10.50	D						5.44	10.50		Very weak light grey sandy LIMESTONE recovered as slightly sandy sub-angular to rounded fine to coarse limestone GRAVEL. Sand is fine. LOWE LINCOLNSHIRE LIMESTONE		
10.60	D						5.34	10.60		Very stiff dark grey slightly sandy slightly gravelly silty CLAY. Sand is fine. Gravel is sub-rounded and rounded fine and medium limestone. INFERIOR OOLITE GROUP		
								(0.80)		*Becoming gravelly*		
11.10	N=58 (5,7/58 for 233mm)(S) B D											
11.40	N=50 (25 for 75mm/50 for 75mm)(S) D						4.54	11.40		Very weak grey sandy LIMESTONE recovered as sandy angular and sub-angular fine to coarse limestone gravel. Sand is fine to coarse. INFERIOR OOLITE GROUP		
								(0.30)				
							4.24	11.70		Very weak light grey LIMESTONE recovered as sub-angular limestone COBBLES. INFERIOR OOLITE GROUP		
								(0.60)				
11.70 - 12.50		75	0	0								
12.20	D											
							3.64	12.30		Stiff thinly laminated grey slightly gravelly silty CLAY with rare white foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
12.50	D											
13.00	D											
								(1.70)				
12.50 - 14.00 13.25	U	100	0	0								
14.00	N=39 (3,5/8,9,9,13)(S) D						1.94	14.00		Stiff to very stiff thinly laminated fissured grey slightly gravelly silty CLAY with rare white foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					11.70	200	11.70	200
					25.50	128		

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-11.70m bgl followed on by rotary coring 11.70m-25.50m bgl. Chiselling 0.5hr 11.40-11.70m bgl. Rootlets encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT Hammer Energy Ratio - 66%. Rotary Coring SPT hammer energy ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
11.70	12.50	Air/Mist	100%	yellow				
12.50	14.00	Air/Mist	100%	grey				
14.00	15.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.50			870	5.10	Water level rose overnight from 10.50m bgl on 4/10/18 to 5.10m bgl on 5/10/18.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme		Client: Interserve Construction Limited		Hole ID: **BH32**
	Contract Number: 17076	Date Started: 04/10/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **CP+RC**
	Easting: 508976.6	Northing: 299537.5	Ground Level: 15.94mAOD	Plant Used: Comacchio 205	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575/EQU2069 Energy Ratio: 73/82.18% | Sheet 4 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
14.50	D 0 D									Stiff to very stiff thinly laminated fissured grey slightly gravelly silty CLAY with rare white foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
14.00 - 15.50		100	0	0								
15.00	D											
15.50	D									*Rare pockets of fine brown sand.*		
16.00	D											
15.50 - 17.00		100	0	0								
16.50	D											
17.00	N=31 (4,5/7,6,8,10)(S) D									*Low mudstone cobble content.*		
17.50	D											
17.00 - 18.50		87	0	0								
18.00	D											
										Assessed zone of core loss		
18.50	D									*Occasional limestone nodules.*		
19.00	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					11.70	200	11.70	200
					25.50	128		

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-11.70m bgl followed on by rotary coring 11.70m-25.50m bgl. Chiselling 0.5hr 11.40-11.70m bgl. Rootlets encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT Hammer Energy Ratio - 66%. Rotary Coring SPT hammer energy ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
15.50	17.00	Air/Mist	100%	grey				
17.00	18.50	Air/Mist	100%	grey				
18.50	20.00	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.50			870	5.10	Water level rose overnight from 10.50m bgl on 4/10/18 to 5.10m bgl on 5/10/18.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED	Contract Name: A47 Improvements Programme	Client: Interserve Construction Limited				Hole ID: **BH32**
	Contract Number: 17076	Date Started: 04/10/2018	Logged By: RP	Checked By: SB	Status: FINAL	Hole Type: **CP+RC**
	Easting: 508976.6	Northing: 299537.5	Ground Level: 15.94mAOD	Plant Used: Comacchio 205	Print Date: 01/08/2019	Scale: 1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575/EQU2069 Energy Ratio: 73/82.18% | Sheet 5 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
18.50 - 20.00										Stiff to very stiff thinly laminated fissured grey slightly gravelly silty CLAY with rare white foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
19.50	D	100	0	0								
20.00	N=51 (6,8/10,11,16,14) (S) D											
20.50	D											
20.00 - 21.50		100	0	0								
21.00	D											
21.50	D 0 D							(11.94)				
21.74	U											
22.00	D											
21.50 - 23.00		100	0	0								
22.50	D											
23.00	N=48 (6,9/8,12,15,13)(S) D											
23.50	D	67	0	0								
23.00 - 24.50												

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					11.70	200	11.70	200
					25.50	128		

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-11.70m bgl followed on by rotary coring 11.70m-25.50m bgl. Chiselling 0.5hr 11.40-11.70m bgl. Rootlets encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT Hammer Energy Ratio - 66%. Rotary Coring SPT hammer energy ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
20.00	21.50	Air/Mist	100%	grey				
21.50	23.00	Air/Mist	100%	grey				
23.00	24.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.50			870	5.10	Water level rose overnight from 10.50m bgl on 4/10/18 to 5.10m bgl on 5/10/18.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH32**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/10/2018	RP	SB	FINAL	**CP+RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
508976.6	299537.5	15.94mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575/EQU2069 Energy Ratio: 73/82.18% | Sheet 6 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
										Stiff to very stiff thinly laminated fissured grey slightly gravelly silty CLAY with rare white foraminifera. Gravel is sub-angular and sub-rounded fine to coarse mudstone. LIAS GROUP		
24.50	D											
24.50 - 25.50 25.00	D	88	0	0								
										Assessed zone of core loss		
25.50	N=51 (6,6/51 for 290mm)(S) D											
							-10.0 0	25.94		End of Borehole at 25.94m		

25 26 27 28

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					11.70 25.50	200 128	11.70	200

Remarks:

Hand dug inspection pit terminated at 0.60m bgl on hard strata. Borehole drilled using cable percussive methods 0.60m-11.70m bgl followed on by rotary coring 11.70m-25.50m bgl. Chiselling 0.5hr 11.40-11.70m bgl. Rootlets encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. Cable percussive SPT Hammer Energy Ratio - 66%. Rotary Coring SPT hammer energy ratio - 82.18%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
24.50	25.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
10.50			870	5.10	Water level rose overnight from 10.50m bgl on 4/10/18 to 5.10m bgl on 5/10/18.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH33**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	05/10/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509036.1	299540.3	18.88mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunn | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 1 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D ES									Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone and flint. Roots and rootlets. TOPSOIL		
0.20	J 0ppm 2 X D						18.68	0.20		Firm orangish brown to light brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone and flint. Roots and rootlets. RIVER TERRACE DEPOSITS		
	J 0ppm						18.48	0.40		Stiff to very stiff light grey slightly gravelly silty CLAY. Gravel is sub-angular and sub-rounded fine to coarse limestone and flint. Roots and rootlets. RIVER TERRACE DEPOSITS		
0.50	2 X D B D ES J						18.28	0.60		Stiff to very stiff light grey silty CLAY. Roots and rootlets. INFERIOR OOLITE GROUP		
0.80	0ppm D						18.08	0.80		Stiff orangish brown to yellowish brown sandy silty CLAY. Sand is fine to coarse. INFERIOR OOLITE GROUP		
1.00	N=23 (4,8/7,7,5,4)(S) 2 X D						17.88	1.00		Stiff brown with light greyish brown mottling slightly gravelly silty CLAY. Gravel is angular and sub-angular fine to coarse limestone. Rare ironstone nodules. Rare rootlets. INFERIOR OOLITE GROUP		
	B J											
1.20	0ppm D							(0.42)				
							17.46	1.42		Very dense light grey and brown slightly gravelly fine to coarse SAND with a low sub-angular limestone cobble content. Gravel is sub-angular fine to coarse limestone. Rare ironstone nodules. INFERIOR OOLITE GROUP		
1.00 - 2.00		100	0	0								
1.60	B									*Fine to coarse gravel of iron nodules.*		
								(0.88)				
2.00	N=50 (25 for 115mm/50 for 230mm)(S)											
2.00 - 2.50		100	0	0								
							16.58	2.30		Very stiff light brown to yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
2.40	D											
							16.38	2.50		Light yellowish brown gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
								(0.60)				
2.50 - 3.50		95	0	0								
							15.78	3.10		Yellowish brown to brown with light grey mottling clayey gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
							15.62	3.26		Weak white and light yellowish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as sub-angular fine to coarse gravel and cobbles. INFERIOR OOLITE GROUP		
							15.42	3.46		Dense yellowish brown slightly clayey gravelly fine to coarse SAND with a low sub-angular limestone cobble content. Gravel is angular and sub-angular fine to coarse limestone. INFERIOR OOLITE GROUP		
3.50	N=48 (25 for 85mm/13,11,13,11)(S)											
3.50 - 4.30	D	100	0	0								
3.90								(1.04)				
4.30	B											
4.30 - 4.50		100	0	0								
							14.38	4.50		Weak light yellowish brown with some orangish brown iron staining sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP		
										J, 0, R, P, partly open = 5mm, sandy veneer *J, 20, R, UN, partly open = 5mm, sandy veneer* *J, 0, R, P/UN, sandy veneer* *4.76-4.98m J, 90, R, P, sandy clay veneer* *4.76-4.98m Fragmented core due to joints.*		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
01-11-2018	08:00	0.00	0.00	Dry	20.10	128	20.10	180
01-11-2018	17:00	3.50	0.00	Dry				
02-11-2018	10:00	3.50	0.00	Dry				
02-11-2018	15:00	6.40	5.00	Dry				
05-11-2018	10:00	6.40	4.00	Dry				
05-11-2018	17:15	12.75	12.00	11.90				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
					0.00	6.40	PLAIN	50
					6.40	12.40	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled using dynamic sampling 1.00m-4.50m bgl, 6.40m-13.50m bgl and 14.50m-17.50m bgl. Borehole drilled by rotary coring 4.50m-6.40m bgl, 13.50-14.50m bgl and 17.50-20.50m bgl. Pure bore drilling fluid added to assist recovery at 8.00m bgl. Roots encountered to 1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.40m bgl. Granular response zone 12.40-6.40m bgl. 35 bags of gravel used in installation - possible void. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
9.95	8.00		20	8.00	Fast inflow. Groundwater strike encountered at 9.95m bgl, rising to 8.00m after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH33**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	05/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509036.1	299540.3	18.88mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunn | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 2 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.01	C									Weak light yellowish brown with some orangish brown iron staining sandy LIMESTONE. Sand is fine to coarse. INFERIOR OOLITE GROUP		
5.16	Core									*J, 0, R, P, sandy veneer*		
4.50 - 6.00										*DB / J, 0, R, P, clean*		
										DB / J, 0, R, P, clean		
										DB / J, 0, R, P, clean		
										J, 10, R, P/ST, partly open = 5mm, clean		
5.46	C	95	95	76	11			(1.38)		*5.35-5.46m J, 80 R, P, partly open = 5mm, clayey veneer*		
										J, 5, R, P, tight, clean		
5.61	Core											
										J, 0, R, P, clean		
										J, 30, R, P, clean		
										DB		
							13.00	5.88		Assessed zone of core loss.		
							12.88	6.00		Weak light yellowish brown sandy LIMESTONE. Sand is fine to coarse. Some iron staining on joint surfaces. INFERIOR OOLITE GROUP		
6.00 - 6.40		100	100	70	8			(0.40)		*6-6.17m J, 80, R, P, iron staining*		
										J, 40, R, P, iron staining		
										6.22-6.33m Fragmented Core		
										6.33-6.4m J, 90, R, P, partly open = 5mm, clayey veneer		
6.40	N=18 (2,3/3,4,4,7)(S)						12.48	6.40		Medium dense yellowish brown silty clayey fine and medium SAND. INFERIOR OOLITE GROUP		
	B											
	D											
								(0.70)				
7.10	B						11.78	7.10		Light grey with some orangish brown and dark grey mottling fine and medium SAND. INFERIOR OOLITE GROUP		
	D											
6.40 - 8.00	ES	87	0	0								
								(0.70)				
							11.08	7.80		No core recovery.		
7.94	ES											
8.00	EW						10.88	8.00		Very dense light grey with yellowish brown and orangish brown mottling silty fine and medium SAND. INFERIOR OOLITE GROUP		
	N=50 (7,1/50 for 215mm) (S)											
	B											
	D											
								(0.86)				
8.00 - 9.50		100	0	0								
8.86	B						10.02	8.86		Orange to orangish brown with brown, yellowish brown and black mottling slightly gravelly clayey silty fine and medium SAND. Gravel is sub-angular and sub-rounded fine to coarse ferruginous sandstone. INFERIOR OOLITE GROUP		
	D											
								(0.64)				
9.50	N=26 (3,5/5,6,7,8)(S)						9.38	9.50		Medium dense orangish brown to brown fine and medium SAND (SPT Sample). INFERIOR OOLITE GROUP		
								(0.50)				
10.00	B						8.88	10.00				
	D											

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
06-11-2018	09:00	12.75	12.00	8.10
06-11-2018	17:15	16.00	13.50	10.20
07-11-2018	10:00	16.00	13.50	8.60
07-11-2018	14:45	20.50	20.10	9.80

Borehole Diameter

Depth (m)	Dia (mm)
20.10	128

Casing Diameter

Depth (m)	Dia (mm)
20.10	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled using dynamic sampling 1.00m-4.50m bgl, 6.40m-13.50m bgl and 14.50m-17.50m bgl. Borehole drilled by rotary coring 4.50m-6.40m bgl, 13.50-14.50m bgl and 17.50-20.50m bgl. Pure bore drilling fluid added to assist recovery at 8.00m bgl. Roots encountered to 1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.40m bgl. Granular response zone 12.40-6.40m bgl. 35 bags of gravel used in installation - possible void. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	6.40	PLAIN	50
6.40	12.40	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
9.95	8.00		20	8.00	Fast inflow. Groundwater strike encountered at 9.95m bgl, rising to 8.00m after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH33**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	05/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509036.1	299540.3	18.88mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunn | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 3 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
								(0.75)		Orangish brown to brown slightly gravelly fine and medium SAND. Gravel is brown and yellowish brown angular and sub-angular fine to coarse ironstone. INFERIOR OOLITE GROUP *Hole collapsed and casing was reamed to 10.00m bgl. No over core of SPT possible.*		
10.00 - 11.50 10.75	B D	100	0	0			8.13	10.75		Light yellowish brown to yellowish brown with brown, orangish brown and brownish grey mottling fine and medium SAND. INFERIOR OOLITE GROUP		
								(0.75)				
11.50	N=50 (4,8/50 for 220mm) (S)						7.38	11.50		Light brown with orange to orangish brown and yellowish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
11.50 - 12.00 11.80	D	100	0	0			7.12	11.76		Orange to orangish brown with dark orangish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
							6.99	11.89		Brown with dark brown and greyish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
							6.88	12.00		Orangish brown and light greyish brown mottled fine and medium SAND. INFERIOR OOLITE GROUP		
12.30	D						6.64	12.24		Light greyish brown with orange to orangish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
12.00 - 12.75		100	0	0			6.46	12.42				
12.50	D						6.45	12.49		Grey fine and medium SAND. INFERIOR OOLITE GROUP		
							6.39			Black slightly gravelly sandy CLAY. Sand fine and medium. Gravel is angular and sub-angular fine and medium siltstone and mudstone. LIAS GROUP		
							6.22	12.66		Grey with light grey, dark grey and black mottling clayey SILT. LIAS GROUP		
12.75	B									Light grey with grey, dark grey and black mottling slightly gravelly clayey silty fine to coarse SAND. Gravel is sub-angular and sub-rounded fine and medium mudstone. LIAS GROUP		
								(0.59)				
12.75 - 13.50		66	0	0			5.63	13.25		Assessed zone of core loss.		
13.50	N=50 (6,9/50 for 225mm) (S) ES											
								(1.25)				
13.50 - 14.50		0	0	0								
14.50	N=50 (3,8/50 for 235mm) (S)						4.38	14.50		Very stiff dark grey with some light grey mottling silty CLAY. LIAS GROUP		
							4.25	14.63		Light grey and grey mottled SILT. LIAS GROUP		
								(0.33)				
15.00	D						3.92	14.96				

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter

Depth (m)	Dia (mm)
20.10	128

Casing Diameter

Depth (m)	Dia (mm)
20.10	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	6.40	PLAIN	50
6.40	12.40	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled using dynamic sampling 1.00m-4.50m bgl, 6.40m-13.50m bgl and 14.50m-17.50m bgl. Borehole drilled by rotary coring 4.50m-6.40m bgl, 13.50-14.50m bgl and 17.50-20.50m bgl. Pure bore drilling fluid added to assist recovery at 8.00m bgl. Roots encountered to 1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.40m bgl. Granular response zone 12.40-6.40m bgl. 35 bags of gravel used in installation - possible void. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
9.95	8.00		20	8.00	Fast inflow. Groundwater strike encountered at 9.95m bgl, rising to 8.00m after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH33**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	05/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509036.1	299540.3	18.88mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunn | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 4 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
							3.76	15.12		Very stiff dark grey with light grey mottling silty CLAY. LIAS GROUP		
										Grey clayey gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone and mudstone. Occasional lignite present. LIAS GROUP		
14.50 - 16.00							3.63	15.25		Assessed zone of core loss.		
		50	0	0				(0.75)				
16.00	N=17 (5,4/3,3,5,6)(S)						2.88	16.00		Assessed zone of core loss.		
								(0.75)				
16.00 - 17.50		50	0	0			2.13	16.75		Firm to stiff grey slightly gravelly CLAY. Gravel is sub-angular fine to coarse limestone and mudstone. LIAS GROUP		
16.90	D						1.95	16.93		Firm to stiff indistinctly very thinly laminated grey fossiliferous CLAY. LIAS GROUP		
								(0.57)				
17.40	D											
17.50	N=44 (3,4/7,10,12,15)(S)						1.38	17.50		Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. Pyritic. LIAS GROUP		
17.60	D											
17.50 - 18.60		100	0	0								
18.10	D											
18.50	D											
								(3.00)				
18.80	D ES											
19.15	U											
18.60 - 20.10		93	0	0								
19.80	D											

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					20.10	128	20.10	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled using dynamic sampling 1.00m-4.50m bgl, 6.40m-13.50m bgl and 14.50m-17.50m bgl. Borehole drilled by rotary coring 4.50m-6.40m bgl, 13.50-14.50m bgl and 17.50-20.50m bgl. Pure bore drilling fluid added to assist recovery at 8.00m bgl. Roots encountered to 1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.40m bgl. Granular response zone 12.40-6.40m bgl. 35 bags of gravel used in installation - possible void. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
17.50	18.60	Air/Mist	0%		0.00	6.40	PLAIN	50
18.60	20.10	Air/Mist	0%		6.40	12.40	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
9.95	8.00		20	8.00	Fast inflow. Groundwater strike encountered at 9.95m bgl, rising to 8.00m after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH33**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	05/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509036.1	299540.3	18.88mAOD	Comacchio 205	01/08/2019	1:25

Weather: Sunn | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 5 of 5

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.10	N=50 (6,9/50 for 280mm) (S) SPT									Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. Pyritic. LIAS GROUP		
							-1.62	20.50		End of Borehole at 20.50m		

21 22 23 24 25

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					20.10	128	20.10	180

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
					0.00	6.40	PLAIN	50
					6.40	12.40	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled using dynamic sampling 1.00m-4.50m bgl, 6.40m-13.50m bgl and 14.50m-17.50m bgl. Borehole drilled by rotary coring 4.50m-6.40m bgl, 13.50-14.50m bgl and 17.50-20.50m bgl. Pure bore drilling fluid added to assist recovery at 8.00m bgl. Roots encountered to 1.40m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 12.40m bgl. Granular response zone 12.40-6.40m bgl. 35 bags of gravel used in installation - possible void. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
9.95	8.00		20	8.00	Fast inflow. Groundwater strike encountered at 9.95m bgl, rising to 8.00m after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH34**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509024.1	299508.4	24.02mAOD	Commachio 305	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 1 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J									Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone and flint. Roots and rootlets present. TOPSOIL		
0.20	0ppm 2 X D ES J 0ppm						23.77	0.25		Light yellowish brown to light brown sandy gravelly CLAY with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse limestone. Some roots and rootlets present. Weathered INFERIOR OOLITE GROUP		
0.50	2 X D B J 0ppm							(0.75)				
1.00	N=47 (10,14/18,13,9,7) (S) 2 X D B J						23.02	1.00		Weak light yellowish brown and light grey sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy angular and sub-angular fine to coarse gravel. Weathered INFERIOR OOLITE GROUP		
								(0.30)				
							22.72	1.30		Assessed zone of core loss.		
							22.52	1.50		Weak yellowish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy angular and sub-angular fine to coarse gravel with a moderate sub-angular cobble content. Weathered INFERIOR OOLITE GROUP		
1.70	D						22.32	1.70		Weak yellowish brown and orangish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
							22.22	1.80		Weak yellowish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy angular and sub-angular fine to coarse gravel with a low sub-angular cobble content. Weathered INFERIOR OOLITE GROUP		
								(0.36)				
							21.86	2.16		Firm yellowish brown and orangish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
1.50 - 3.00		80	0	0			21.73	2.29		Very weak yellowish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy angular and sub-angular fine to coarse gravel with a low sub-angular cobble content. Weathered INFERIOR OOLITE GROUP		
							21.58	2.44		Firm yellowish brown and orangish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse limestone. Weathered INFERIOR OOLITE GROUP		
							21.50	2.52		Very weak yellowish brown highly to moderately weathered sandy LIMESTONE. Sand is fine to coarse. Recovered as sandy angular and sub-angular fine to coarse gravel with a low sub-angular cobble content. Weathered INFERIOR OOLITE GROUP		
							21.32	2.70		Assessed zone of core loss.		
								(0.30)				
							21.02	3.00		Yellowish brown, orangish brown and light brown to light greyish brown clayey sandy sub-angular and sub-rounded fine to coarse limestone GRAVEL with a low sub-angular limestone cobble content. Sand is fine to coarse. Weathered INFERIOR OOLITE GROUP		
3.10	D							(0.50)				
							20.52	3.50		Assessed zone of core loss.		
3.00 - 4.50		33	0	0								
								(1.00)				
4.50	D						19.52	4.50		Very weak yellowish brown, white and light grey fossiliferous LIMESTONE. INFERIOR OOLITE GROUP		
4.70	B D						19.32	4.70		Brown and grey mottled fine and medium SAND. INFERIOR OOLITE GROUP		
							19.22	4.80		Light grey with grey, dark grey and orange to orangish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
29-10-2017	17:00	11.85	10.00	Dry
27-09-2018	00:00	7.70	6.00	Dry
27-09-2018	08:00	0.00	0.00	Dry
29-10-2018	10:00	7.70	8.00	Dry
30-10-2018	09:00	11.85	10.00	6.75
30-10-2018	17:00	19.00	11.00	17.30

Borehole Diameter

Depth (m)	Dia (mm)
25.50	128

Casing Diameter

Depth (m)	Dia (mm)
11.00	180

Flush Information

Top (m)	Base (m)	Flush Type	Return	Flush Colour
1.00	3.00	Air/Mist	100%	yellow
3.00	4.50	Air/Mist	0%	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	14.50	PLAIN	50
14.50	25.50	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 10.00m-25.50m bgl. Borehole drilled by dynamic sampling 4.50m-10.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 25.50m bgl. Granular response zone 25.50-14.50m bgl. Roots encountered to 1.00m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.40			20	13.40	Groundwater seepage encountered at 13.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH34**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509024.1	299508.4	24.02mAOD	Commachio 305	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 2 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
4.50 - 6.00		86	0	0				(1.00)		Light grey with grey, dark grey and orange to orangish brown mottling fine and medium SAND. INFERIOR OOLITE GROUP		
							18.22	5.80		Assessed zone of core loss.		
6.00	N=31 (2,2/3,6,7,15)(S) B D ES						18.02	6.00		Dense becoming very dense light grey and orangish brown mottled gravelly clayey silty fine to coarse SAND. Gravel is sub-angular fine to coarse sandstone. INFERIOR OOLITE GROUP		
6.00 - 7.33		100	0	0				(2.00)				
7.33	N=50 (5,6/50 for 240mm) (S)											
7.90	ES EW						16.02	8.00		Yellowish brown to light brown with orangish brown and grey mottling fine and medium SAND. INFERIOR OOLITE GROUP		
8.70	B							(1.20)				
8.00 - 9.50		80	0	0								
							14.82	9.20		Assessed zone of core loss.		
9.50	N=46 (2,4/8,12,14,12)(S)									*Yellowish brown to light brown with orangish brown and grey mottling fine to medium SAND. NORTHAMPTON SAND FORMATION (From SPT)*		
										Dark grey and light grey mottled clayey SILT. Black organic layer at 9.85m 10mm thick. LIAS GROUP (From SPT)		

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
31-10-2018	09:30	19.00	11.00	6.90	25.50	128	11.00	180
31-10-2018	17:00	25.50	11.00	13.60				

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
10.00	11.50	Air/Mist	100%	grey	0.00	14.50	PLAIN	50
					14.50	25.50	SLOTTED	50

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 10.00m-25.50m bgl. Borehole drilled by dynamic sampling 4.50m-10.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 25.50m bgl. Granular response zone 25.50-14.50m bgl. Roots encountered to 1.00m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.40			20	13.40	Groundwater seepage encountered at 13.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH34**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509024.1	299508.4	24.02mAOD	Commachio 305	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 3 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
9.50 - 11.50		18	0	0				(1.95)		Assessed zone of core loss.		
11.00	D											
							12.87	11.15		Dark grey with some light grey mottling slightly gravelly clayey SILT. Gravel is sub-angular and sub-rounded fine to coarse siltstone and mudstone. LIAS GROUP		
							12.67	11.35		Dark grey with some light grey mottling clayey SILT. LIAS GROUP		
11.50	50 (7,12/50 for 205mm) (S)						12.52	11.50		Assessed zone of core loss.		
							12.37	11.65		Firm to stiff dark grey and light grey mottled silty CLAY. LIAS GROUP		
							12.17	11.85		Firm grey clayey SILT. LIAS GROUP		
							12.09	11.93		Very stiff light grey to grey slightly clayey SILT. Pyritic. Some lignite present. LIAS GROUP		
11.50 - 13.00		90	0	0				(0.97)				
12.60	U											
							11.12	12.90		Very stiff light grey with brownish grey and black mottling sandy clayey SILT. Pyritic. Lignite present. Pyritization of some of lignified material. LIAS GROUP		
							11.02	13.00		Stiff grey, light grey and brownish grey mottled sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine to coarse limestone, mudstone and ironstone. Pyritic. Some black lignified material present. LIAS GROUP		
13.20	D							(0.41)				
13.41	C						10.61	13.41		Very weak grey slightly weathered fossiliferous LIAS GROUP		
13.00 - 14.50		100	46	46				(0.69)				
							9.92	14.10		Very stiff indistinctly very thinly laminated dark grey fossiliferous silty CLAY locally tending to extremely weak mudstone. LIAS GROUP		
14.30	D											
14.50	N=41 (5,9/9,9,11,12)(S)											
14.80	D											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.50	128	11.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 10.00m-25.50m bgl. Borehole drilled by dynamic sampling 4.50m-10.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 25.50m bgl. Granular response zone 25.50-14.50m bgl. Roots encountered to 1.00m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
11.90	13.00	Air/Mist	100%	grey
13.00	14.50	Air/Mist	100%	grey
14.50	16.00	Air/Mist	20%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	14.50	PLAIN	50
14.50	25.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.40			20	13.40	Groundwater seepage encountered at 13.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH34**

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/2018	RP	SB	FINAL	**RC**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509024.1	299508.4	24.02mAOD	Commachio 305	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 4 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
15.10	B									Very stiff indistinctly very thinly laminated dark grey fossiliferous silty CLAY locally tending to extremely weak mudstone. LIAS GROUP		
14.50 - 16.00 15.30	D											
		100	0	0				(1.90)				
15.80	D											
							8.02	16.00		Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY. LIAS GROUP		
16.60	D ES											
16.00 - 17.50 16.75	U	100	0	0				(1.50)				
17.40	D											
17.50	N=50 (7,10/50 for 275mm)(S) SPT						6.52	17.50		Very stiff indistinctly very thinly laminated dark grey CLAY. LIAS GROUP		
17.90	D											
								(1.23)				
17.50 - 19.00 18.30	D	83	0	0								
18.60	D ES											
							5.29	18.73		Very weak dark grey MUDSTONE. LIAS GROUP		
							5.22	18.80		Assessed zone of core loss.		
							5.02	19.00		Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. LIAS GROUP		
19.20	D											
		100	0	0				(1.40)				
19.00 - 20.50 19.80	D											

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.50	128	11.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 10.00m-25.50m bgl. Borehole drilled by dynamic sampling 4.50m-10.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 25.50m bgl. Granular response zone 25.50-14.50m bgl. Roots encountered to 1.00m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour
16.00	17.50	Air/Mist	20%	grey
17.50	19.00	Air/Mist	0%	
19.00	20.50	Air/Mist	100%	grey

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	14.50	PLAIN	50
14.50	25.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.40			20	13.40	Groundwater seepage encountered at 13.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH34**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509024.1	299508.4	24.02mAOD	Commachio 305	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 5 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
20.30	D									Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. LIAS GROUP		
							3.62	20.40		Very weak dark grey fossiliferous MUDSTONE. LIAS GROUP		
							3.52	20.50		Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. LIAS GROUP		
20.90	D											
20.50 - 22.00		100	0	0								
21.40	D											
21.90	D											
22.37	D											
22.00 - 22.86		100	0	0				(5.00)				
22.90	D											
23.16	D U											
22.86 - 24.00		94	0	0						*Assessed zone of core loss*		
23.60	D											
24.30	D											
		100	0	0								
24.00 - 25.50												
24.80	D											

21 22 23 24 25

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					25.50	128	11.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 10.00m-25.50m bgl. Borehole drilled by dynamic sampling 4.50m-10.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 25.50m bgl. Granular response zone 25.50-14.50m bgl. Roots encountered to 1.00m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information					Installation			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)
20.50	22.00	Air/Mist	100%	grey	0.00	14.50	PLAIN	50
21.40	22.00	Air/Mist	100%	grey	14.50	25.50	SLOTTED	50
22.00	22.86	Air/Mist	100%	grey				
22.86	24.00	Air/Mist	100%	grey				
24.00	25.50	Air/Mist	100%	grey				

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.40			20	13.40	Groundwater seepage encountered at 13.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH34**
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/10/2018	RP	SB	FINAL	**RC**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509024.1	299508.4	24.02mAOD	Commachio 305	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: 305 Energy Ratio: 77.57% | Sheet 6 of 6

Samples & In Situ Testing							Strata Details				Groundwater	
Depth	Tests/Samples	TCR	SCR	RQD	FI	Water Added	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
25.30	D						-1.48	25.50		Very stiff indistinctly very thinly laminated dark grey fossiliferous CLAY locally tending to extremely weak mudstone. LIAS GROUP End of Borehole at 25.50m		

26 27 28 29 30

Start & End of Shift Observations				
Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
25.50	128	11.00	180

Remarks:

Hand dug inspection pit terminated at 1.00m bgl on hard strata. Borehole drilled by rotary coring 1.00m-4.50m bgl and 10.00m-25.50m bgl. Borehole drilled by dynamic sampling 4.50m-10.00m bgl. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed to 25.50m bgl. Granular response zone 25.50-14.50m bgl. Roots encountered to 1.00m bgl. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Flush Information				
Top (m)	Base (m)	Flush Type	Return	Flush Colour

Installation			
Top (m)	Base (m)	Type	Dia (mm)
0.00	14.50	PLAIN	50
14.50	25.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.40			20	13.40	Groundwater seepage encountered at 13.40m bgl, no rise after 20 minutes.

Fracture spacing reported in mm as Min, Average and Max values. TCR, SCR and RQD reported in %. Hand vane (HV) reported in kPa.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH35**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	11/10/18	WN	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509122.8	299487.0	19.86mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J			(0.30)		Dark brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent sub-angular and sub-rounded fine to coarse gravel sized fragments of brick. Frequent rootlets. MADE GROUND		
	PID	0.0ppm						
0.20	2 X D ES J		19.56	0.30		Firm light grey and light brown slightly sandy slightly gravelly silty CLAY. Sand is fine. Gravel is sub-angular and sub-rounded fine and medium limestone. RIVER TERRACE DEPOSITS 3		
	PID	0.0ppm						
0.50	2 X D B D ES J			(0.80)				
	PID	0.0ppm						
1.00	2 X D B J		18.76	1.10		Very stiff light grey mottled black and reddish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is angular and sub-rounded fine and medium limestone. Weathered INFERIOR OOLITE GROUP		
	PID	0.0ppm						
1.20	SPT	N=51 (2,2/51 for 225mm)						
1.20 - 1.70	2 X D B			(0.60)				
			18.16	1.70		Very weak light brown sandy LIMESTONE recovered as clayey silty SAND and angular and sub-angular fine to coarse limestone GRAVEL. Sand is fine to coarse. INFERIOR OOLITE GROUP		
1.90	D							
2.00	D							
2.00 - 2.40	B			(0.70)				
2.40	SPT	N=50 (25 for 75mm/50 for 30mm)	17.45	2.40		End of Borehole at 2.40m		
4.00	B							

1 2 3 4 5

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
11-10-2018	09:00	0.00	0.00	Dry	2.40	200		
11-10-2018	15:00	2.40	0.00					

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
2.00	2.40	01:30					

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-2.40m bgl. Roots encountered to 0.30m bgl. Chiselling: 1.5hr 2.00-2.40m bgl. Hole terminated at 2.40m bgl on impenetrable limestone strata. Upon completion, borehole backfilled with bentonite pellets. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH36**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	15/09/18	WN	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509428.1	299400.2	19.54mAOD	Dando 1500	01/08/2019	1:25

Weather: | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	B, J					Firm brown sandy gravelly CLAY with a low angular and sub-angular limestone cobble content. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse flint and limestone. Roots present. TOPSOIL		
0.20	B, ES, J			(0.60)				
0.50	B, D, ES, EW, J		18.94	0.60		Brown slightly clayey slightly silty gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse flint and limestone. Roots present. RIVER TERRACE DEPOSITS 3		
0.60	B			(0.30)				
0.60 - 0.70	D		18.64	0.90		Yellowish brown, becoming brown with depth, slightly clayey gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse flint and limestone. RIVER TERRACE DEPOSITS 3		
1.00	B, D, ES, J		18.44	1.10		Very dense brown slightly clayey slightly silty gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse flint and limestone. RIVER TERRACE DEPOSITS 3		
1.10 - 1.20	B							
1.20	SPT	N=50 (10,19/50 for 155mm)						
1.20 - 1.50	B			(0.80)				
1.90	D		17.64	1.90		Very dense orangish brown, brown, grey, dark grey and reddish brown sandy sub-angular and sub-rounded fine to coarse flint, limestone and mudstone GRAVEL with a low angular and sub-angular limestone and mudstone cobble content. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
2.00 - 2.50	B							
2.50	SPT	N=50 (5,9/50 for 225mm)		(1.10)				
2.50 - 3.00	D, B							
3.00	D, ES		16.54	3.00		Stiff light grey, orangish brown, yellowish brown and brown mottled silty CLAY. GREAT OOLITE GROUP		
3.10	D			(0.40)				
3.40	D		16.14	3.40		Very weak light yellowish brown and light brownish grey to light grey sandy LIMESTONE. Sand is fine to coarse. Recovered as gravelly fine to coarse sand. Gravel is sub-angular and sub-rounded fine to coarse limestone. GREAT OOLITE GROUP		
3.70	D		15.84	3.70		Very dense orangish brown to brown slightly gravelly fine to coarse SAND. Gravel is angular and sub-angular fine to coarse limestone. GREAT OOLITE GROUP		
3.70 - 4.10	B							
3.80	SPT	N=50 (25 for 75mm/50 for 75mm)						
4.20	D			(0.70)				
4.40	SPT, D	N=50 (25 for 75mm/50 for 75mm)	15.14	4.40		End of Borehole at 4.40m		

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
12-10-2018	13:00	0.00	0.00	
15-10-2018	15:00	4.20	4.00	

Borehole Diameter

Depth (m)	Dia (mm)
4.40	200

Casing Diameter

Depth (m)	Dia (mm)

Chiselling

From (m)	To (m)	Duration	Remarks
3.20	4.20	01:00	
4.20	4.40	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	0.60	PLAIN	50
0.60	2.80	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-4.40m bgl. Roots and rootlets observed to a depth of 0.90m bgl. 300 litres added to assist boring 1.20-2.80m bgl, 200mm diameter casing installed to 4.00m bgl. Chiselling: 1.5 hr 1.20-2.80m bgl. 0.25hr 3.20-3.60m bgl, 0.75 hr 3.60-4.20m bgl and 0.5hr 4.20-4.40m bgl. Borehole terminated at 4.40mbgl on impenetrable limestone strata. Upon completion, a slotted standpipe (50mm diam ID HDPE) was installed 2.80m bgl. Granular response zone 2.80-0.60m. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH37**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/09/18 - 05/09/18	RP	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509541.2	299373.2	18.78mAOD	Dando 1500	01/08/2019	1:25

Weather: | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES					Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. TOPSOIL		
	J					*Reworked*		
0.10 - 0.20	B							
0.20	ES							
	J							
0.20 - 0.50	B							
0.50	D							
	ES							
	EW			(1.20)				
	J							
0.50 - 0.70	B							
1.00	D							
	ES							
	J							
1.00 - 1.20	B		17.58	1.20				
1.20	SPT	N=12 (2,2/2,2,3,5)				Medium dense brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3		
	D							
1.20 - 1.70	B							
				(0.70)				
1.90 - 2.40	B		16.88	1.90				
2.00	D					Very stiff light grey slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is sub-rounded fine to coarse mudstone. GREAT OOLITE GROUP		
2.20 - 2.70	UT	Ublow = 120		(0.60)				
2.50	D		16.28	2.50				
2.50 - 3.00	B					Light grey slightly clayey silty fine and medium SAND. GREAT OOLITE GROUP		
				(0.50)				
3.00	SPT	N=44 (7,10/10,11,11,12)	15.78	3.00		Very stiff light grey mottled orangish brown sandy CLAY. Sand is fine and medium. GREAT OOLITE GROUP		
	D							
3.00 - 3.50	B							
				(0.50)				
			15.28	3.50		End of Borehole at 3.50m		

1 2 3 4 5

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
04-09-2018	11:00	3.50	3.00		3.50	200	3.00	200
10-09-2018	15:00	0.00	0.00	Dry				

Chiselling			
From (m)	To (m)	Duration	Remarks
1.60	3.50	04:00	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-3.50m bgl. 200mm diameter casing installed to 3.00m bgl. UT sample attempted at 2.20m bgl - No recovery. Chiselling: 4hrs 1.60-3.50m bgl. Borehole reattempted as BH37A as a result of unretrievable UT. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH37A**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/09/18 - 05/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509541.7	299375.1	19.32mAOD	Dando 1500	01/08/2019	1:25

Weather: | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	D					Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. Roots and rootlets present. Reworked TOPSOIL		
	J							
0.20	D			(0.50)				
	J							
0.50	D		18.82	0.50		Firm orangish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. Roots and rootlets present. RIVER TERRACE DEPOSITS 3		
	J							
1.00	D							
	J			(1.20)				
1.20	SPT	N=13 (2,2/2,6,2,3)						
	D							
1.20 - 1.40	B							
1.70	D		17.62	1.70		Very stiff grey mottled dark grey silty CLAY. GREAT OOLITE GROUP		
2.00 - 2.30	B							
2.00 - 2.50	UT	Ublow = 120		(0.70)				
2.40	SPT	N=50 (7,8/50 for 165mm)	16.92	2.40		Very dense light grey mottled orange slightly clayey silty fine SAND. GREAT OOLITE GROUP		
	D							
2.40 - 3.00	B							
				(0.80)				
3.20	SPT	N=29 (7,8/7,7,8,7)	16.12	3.20		Stiff light grey mottled orangish brown and reddish brown slightly gravelly sandy CLAY. Sand is fine and medium. Gravel is sub-angular fine to coarse ironstone. GREAT OOLITE GROUP		
	D							
3.20 - 3.40	B							
				(0.70)				
3.80	D							
3.90	D		15.42	3.90		Stiff light grey mottled orangish brown sandy CLAY. Sand is fine to coarse. GREAT OOLITE GROUP		
				(0.60)				
4.50	SPT	N=50 (8,22/50 for 105mm)	14.82	4.50		Very dense light yellowish brown mottled light grey clayey fine to coarse SAND. INFERIOR OOLITE GROUP		
	D							
4.50 - 5.00	B							
				(0.50)				
5.00	SPT	N=50 (25,0/50 for 30mm)	14.32	5.00				

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
04-09-2018	16:00	0.00	0.00	Dry
05-09-2018	14:00	5.00	5.00	

Borehole Diameter

Depth (m)	Dia (mm)
5.00	200

Casing Diameter

Depth (m)	Dia (mm)
5.00	200

Chiselling

From (m)	To (m)	Duration	Remarks
1.20	5.00	04:00	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	2.50	PLAIN	50
2.50	5.00	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20-5.10m bgl. 200mm diameter casing installed to 5.00m bgl. UT sample attempted at 2.00m bgl - No recovery. Roots encountered to 1.70m bgl. Chiselling: 4 hrs 1.20-5.10m bgl. Borehole terminated at 5.10m bgl on impenetrable limestone strata. Upon completion, borehole installed with a slotted standpipe (50mm diam ID HDPE) to 5.10m bgl. Granular response zone 5.10-2.50m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH37A**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	04/09/18 - 05/09/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509541.7	299375.1	19.32mAOD	Dando 1500	01/08/2019	1:25

Weather: | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
	D		14.22	5.10		Very weak yellowish brown fossiliferous coarse calcareous SANDSTONE and sandy LIMESTONE recovered as sub-angular and sub-rounded coarse gravel. Frequent ferruginous nodules. INFERIOR OOLITE GROUP		
						End of Borehole at 5.10m		

6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
5.00	200	5.00	200

Chiselling

From (m)	To (m)	Duration	Remarks
1.20	5.00	04:00	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	2.50	PLAIN	50
2.50	5.00	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20-5.10m bgl. 200mm diameter casing installed to 5.00m bgl. UT sample attempted at 2.00m bgl - No recovery. Roots encountered to 1.70m bgl. Chiselling: 4 hrs 1.20-5.10m bgl. Borehole terminated at 5.10m bgl on impenetrable limestone strata. Upon completion, borehole installed with a slotted standpipe (50mm diam ID HDPE) to 5.10m bgl. Granular response zone 5.10-2.50m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH38**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	30/08/18 - 31/08/18	RP	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509778.5	299318.1	18.65mAOD	Dando 2500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 0.50	B					Firm slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse flint, sandstone and limestone. Roots present. Reworked TOPSOIL		
0.10	D							
	J							
	PID	0.0ppm		(0.50)				
0.20	D							
	ES							
	EW							
	J		18.15	0.50				
	PID	0.0ppm				Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse flint, sandstone and limestone. Reworked RIVER TERRACE DEPOSITS 3		
0.50	D							
	ES							
	J							
0.50 - 1.20	B							
0.50	PID	7.2ppm		(0.70)				
1.00	D							
	ES							
	J							
	PID	6.8ppm	17.45	1.20				
1.20	SPT	N=31 (6,7/5,9,8,9)				Dense orangish brown clayey gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3		
	D							
				(0.80)				
2.00 - 2.50	B		16.65	2.00		Orangish brown, brown, white and grey slightly clayey slightly silty slightly sandy sub-angular to rounded fine to coarse flint, sandstone and limestone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
				(0.55)				
2.55	D		16.10	2.55		Very stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse flint, sandstone and limestone. RIVER TERRACE DEPOSITS 3		
				(0.45)				
3.00	SPT	N=12 (1,2/2,3,3,4)	15.65	3.00		Firm brown slightly sandy CLAY. Sand is fine and medium. GREAT OOLITE GROUP		
	D							
	SPT							
				(1.00)				
4.00	ES		14.65	4.00		Orangish brown and brown slightly clayey gravelly fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse flint, sandstone and limestone. GREAT OOLITE GROUP		
4.00 - 4.50	B							
				(0.50)				
4.50	SPT	N=50 (7,10/50 for 215mm)	14.15	4.50		Very dense orangish brown and brown clayey silty gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse sandstone and limestone. INFERIOR OOLITE GROUP		
4.50 - 5.00	B							
4.55 - 5.00	B							

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
30-08-2018	11:00	0.00	0.00		8.10	200	2.50	200
30-08-2018	16:00	3.00	2.50				2.80	200
31-08-2018	09:00	3.00	2.50					
31-08-2018	15:00	8.10	2.80					

Chiselling			
From (m)	To (m)	Duration	Remarks
8.00	8.10	00:30	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-8.10m bgl. 200mm diameter casing installed to 2.80m bgl. Roots encountered to 0.50m bgl. Chiselling: 0.5 hr 8.00-8.10m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 63%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH38**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	30/08/18 - 31/08/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509778.5	299318.1	18.65mAOD	Dando 2500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Very dense orangish brown and brown clayey silty gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse sandstone and limestone. INFERIOR OOLITE GROUP		
6.00	SPT	N=50 (9,12/50 for 180mm)						
6.00 - 6.50	B D			(3.00)				
7.50	SPT	N=59 (25 for 110mm/59 for 125mm)	11.15	7.50		Very dense yellowish brown, light yellowish brown and brown slightly clayey gravelly fine to coarse SAND with a low angular and sub-angular limestone cobble content. Gravel is sub-angular fine to coarse sandstone and sandy limestone. INFERIOR OOLITE GROUP		
7.50 - 8.00	B			(0.50)				
8.00 - 8.10	D		10.65	8.00		Extremely weak yellowish brown, white and grey moderately weathered MUDSTONE. LIAS GROUP		
			10.55	8.10		End of Borehole at 8.10m		

6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					8.10	200	2.50 2.80	200 200

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
8.00	8.10	00:30					

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-8.10m bgl. 200mm diameter casing installed to 2.80m bgl. Roots encountered to 0.50m bgl. Chiselling: 0.5 hr 8.00-8.10m bgl. Upon completion, borehole backfilled with bentonite pellets. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 63%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH39**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/18 - 30/08/18	RP	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
510011.1	299238.3	16.93mAOD	Dando 2500	01/08/2019	1:25

Weather: | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	ES J			(1.20)		Brown clayey silty sandy angular to sub-rounded fine to coarse flint and limestone GRAVEL. Sand is fine to coarse. Roots and rootlets. TOPSOIL *Reworked*		
0.10 - 0.50	B							
0.10	PID	28.3ppm						
0.20	J							
	PID	25.3ppm						
0.50	ES EW J							
0.50 - 1.00	B							
0.50	PID	44.6ppm						
1.00	ES J							
1.20	SPT	N=31 (6,11/8,9,8,6)	15.73	1.20		Dense brown clayey silty sandy angular and sub-angular fine to coarse flint and limestone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
1.20 - 1.70	B			(0.80)				
2.00 - 2.50	B		14.93	2.00		Medium dense becoming dense grey, dark grey, orangish brown, brown and black slightly clayey slightly silty slightly sandy sub-angular and sub-rounded flint and limestone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
3.00	SPT	N=29 (4,5/6,7,8,8)		(3.50)				
3.00 - 3.50	B							
4.50	SPT	N=36 (2,5/6,7,9,14)						
4.50 - 5.00	B							

1 2 3 4 5

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)
29-08-2018	14:00	0.00	0.00	Dry
29-08-2018	16:00	1.20	0.00	
30-08-2018	09:00	1.20	0.00	
30-08-2018	17:00	7.20	5.70	

Borehole Diameter

Depth (m)	Dia (mm)
7.20	200

Casing Diameter

Depth (m)	Dia (mm)
7.20	200

Chiselling

From (m)	To (m)	Duration	Remarks
7.10	7.20	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	2.00	PLAIN	50
2.00	5.50	SLOTTED	50

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20-7.20m bgl. 200mm diameter casing installed to 5.10m bgl. Roots and rootlets observed to 0.80m bgl. Chiselling: 0.5hr 7.10-7.20m bgl. Borehole terminated at 7.20m bgl on impenetrable limestone stratum. Upon completion, borehole installed with a slotted standpipe (50mm diam ID HDPE) to 5.50m bgl. Granular response zone 5.50-2.00m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 63%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:	Client:	Hole ID:
A47 Improvements Programme	Interserve Construction Limited	**BH39**

Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	29/08/18 - 30/08/18	RP	SB	FINAL	**CP**

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
510011.1	299238.3	16.93mAOD	Dando 2500	01/08/2019	1:25

Weather: | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
						Medium dense becoming dense grey, dark grey, orangish brown, brown and black slightly clayey slightly silty slightly sandy sub-angular and sub-rounded flint and limestone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
5.50 - 6.00	B D		11.43	5.50 (0.50)		Stiff light grey mottled orangish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is sub-angular and sub-rounded fine and medium flint. RIVER TERRACE DEPOSITS 3		
6.00 6.00 - 6.50	SPT B D	N=50 (25 for 110mm/50 for 90mm)	10.93	6.00 (1.10)		Very stiff orangish brown to yellowish brown very sandy CLAY. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
7.10 - 7.20	B		9.83 9.73	7.10 7.20		Very weak sandy LIMESTONE recovered as orangish brown, reddish brown and yellowish brown sandy angular and sub-angular fine to coarse GRAVEL. Sand is fine to coarse. Frequent ferruginous nodules, veins and iron staining. GREAT OOLITE GROUP End of Borehole at 7.20m		

6 7 8 9 10

Start & End of Shift Observations

Date	Time	Depth (m)	Casing (m)	Water (m)

Borehole Diameter		Casing Diameter	
Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
7.20	200	7.20	200

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20-7.20m bgl. 200mm diameter casing installed to 5.10m bgl. Roots and rootlets observed to 0.80m bgl. Chiselling: 0.5hr 7.10-7.20m bgl. Borehole terminated at 7.20m bgl on impenetrable limestone stratum. Upon completion, borehole installed with a slotted standpipe (50mm diam ID HDPE) to 5.50m bgl. Granular response zone 5.50-2.00m bgl. Reworked refers to ploughed ground. SPT Hammer Energy Ratio - 63%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Chiselling

From (m)	To (m)	Duration	Remarks
7.10	7.20	00:30	

Installation

Top (m)	Base (m)	Type	Dia (mm)
0.00	2.00	PLAIN	50
2.00	5.50	SLOTTED	50

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH40**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	17/10/18 - 18/10/18	WN	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
510083.8	299318.7	16.86mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D ES J			(0.30)		Dark brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent sub-angular and sub-rounded fine to coarse gravel sized fragments of brick. Frequent rootlets. MADE GROUND		
	PID	0.0ppm	16.56	0.30				
0.20	2 X D ES EW J					Dark brown slightly gravelly silty fine SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. RIVER TERRACE DEPOSITS 3		
	PID	0.0ppm						
0.50	2 X D ES J			(0.70)				
	PID	0.0ppm						
1.00	B D J		15.86	1.00		Soft orangish brown to brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is angular and sub-angular fine to coarse flint. RIVER TERRACE DEPOSITS 3		
	PID	0.0ppm						
1.20	SPT 2 X D D	N=7 (1,1/2,2,1,2)						
1.20 - 1.70	B			(1.00)				
2.00	D		14.86	2.00		Firm orangish brown to brown sandy CLAY. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
				(0.30)				
2.30	D		14.56	2.30		Medium dense becoming dense orangish brown, brown, black, and grey slightly clayey slightly silty sandy angular and sub-rounded fine to coarse flint, limestone and mudstone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
2.50	SPT	N=12 (1,2/2,3,3,4)						
2.50 - 3.00	B							
3.00	SPT D	N=39 (2,3/5,5,14,15)						
3.00 - 3.50	B			(1.80)				
3.50	D							
4.00	D							
4.10 - 4.20	D		12.76	4.10		Medium dense orangish brown, brown, black and grey gravelly fine to coarse SAND with a low sub-angular flint cobble content. Gravel is angular and sub-angular fine to coarse flint, limestone, and mudstone. RIVER TERRACE DEPOSITS 3		
4.50	SPT D	N=25 (4,5/6,6,7,6)		(1.80)				
4.50 - 5.00	B							
5.00 - 5.20	D							

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
17-10-2018	16:00	0.00	0.00	Dry	6.00	200	6.00	200
18-10-2018	14:00	6.00	6.00					

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
2.30	4.00	01:30					
5.00	5.20	00:30					

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-6.00m bgl. 200mm diameter casing installed to 6.00m bgl. Chiselling: 1.5 hr 2.30-4.10m bgl and 0.5 hr 5.00-5.20m bgl. 200 litres of water added to assist boring 2.30-4.10m bgl. Roots encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH40**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	17/10/18 - 18/10/18	WN	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
510083.8	299318.7	16.86mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 2 of 2

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
5.30	D					Medium dense orangish brown, brown, black and grey gravelly fine to coarse SAND with a low sub-angular flint cobble content. Gravel is angular and sub-angular fine to coarse flint, limestone, and mudstone. RIVER TERRACE DEPOSITS 3		
5.50	D							
5.90	D		10.96	5.90				
5.90 - 6.00	B					Very weak light yellowish brown, light grey and orangish-brown sandy LIMESTONE. Sand is fine to coarse. Iron staining. GREAT OOLITE GROUP		
6.00	SPT	N=50 (25 for 75mm/50 for 75mm)	10.86	6.00		End of Borehole at 6.00m		

6 7 8 9 10

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
					6.00	200	6.00	200

Chiselling			
From (m)	To (m)	Duration	Remarks
2.30	4.00	01:30	
5.00	5.20	00:30	

Installation			
Top (m)	Base (m)	Type	Dia (mm)

Remarks:

Hand dug inspection pit to 1.20m bgl. Borehole drilled using cable percussive methods 1.20m-6.00m bgl. 200mm diameter casing installed to 6.00m bgl. Chiselling: 1.5 hr 2.30-4.10m bgl and 0.5 hr 5.00-5.20m bgl. 200 litres of water added to assist boring 2.30-4.10m bgl. Roots encountered to 0.30m bgl. Upon completion, borehole backfilled with bentonite pellets. SPT Hammer Energy Ratio - 73%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

soils LIMITED

Contract Name:		Client:			Hole ID:
A47 Improvements Programme		Interserve Construction Limited			**BH41**
Contract Number:	Start and End Date:	Logged By:	Checked By:	Status:	Hole Type:
17076	16/10/18 - 17/10/18	WN	SB	FINAL	**CP**
Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
509812.7	299357.2	19.30mAOD	Dando 1500	01/08/2019	1:25

Weather: Sunny | Termination: Hole completed | SPT Hammer: AR1575 Energy Ratio: 73% | Sheet 1 of 1

Samples & In Situ Testing			Strata Details				Groundwater	
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.10	2 X D J			(0.30)		Dark brown gravelly fine to coarse SAND. Gravel is sub-angular and sub-rounded fine to coarse flint. Frequent sub-angular and sub-rounded fine to coarse gravel sized fragments of brick. Frequent rootlets. MADE GROUND		
	PID	0.0ppm						
0.20	2 X D ES J		19.00	0.30		Dark brown slightly gravelly silty fine SAND. Gravel is sub-angular and sub-rounded fine to coarse flint and limestone. RIVER TERRACE DEPOSITS 3		
	PID	0.0ppm		(0.40)				
0.50	2 X D J							
	PID	0.0ppm	18.60	0.70				
0.60	B					Very dense becoming medium dense orangish brown and brown slightly silty sandy angular and sub-angular fine and medium limestone and mudstone GRAVEL. Sand is fine to coarse. RIVER TERRACE DEPOSITS 3		
0.70 - 1.20	B							
1.20	SPT D	N=50 (10,11/50 for 230mm)						
1.20 - 1.70	B							
				(2.10)				
2.20	SPT D	N=26 (4,4/5,6,8,7)						
2.20 - 2.70	B							
			16.50	2.80		Orangish brown, brown and black gravelly fine to coarse SAND with a low sub-angular flint cobble content. Gravel is angular and sub-angular fine to coarse flint, limestone, and mudstone. RIVER TERRACE DEPOSITS 3		
2.90	D ES							
				(0.80)				
3.60	SPT D	N=26 (5,6/5,6,8,7)	15.70	3.60		Light yellowish brown, light grey and orangish brown sandy LIMESTONE. Sand is fine to coarse. Recovered as very sandy sub-angular and sub-rounded fine to coarse limestone gravel. Some iron staining. GREAT OOLITE GROUP		
3.60 - 4.00	B							
				(0.60)				
4.10	D							
4.20	SPT	50 (25,/50 for 75mm)	15.10	4.20		End of Borehole at 4.20m		

1 2 3 4 5

Start & End of Shift Observations					Borehole Diameter		Casing Diameter	
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
15-10-2018	10:30	0.00	0.00	0.00	4.20	200	4.00	200
17-10-2018	15:00	4.20	4.00					

Chiselling				Installation			
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)
4.10	4.20	01:00					

Remarks:

Hand dug inspection pit terminated at 0.70m bgl on hard strata. Borehole drilled using cable percussive methods 0.70m-4.20m bgl. 200mm diameter casing installed to 4.00m bgl. Chiselling: 1hr 4.10-4.20m bgl and 1.5hr 0.70-2.80m bgl. 250 litres of water added to assist boring 0.70m-2.80m bgl. Roots encountered to 0.30m bgl. Borehole terminated at 4.20m bgl on impenetrable limestone strata. Upon completion, borehole backfilled with bentonite pellets. 10.75 hrs standing due to access constraints. SPT Hammer Energy Ratio - 63%. Please note that the SPT 'N' values presented have not been corrected for rig efficiency.

Water Strikes

Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
			0	0.00	Groundwater not encountered.

Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.

Appendix A.2 Dynamic Cone Penetration

Dynamic Cone Penetration Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton

Field Data

Location	DCP01		DCP02		DCP26	
Date	30/09/2018		27/11/2018		29/10/2018	
	Blow Count	Depth (mm)	Blow Count	Depth (mm)	Blow Count	Depth (mm)
Start Depth	0	115	0	75	0	125
	1	177	5	140	1	185
	1	203	5	171	2	250
	1	219	5	191	5	380
	5	261	5	248	10	534
	5	318	5	347	20	681
	5	369	5	420	10	726
	5	436	5	457	10	734
	5	470	5	490	10	740
	5	503	5	526	10	770
	5	552	5	564	10	775
	5	581	5	603	Refusal	
	5	595	5	651		
	5	598	5	687		
	Refusal		5	706		
			5	741		
			5	768		
			5	798		
			5	834		
			5	864		
			5	892		
			7	950		

Comments

Refusal = Technical refusal 50+ blow counts

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR
Telephone: 01737 814 221

Dynamic Cone Penetration Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton

Field Data

Location	DCP16		DCP17		DCP18	
Date	04/10/2018		04/10/2018		05/10/2018	
	Blow Count	Depth (m)	Blow Count	Depth (m)	Blow Count	Depth (m)
Start Depth	0	110	0	80	0	135
	2	155	3	130	1	205
	5	215	5	170	1	255
	5	275	5	215	1	295
	5	328	5	265	3	345
	10	385	5	335	5	405
	10	442	5	400	5	455
	10	500	5	484	5	510
	10	565	5	560	5	558
	10	610	5	625	5	603
	10	642	5	675	5	650
	10	690	5	735	10	712
	10	738	5	780	10	760
	10	770	5	835	10	810
	10	810	5	890	10	850
	10	852	5	940	10	900
	10	890			10	945
	10	920				
	10	950				

Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR
Telephone: 01737 814 221

Dynamic Cone Penetration Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton

Field Data

Location	DCP19		DCP20		DCP21	
Date	05/10/2018		08/10/2018		09/10/2018	
	Blow Count	Depth (m)	Blow Count	Depth (m)	Blow Count	Depth (m)
Start Depth	0	55	0	115	Blows	Depth
	1	105	1	210	0	41
	1	145	2	260	1	75
	1	180	5	320	2	110
	1	235	5	345	3	140
	2	320	10	385	3	160
	1	360	10	415	5	195
	2	400	10	445	5	225
	5	455	10	482	5	255
	5	496	10	515	5	283
	10	565	10	530	5	305
	10	630	20	545	5	325
	5	670	Refusal		10	370
	10	730			10	410
	10	795			10	463
	10	855			10	500
	10	917			10	555
	8	960			10	628
					10	695
					10	755
					10	845
					5	900

Comments

Refusal = Technical refusal 50+blows.

SOILS LIMITED

Newton House, Cross Road, Tadworth
Surrey, KT20 5SR

Telephone: 01737 814 221

Dynamic Cone Penetration Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton

Field Data

Location	DCP22		DCP23		DCP25	
Date	09/10/2019		08/10/2018		29/10/2018	
	Blow Count	Depth (m)	Blow Count	Depth (m)	Blow Count	Depth (m)
Start Depth	0	55	0	80	0	120
	1	110	1	130	1	210
	2	165	2	185	2	278
	2	205	3	238	5	384
	3	265	3	270	5	453
	3	308	5	320	5	522
	5	365	5	370	10	562
	5	440	5	425	10	653
	3	500	5	482	10	698
	5	590	5	532	10	767
	5	675	5	575	16	830
	5	730	10	630	20	944
	5	795	10	675	7	950
	5	880	10	716	15	976
	5	950	10	760	10	996
			10	800	15	1070
			10	850	12	1100
			10	895		
			10	915		
			10	950		

Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR
Telephone: 01737 814 221

Appendix A.3 Cone Penetration Test – Lankelma Report

LANKELMA Limited
Cold Harbour Barn, Cold Harbour Lane, Iden
East Sussex, TN31 7UT
T: +44 (0)1797 280050
E: info@lankelma.com
[redacted]

A47 WANSFORD

SOIL INVESTIGATION

CPT REPORT

Cone penetration test
Geotechnical data interpretation

Project ref.: P-107008-1






PROJECT:	A47 Wansford

CLIENT:	Soils Ltd.

FIELDWORK

CPT rig(s)	20.5 tonne track-truck mounted CPT unit (UK3)
Date fieldwork started	13th September 2017
Date fieldwork completed	14th September 2017
Lankelma's representative	Paul Dimelow
Client's representative	John Hills

REPORT

Status	Revision	Action	Date	Name
Revised	00	**Completed**	18/09/18	Chris Player
		Checked	19/09/18	Emma Stickland
		Approved	20/09/18	Joseph Hobbs
Revised	01	**Completed**	01/11/18	Chris Player
		Checked	01/11/18	Emma Stickland
		Approved	01/11/18	Joseph Hobbs
Final	02	**Completed**	10/07/19	Chris Player
		Checked	10/07/19	Emma Stickland
		Approved	10/07/19	Joseph Hobbs

CONTENTS

1 INTRODUCTION 1
2 DISCLAIMER 1
3 COMPLETED WORKS 1
4 FIELDWORK 1
4.1 CONE PENETRATION TESTING 1
4.2 POSITIONING AND TEST TERMINATION DEPTHS 2
5 RAW DATA REDUCTION AND PRESENTATION 2
6 INTERPRETATION 3
6.1 IN-SITU STRESS CONDITIONS 3
6.2 SOIL BEHAVIOUR TYPE 4
6.3 SOIL BEHAVIOUR TYPE – *IC* INDEX 4
6.4 GEOTECHNICAL PARAMETERS 4
6.4.1 RELATIVE DENSITY 4
6.4.2 UNDRAINED SHEAR STRENGTH 5
6.4.3 OVERCONSOLIDATION RATIO 7
6.4.4 SENSITIVITY 7
6.4.5 SPT N60 VALUES 8
6.4.6 FRICTION ANGLE 8
6.4.7 COEFFICIENT OF VOLUME CHANGE 10
6.4.8 YOUNG'S MODULUS 10
7 CPT DATA INTERPRETATION NOTES 12
8 REFERENCES 14

SUMMARY TABLES

Table 1 CPT test summary 15

APPENDICES

APPENDIX A General information
APPENDIX B Cone penetration test results – raw data plots
APPENDIX C Standard interpretation results (set 1)
APPENDIX D Standard interpretation results (set 2)

1 INTRODUCTION

At the request of Soils Ltd., a CPT led soils investigation was carried out on project *A47 Wansford*.

Site location:

A47 Wansford
Peterborough
PE8 6HJ

2 DISCLAIMER

The investigation information, raw data and interpretations provided in this report are for the sole benefit of the Client identified at the front of the report.

Lankelma has exercised reasonable skill, care and diligence in the fieldwork and preparation of this report. This report has been completed based on information available to Lankelma at the time of preparation. The measurement and interpreted data in this report do not constitute recommendations for design purposes. An appropriately qualified person must review and interpret the data given in this report, together with any assumptions we have made that affect the data, before using the data for design or recommendation.

Lankelma accepts no responsibility for the accuracy or appropriateness of any assumptions, derived soil parameters or soil units contained in this report.

3 COMPLETED WORKS

- 5 nr. cone penetration tests (CPTu) with piezo measurement; and
- Factual report plus additional geotechnical data interpretation.

The *Summary Tables* section contains tabulated summaries of the works completed together with analysis results where necessary.

4 FIELDWORK

4.1 CONE PENETRATION TESTING

Cone penetration tests were performed with a 20.5-tonne track-truck mounted CPT unit (UK3) equipped with a 17-tonne capacity hydraulic ram set. Testing was carried out in general accordance with BS ISO 22476-1:2012.

Penetrometer measurements included cone tip resistance, friction sleeve resistance and dynamic pore water pressure sampled at a 10mm resolution.

The penetrometer was calibrated in accordance with BS8422:2003 and ASTM E74-13a. The management of calibration records is in accordance with ISO 10012. Copies of all calibration certificates for the cones used are presented in Appendix A. Penetrometer details and calibration certificates are reported in Table 1 and Appendix A respectively.

The piezometer filter element was in the u_2 position and was vacuum saturated. The pore pressure system was saturated with de-aired 10000 cSt silicone oil.

4.2 POSITIONING AND TEST TERMINATION DEPTHS

The Client was responsible for the positioning and re-survey of all investigative locations.

The target depth for the investigation was 10m below ground level. Table 1 details the final test depths and reasons for test termination (r*efusal factor). W*here penetration refusal was encountered the termination depth was advised to, and agreed with, the Client's on-site representative.

5 RAW DATA REDUCTION AND PRESENTATION

The CPT results are presented in Appendix B. The corrected cone resistance (q_t), local side friction (f_s), dynamic pore water pressure (u_2), friction ratio (R_f) and inclination are all presented against depth and elevation in accordance with recommendations of the BS ISO 22476-1:2012. CPT data and the associated derived geotechnical parameters are included in the AGS 3.1 and 4.0 data files provided.

The cone tip resistance and sleeve force measurements have been converted to pressures using the nominal dimensions of the penetrometer.

For piezocone tests the corrected tip resistance has been calculated according to the formula:

$$q_t = q_c + u_2 \times (1 - a)$$

Where a is the 'area ratio' and (1- a) is the proportion of cross sectional area between the cone tip and cone body where pore pressures (positive or negative) can act to add or subtract from the total external axial force on the tip. The difference between measured and corrected values is largest in low strength soils with large excess pore pressures. The relationship between measured resistance, excess pressure and correction difference is described by the curves in the following chart for alpha factor of 0.8:

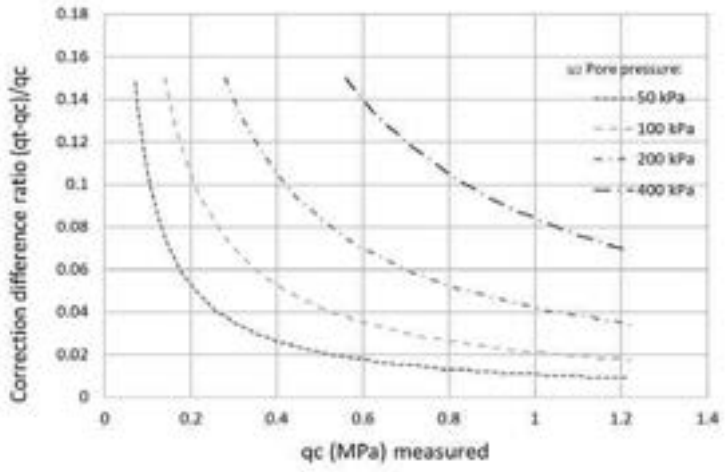


Figure 5-1 corrected tip resistance fraction with measured tip resistance

Penetration length readings are corrected for inclination and sleeve readings are depth corrected for the dimensional offset between cone tip and sleeve during post processing. An additional shift of -80mm is applied to the sleeve to account for tip failure zone offset (see 'CPT Interpretation Notes'). 'Rod spikes' (artefacts of the 1m interval pause for rod string addition) are filtered from the cone tip and sleeve data.

The raw (or corrected) data are presented in Appendix B.

6 INTERPRETATION

Geotechnical parameters appropriate for drained and undrained cone penetration conditions are derived for corresponding drained and undrained derived soil behaviour types (SBTs) respectively, however to account for uncertainty in the SBT correlation with drainage behaviour, all parameters are derived over the range of mixed soil types 'silt mixtures' and 'sand mixtures' or *Ic* 2.05-2.95 (Robertson, 2010).

Note: All derived parameters, soil type interpretation and assumptions should be regarded as provisional and subject to review by an appropriately qualified person.

6.1 IN-SITU STRESS CONDITIONS

The in-situ total and effective stress state has been calculated based on an assumed total unit weight of 17kN/m^3 above the principal phreatic surface and 18kN/m^3 below.

The depth of the principal phreatic surface, or groundwater table, has been assumed at an arbitrary value of 1.5mBGL for parameter calculations.

Note: The term phreatic surface is used here, however when it is based on piezocone measurements it is assumed that the piezometric level (under hydrostatic conditions) and groundwater table coincide. The phreatic or piezometric surface reported is only intended to provide information about the assumed pore pressure distribution for calculation of relevant

derived parameters from the CPT and may not represent the true position of the groundwater table or perched water bodies. Complex groundwater pressure distributions, if they are observed from the measurements, will be applied to relevant derived parameters.

6.2 SOIL BEHAVIOUR TYPE

The soil behaviour type (SBT) has been interpreted using the Robertson (1990) classification system based on the normalised cone resistance (Qt) and normalised friction sleeve resistance (Fr). A copy of the chart is given in Appendix A titled 'CPT Soil Behaviour Type Chart'.

The results are presented on the plots of Appendix C – *Standard interpretation results (set 1)*.

6.3 SOIL BEHAVIOUR TYPE – *IC* INDEX

The SBT is presented as the soil behaviour type index, I_c, for both stress-normalised and non-normalised evaluations according to the charts of Robertson (1998 & 2010) applicable to predominantly silicate soils.

The index provides a continuous profile of SBT variation with depth allowing the selection of appropriate layer boundaries. The basis of I_c and its approximation of the original chart classification zones may be seen from Appendix A figure 'CPT Soil Behaviour Type Chart'. The method does not identify zones 1 (*sensitive fine grained)* and zones 8 & 9 (*overconsolidated or cemented*).

Non-stress normalised SBT index I_c:

$$I_c = \left[\left(3.47 - \log\left(\frac{q_c}{\sigma_{atm}}\right)\right)^2 + (logR_f + 1.22)^2\right]^{0.5}$$

Stress-normalised SBT index I_c:

$$I_c = ((3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2)^{0.5}$$

(See glossary of terms and symbols Appendix A)

The results are presented on the plots of Appendix C – *Standard interpretation results (set 1)*.

6.4 GEOTECHNICAL PARAMETERS

6.4.1 RELATIVE DENSITY

The relative density of sands is calculated based on an empirical relationship proposed by Jamiolkowski *et al.* (2001) based on a large database of undisturbed frozen samples and calibration chamber tests. The expected accuracy may be evaluated from the figures presented below.

$$D_r = 100\left[0.268 \cdot \ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma_{vo}'/\sigma_{atm}}}\right) - k\right]$$

(See glossary of terms and symbols appendix A – *General information*)

k = Compressibility dependant constant can be taken as -0.675 for medium compressibility (applied value in our interpretation), <= 1 for high compressibility and >= 2 for compressible sands.

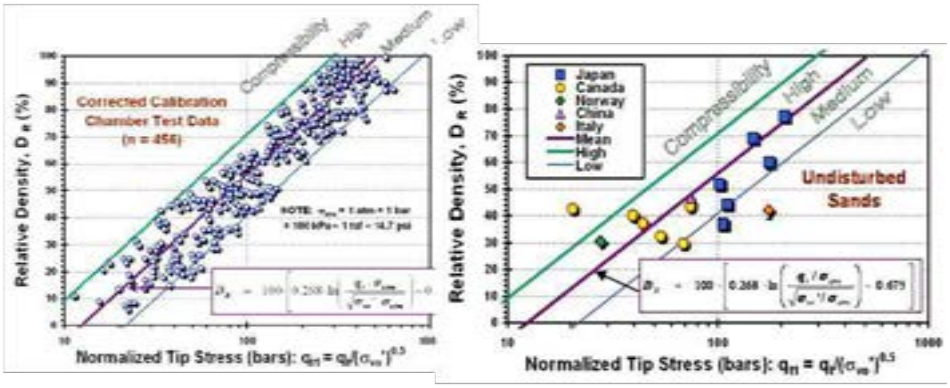


Figure 6-1 Relative density with normalised tip stress and sand compressibility from calibration chamber tests (left) and undisturbed frozen samples (right). Jamiolkowski *et al.* (2001). Reproduced from Mayne (2007).

The results are presented on the plots of Appendix D – *Standard interpretation results (set 2)*.

6.4.2 UNDRAINED SHEAR STRENGTH

S_u is usually estimated as a factor of net cone tip resistance (Lunne *et al*, 1981):

$$s_u = \frac{q_c - \sigma_{v0}}{N_k}$$

where N_k is an empirical cone factor.

(See glossary of terms and symbols appendix A – *General information*)

S_U values are presented for N_{kt} factors of 15 and 20 as standard.

Mayne and Peuchen (2018) performed and evaluation of 407 high-quality triaxial compression tests against net tip resistance and proposed N_{kt} factors with regression analysis details for five categories of clays shown in Table 1.

Table 1 Summary of CAUC s_u versus q_{net} for clays. Reproduced from Mayne and Peuchen (2018).

Clay Group	Number of sites	No. Data	Correlation Coefficient r_2	Factor N_{kt}	Mean Pore Pressure Parameter B_q
Offshore NC-LOC	17	115	0.98	12.32	0.51
Onshore NC-LOC	30	191	0.867	12	0.53
Sensitive NC-LOC	5	43	0.507	10.33	0.84
OC Intact	5	36	0.862	13.57	0.49
OC Fissured	5	22	0.393	22.47	-0.01
All clays	62	407	0.923	13.33	0.55

Alternatively, a variable N_{kt} factor can be estimated for the profile as a function of the pore pressure parameter Bq, applicable for Bq values of > -0.01. The equation below is proposed by Mayne and Peuchen based on the same database evaluation:

$$N_{kt} = 10.5 - 4.6 \cdot \ln(B_q + 0.1)$$

Where the pore pressure parameter B_q is the ratio of excess pore pressure to net tip resistance:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{v0}}$$

The N_{kt} estimate has a standard error of 2.4 Nk and correlation coefficient of 0.645.

The estimate based on B_q is presented as 'S_U3' on the parameter plots and is only suitable and calculated for tests that have a high-quality pore pressure data, often indicated by a positive, repeatable and dynamic response. For tests that have a reliable pore pressure response throughout the evaluation on a point by point basis is warranted. For projects with variable response quality and with possible piezo desaturation (for example in the unsaturated zone or by dilation/cavitation) it is preferable to identify zones with reliable pore pressure response for representative soils and select a characteristic value of B_q for evaluation of N_{kt}. Lankelma are not always in view of the effort that has been made in preparation of the test location to maintain saturation of the piezo sensor.

Note: N_{kt} (with subscript 't') indicates an Nk factor that has been established using the corrected tip resistance qt. Nkt can be applied to the uncorrected tip resistance (qc) of non-piezocone tests but will result in a slightly lower estimate of Su depending on the correction magnitude qc - qt relevant to lower strength soils.

All undrained shear strength derivations are presented on the plots of Appendix C – *Standard interpretation results (set 1).*

6.4.3 OVERCONSOLIDATION RATIO

The preconsolidation stress of clays is calculated based on the method proposed by Mayne (1995) and Demers and Leroueil (2002):

$$\sigma_p' = k \cdot (q_t - \sigma_{vo})$$

$$OCR = \sigma_p'/\sigma_{v0}'$$

(See glossary of terms and symbols Appendix A)

The factor k may be expected to lie within the range 0.2 to 0.5. A first order value of 0.33 represents the trend proposed by Mayne (1995). Higher values of k are recommended for fissured heavily overconsolidated clays. Figure 6-2 illustrates the expected accuracy of the estimate.

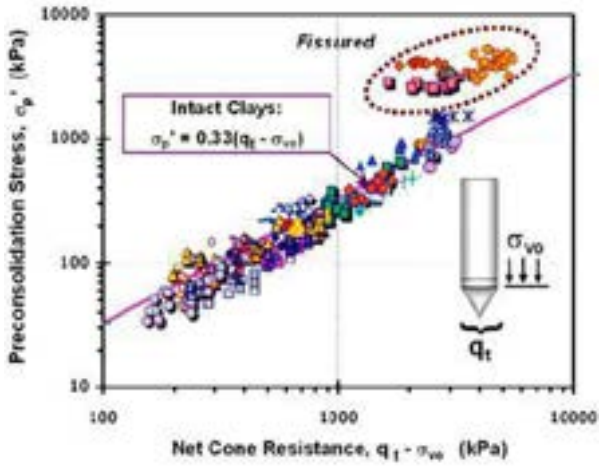


Figure 6-2 Preconsolidation stress from net cone resistance in clays (reproduced from Mayne (2007)).

6.4.4 SENSITIVITY

The approximate sensitivity of the soil, as defined by the ratio of undrained shear strength to remoulded shear strength, is calculated using the factored normalised cone resistance (S_u) and remoulded shear strength taken as equal to the direct friction sleeve measurement:

$$s_t = 0.073 \cdot \frac{q_t - \sigma_{v0}}{f_s}$$ Mayne (2007)

(See glossary of terms and symbols Appendix A – *General information*)

The derived sensitivity is only indicative for sensitive soils because the sensitivity to error of the friction sleeve and tip increases markedly at the very low range.

The results are presented on the plots of Appendix C – *Standard interpretation results (set 1)*.

6.4.5 SPT N60 VALUES

Equivalent SPT N60 Values defined as the non-normalised SPT blow count over a 30cm interval. The results of the two correlations below are presented together in the results section for comparison.

$$N_{60} = \frac{q_t}{8.5 \cdot \sigma_{atm} \cdot (1 - \frac{I_C}{4.6})}$$ Lunne *et al.* (1997)

$$\frac{\left(\frac{q_t}{p_a}\right)}{N_{60}} = 10^{(1.268 - 0.2817 I_c)}$$ Robertson (2012)

(See glossary of terms and symbols Appendix A)

The correlation is intended for clays, silts and sands and not for cemented geo-materials i.e. chalk.

The results are presented in Appendix D – *Standard interpretation results (set 2).*

6.4.6 FRICTION ANGLE

Sands

The peak friction angle of granular materials is calculated using the Kulhawy and Mayne (1990) method and is an empirical relationship as a function of stress normalised cone tip resistance. The relationship is based on a calibration chamber database from 24 sands of varying mineralogy. The relationship has the form:

$$\phi' = 17.6 + 11.0 \cdot \log(q_{t1})$$

Where:

ϕ' = Peak friction angle (degrees)

q_{t1} = stress normalised cone resistance = $(\frac{q_t}{\sigma_{atm}})/(\frac{\sigma_{v0}'}{\sigma_{atm}})^{0.5}$

The expected error with respect to the sand types used in development of the relationship may be assessed from the figure below. It can be seen that the presence of compressible minerals results in a conservative estimate of friction angle.

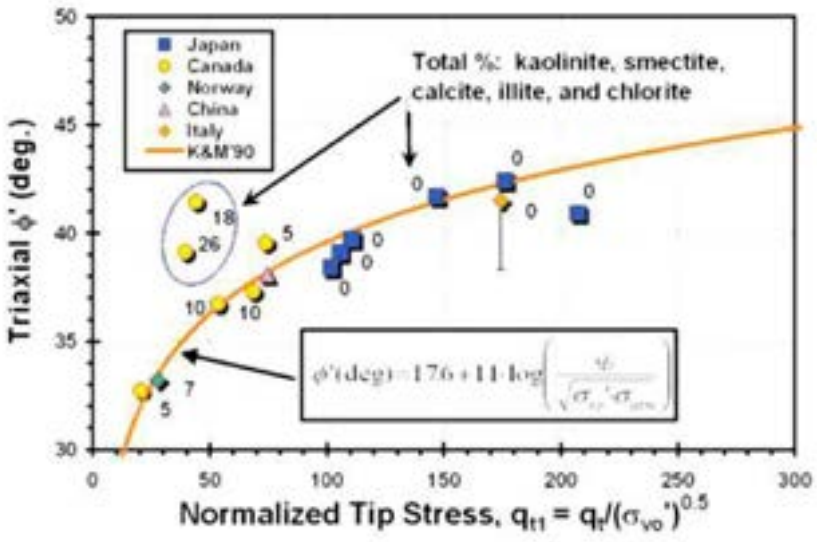


Figure 6-3 Peak triaxial friction angle from undisturbed sands with normalised cone resistance.

File grained soils

The effective friction angle for fine grained soils been calculated based on the Senneset *et al.* (1988, 1989) Norwegian Institute of Technology (NTH) using an approximate solution by Mayne & Campanella (2005) as a direct function of the pore pressure parameter Bq and normalised tip resistance Q. The method is applicable where $0.1 < B_q < 1.0$ and $20° < \phi' < 45°$ and generally appropriate for non-cemented NC-LOC soft to stiff soils.

$$\phi' = 29.5° \, B_q^{0.121} [0.256 + 0.336 \, B_q + \log Q]$$

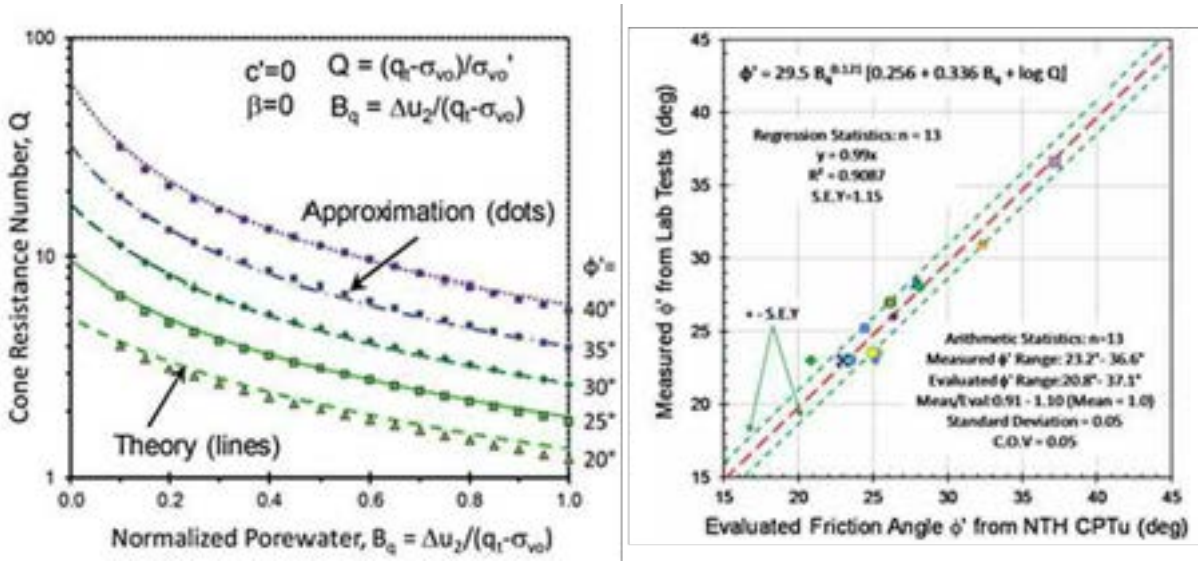


Figure 6-4 [Left] Theoretical curves with function approximation (dots) overlay [Right] calibration data from geotechnical centrifuge tests for a variety of soils. Redrawn from Ouyang & Mayne (2018).

The results are presented in Appendix D – *Standard interpretation results (set 2).*

6.4.7 COEFFICIENT OF VOLUME CHANGE

Coefficient of volume change (m_v) defined as the inverse of the constrained modulus (M), is evaluated for all soil types using the constrained modulus method proposed by Mayne (2006) cited in Mayne (2007) applicable to the present state of vertical effective stress up to the pre-consolidation stress.

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

Where:

$$M = \alpha \cdot (q_t - \sigma_v)$$

$$\alpha = 5$$

An alpha factor of 8.25 reported by Kulhawy & Mayne (1990) for fine grained soils appears to provide a better fit through the data for intact non-organic clays, reducing to around 1 to 2 for organic plastic clays.

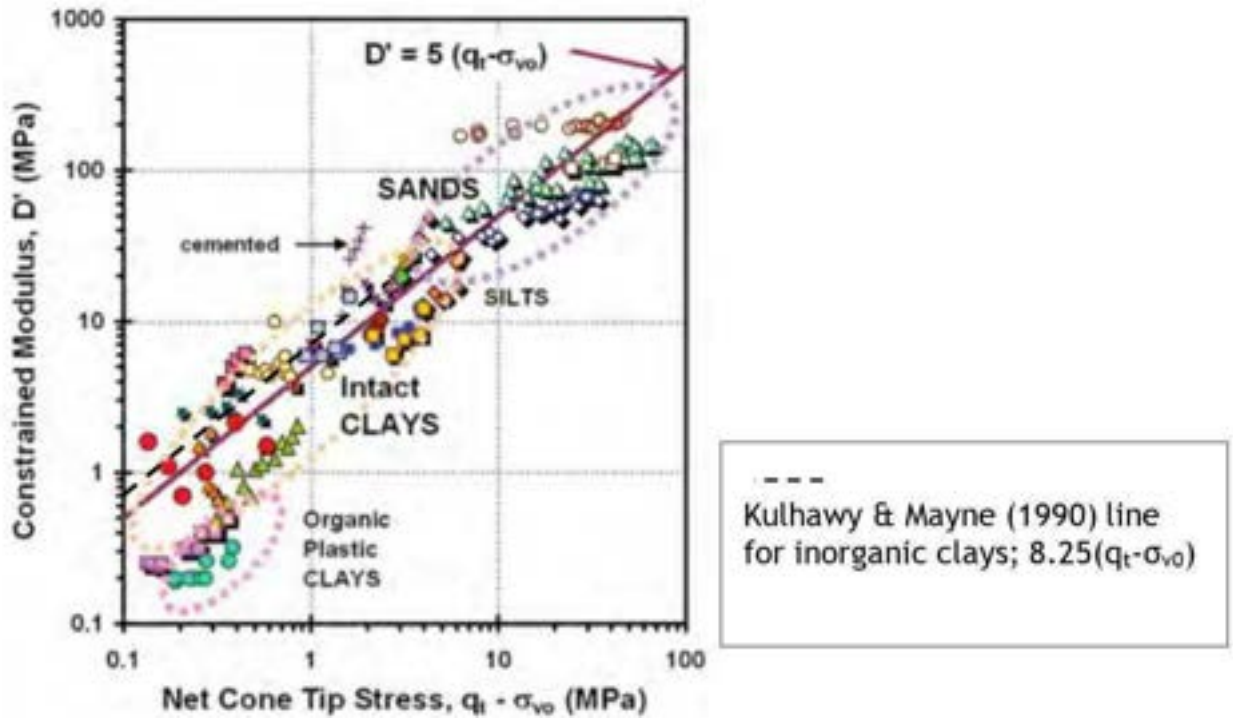


Figure 6-5 Constrained modulus of Mayne (2006). Annotated/redrawn from NCHRP Synthesis 368 (2007).

The results are presented on the plots of Appendix C – *Standard interpretation results (set 1)*.

6.4.8 YOUNG'S MODULUS

The Young's Modulus at 25% mobilised shear strength (FOS = 4) calculated using the general empirical formula (Robertson, 2009):

$$E' = \alpha(q_t - \sigma_v)$$

Where:

$$\alpha = 0.015(10^{0.55\boldsymbol{Ic}+1.68})$$

(See glossary of terms and symbols Appendix A)

Using methods described in Robertson (2009) this formula may be adapted to estimate E' for loading at different percentages of yield stress.

The results are presented in Appendix D – *Standard interpretation results (set 2)*.

7 CPT DATA INTERPRETATION NOTES

Provided below is a non-exhaustive set of notes on interpretation of the acquired CPT data with reference to examples within the dataset where appropriate.

SOIL BEHAVIOUR TYPE

The soil behaviour type (SBT) as defined by Robertson *et al.* (1986) is not intended to replace soil classification based on particle size fractions. Rather, the SBT will generally show bias in the classification towards the soil fraction that dominates soil behaviour in response to penetration. In general, the normalised SBT will be more accurate, but may be less reliable at very shallow depths (1-2m) due to very low vertical effective stresses (applied in normalisation) relative to variable horizontal stresses affecting penetration resistance.

DRAINED AND UNDRAINED SOIL BEHAVIOUR

Geotechnical parameters appropriate for drained and undrained cone penetration conditions are derived for drained and undrained soil behaviour types (SBTs) respectively, however to help mitigate the uncertainty in the SBT correlation with drainage behaviour, all parameters are derived over the range of mixed soil types 'silt mixtures' and 'sand mixtures' or *Ic* 2.05-2.95 (Robertson, 2010). For partially drained conditions in low permeability soils, error will be introduced within derived parameters.

Piezocone dynamic pore water pressures behaviour, dissipations or other site-specific information may be used to identify the appropriate limits of application. Dissipations to t_{50} exceeding 50 seconds indicate undrained penetration behaviour based on findings of Kim *et al.,* 2010.

In partially drained materials the friction sleeve resistance may rise significantly immediately following a pause in penetration due to consolidation and increase in effective stress on the friction sleeve casing.

DYNAMIC PORE PRESSURE DATA (CPTu)

During penetration, dilation pressures at the cone shoulder may result in desaturation of the piezo sensor which may or may not re-saturate at higher excess pressures. The pore pressure response in saturated contractive soils normally have a dynamic 'peaky' appearance.

The tip resistance in lower strength contractive soils without pore pressure measurement in the u2 position is likely to be significantly lower than the equivalent corrected tip resistance depending on the magnitude of pore pressure acting in the gap between cone tip and cone body.

CONE TIP AND SLEEVE OFFSET

The accuracy of the SBT over thin layers and at layer boundaries is sensitive to offset error in the friction ratio often seen as sharp spikes or drops at boundaries. The friction ratio is often inaccurate in heavily disturbed soils with a 'blocky' macro fabric.

For this investigation a friction sleeve depth offset correction of -80mm was applied together with a 5-point moving average on the friction ratio to minimise the influence of this effect.

CONE TYPE

The reference cone type has a 10cm^2 projected cone tip area and 150cm^2 friction sleeve area, however it is common to use the larger 15cm^2 cone with 225cm^2 friction sleeve area for improved sensitivity and penetration depth potential. Use of the 15cm^2 cone will produce more pronounced transitions zones and thin layer effects (larger zone of influence and failure zone).

TRANSITION ZONES AND THIN LAYER EFFECTS

During penetration at the boundary between soils of contrasting stiffness, a transition zone is often evident prior to mobilization of the true soil stiffness. These should be cautiously ignored in assessment of soil behaviour type and parameter evaluation. Where the stiff layer is thin (<~0.5m) the true stiffness will not be fully mobilised. The effect for thin low stiffness layers is less significant. Procedures for thin-layer effect correction are provided by Robertson and Wride (1998). In choosing characteristic values of the tip, sleeve and derived parameter results, large scale peak and trough values may be more representative of the local value.

GRAVELS

The presence of gravel or larger clasts in a soil is often characterised by short peaks in the CPT tip and sleeve readings, possibly with associate inclinometer 'shake' and/or sharp reductions in pore water readings due to dilation effects. Frequent gravels in soft or loose soils may generate erroneous friction ratio values. Where gravels are matrix supported the tip and sleeve peaks may be ignored or filtered in choosing characteristic values for bulk behaviour.

8 REFERENCES

ASTM E74-13a (2013), Standard Practice of Calibration of Force-Measuring Instruments for Verifying the Force Indication of Testing Machines, ASTM International, West Conshohocken, PA.

Baldi, G., Bellotti, R., Ghionna, V.N., Jamiolkowski, M. and Pusqualini, E. (1986) "Interpretation of CPT's and CPTU's, 2nd Part: Drained Penetration of Sands". Proceedings of the 4th International Geotechnical Seminar, Singapore. pp. 143-156.

British Standards Institution (2003) BS 8422:2003, Force measurement – Strain gauge load cell systems – Calibration method. London: British Standards Institution.

Houlsby, G.T. and Teh, C.I. (1988) "Analysis of the Piezocone in Clay". Proceedings of the International Symposium on Penetration Testing (ISOPT-1), Orlando, Vol. 2, pp. 777-783. Balkema Pub., Rotterdam.

ISO 10012:2003 Measurement management systems - Requirements for measurement processes and measuring equipment. New Delhi: Bureau of Indian Standards (2003).

ISO 22476-1:2012 Geotechnical investigation and testing - Field testing - Part 1: Electrical cone and piezocone penetration test. New Delhi: Bureau of Indian Standards (2012).

ISSMGE, 1999. International reference test procedure for the cone penetrometer test CPT and the cone penetration test CPTU, Report of ISSMGE TC16 on Ground Property Characterisation for In situ Testing, In *Proceedings of the 12th European conference on Soil Mechanics and Geotechnical Engineering* 3:2195-222 (1999).

Jamiolkowski, M., LoPresti, D.C.F., and Manassero, M. (2001) "Evaluation of Relative Density and Shear Strength of Sands from Cone Penetration Test and Flat Dilatometer Test". Soil Behaviour and Soft Ground Construction (GSP119), American Society of Civil Engineers, pp. 201-238. Reston, Va. 2001

Kim, K., Prezzi, M., Salgado, R., and Lee, W. (2008) "Effect of Penetration Rate on Cone Penetration Resistance in Saturated Clayey Soils", Journal of Geotech. Geoenviron. Eng., Vol. 134(8), pp. 1142-1153.

Kulhawy, F.H. and Mayne, P.W. (1990) "Manual on Estimating Soil Properties for Foundation Design". Report EPRI EL-6800 Research Project 1493-6, Electric Power Research Institute, Palo Alto, CA, pp. 306.

Ladd, C.C. and DeGroot, D.J. (2003) "Recommended Practice for Soft Ground Site Characterization: Arthur Casagrande Lecture". Soil & Rock America 2003 (Proceedings. 12th Pan American Conference on Soil Mechanics and Geotechnical Engineering, Boston, MA). Verlag Glückauf, Essen, Germany. pp. 3–57.

Lunne, T., Robertson, P.K. and Powell, J.J.M. (1997) "Cone Penetration Testing in Geotechnical Practice" Blackie Academic, New York 1997.

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. pp. 76-107. American Society of Engineers (ASCE).

Mayne, P.W. and Campanella, R.G. (2005) "Versatile Site Characterisation by Seismic Piezocone". Proceedings of the 16th International Conference on Soil Mechanics and Geotechnical Engineering, Vol. 2. Millpress, Rotterdam, The Netherlands 2005. pp 721-724.

Mayne, P.W. & Peuchen J. (2018), "Evaluation of CPTU Nkt cone factor for undrained strength of clays", Anon, 2018. Cone Penetration Testing 2018: Proceedings of the 4th International Symposium on Cone Penetration Testing (CPT'18), 21-22 June, 2018, Delft, The Netherlands. CRC Press. pp. 423-429.

Mayne, P.W. (2007) "Cone Penetration Testing – A Synthesis of Highway Practice". NCHRP Synthesis 368, Transportation Research Board, Washington, D.C.

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 Testing in Geotechnical Engineering. Blacksburg, pp. 1263-1280, American Society of Engineers (ASCE).

Robertson, P.K. (2009). Cited in "Guide to Cone Penetration Testing - 6th edition (2015)", pp. 58, Gregg Drilling & Testing, Inc.

Robertson, P.K. (2009). Interpretation of cone penetration tests – a unified approach. Canadian Geotechnical Journal, 46, p. 1337–1355.

Robertson. P.K., (2010) "Soil Behaviour Type from the CPT: an update". 2nd International Symposium on Cone Penetration Testing. Huntingdon Beach, CA, USA.

Robertson, P.K. (2012). Interpretation of in-situ tests – some insights, Proc. 4th Int. Conf. on Geotechnical & Geophysical Site Characterization, ISC'4, Brazil, 1.

Senneset, K., R. Sandven, and N. Janbu (1989), "Evaluation of Soil Parameters from Piezocone Tests," Transportation Research Record 1235, Transportation Research Board, National Research Council, Washington D.C, pp. 24-37.

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J. (1999) "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils". Canadian Geotechnical Journal. Vol. 36, pp. 369-381.

SUMMARY TABLES

Table 1 CPT test summary

Test ID	Final depth (mBGL)	Cone ID {C=Cone tip; F=Friction Sleeve; I= Inclination; P = Piezo; S=Subtraction cone; 15/10 = cone projected area (cm2))}	CPT rig	Pre-drilled / inspection pit (m)	Casing depth (m)	Refusal factor	Tip zero shift (MPa)	Sleeve zero shift (MPa)	Piezo zero shift (MPa)	Easting	Northing	Elevation (m)	Date of test	Remarks
CPT1	10.01	S15-CFIP.1687	UK3	1.20		Target depth	-0.033	-1.8	-3.0				13/09/2018	
CPT2	2.68	S15-CFIP.1687	UK3	1.20		Tip load	-0.033	-5.8	-8.0				14/09/2018	
CPT3	10.01	S15-CFIP.1687	UK3	1.20		Target depth	-0.033	-3.8	-5.5				13/09/2018	
CPT4	10.01	S15-CFIP.1687	UK3	1.20		Target depth	-0.033	-3.8	-5.5				13/09/2018	
CPT5	3.09	S15-CFIP.1687	UK3	1.20		Tip load	-0.033	-3.8	-5.5				13/09/2018	

CPT test plots are presented in Appendices B, C & D

APPENDIX A GENERAL INFORMATION

LIST OF FIGURES

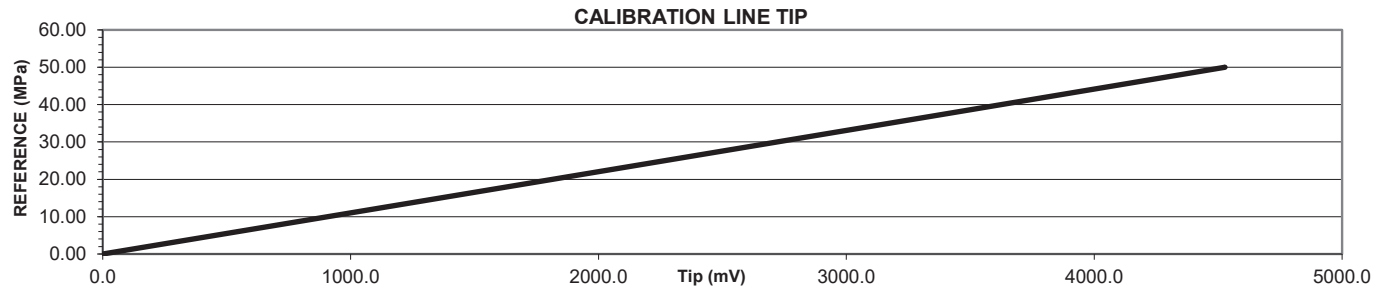
Description	Pages included
Cone calibration certificate: S15-CFIP.1687	1
Data sheet: 20.5 tonne track-truck mounted CPT unit (UK3)	1
CPT soil behaviour type chart	1
Glossary of terms	1

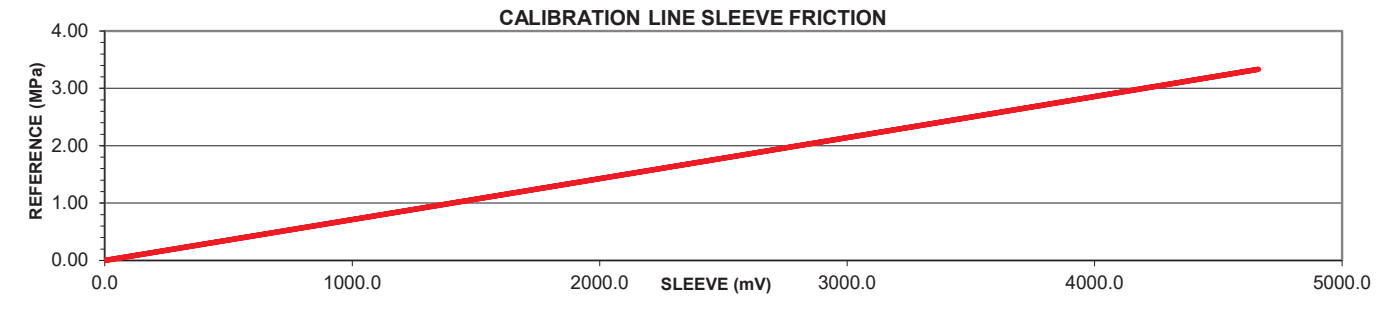
CALIBRATION CERTIFICATE

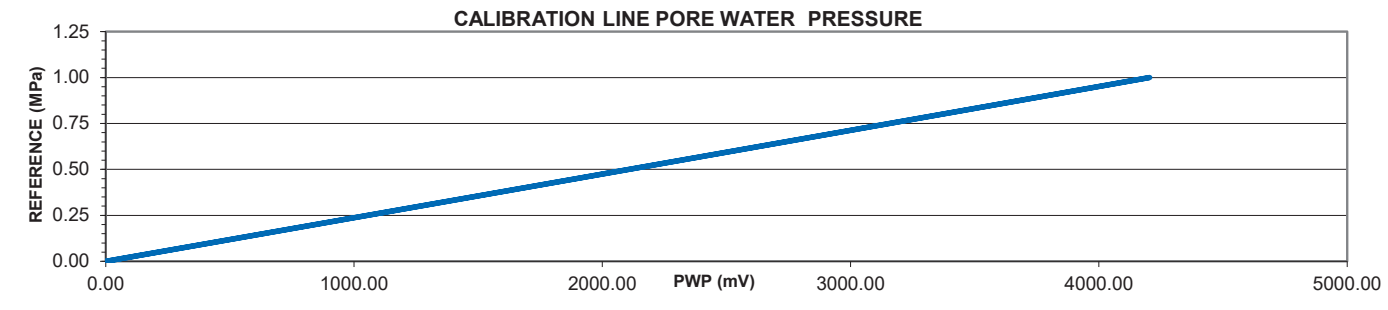
Geopoint-S15-150kN-2MPa

Cone Serial Number: S15.CFIIP-1687

REFERENCE INSTRUMENTS:	CONE END RESISTANCE	SLEEVE FRICTION	PORE WATER PRESSURE
ID	51998	51998	4009509
TYPE	AM DSCC-100kN	AM DSCC-100kN	Druck DPI 104
UNCERTAINTY (±%)	0.024	0.024	0.05
Nominal pressure (MPa,MPa,MPa)	50.00	3.33	1.00
Maximum pressure (MPa,MPa,MPa)	100.00	6.67	2.00
Area (cm²)	15	225	N/A
Sensitivity (mV/MPa)	90.57	1398.97	4203.62
Calibration file scaling factor:			
Nominal cal force (kN, kN, BAR)	75	75	10
Calibration number (mV)	4528	4663	4204
Zero point (mV)	275	275	215
Sensitivity (mV/kN, mV/kN, mV/BAR)	60.378	62.177	420.362
Inclination factors (mV)	X -20°= 226, 0°= 2591, 20°= 4389 / Y -20°= 383, 0°= 2479, 20°= 4245		
Measured alpha factor:	0.68		
Uncertainty (%):			
Reproducibility	0.07	0.07	0.03
Linearity	0.10	0.10	0.10
Hysteresis	0.03	0.03	0.03
Combined expanded (k=2)	0.19	0.39	0.18
Application class	1	1	1







Instrument:	S15-150kN	Location:	Lankelma Calibration Laboratory
Serial Number:	S15.CFIIP-1687	Temperature(° C)	20.0
Manufacturer:	Geopoint	Calibration Engineer	ed f. white
Date of calibration:	17/08/2018	Calibration Expiry	16/11/2018

Calibration signed and dated by:

[redacted]

Digitally signed by Ed f. white

[redacted]

Date: 2018.08.17 14:56:59 +01'00'

Calibration checked and dated by:

[redacted]

Paul Dimelow

2018.08.17 15:19:37 +01'00'

UK3
TRACK-TRUCK RIG



TECHNICAL DETAILS

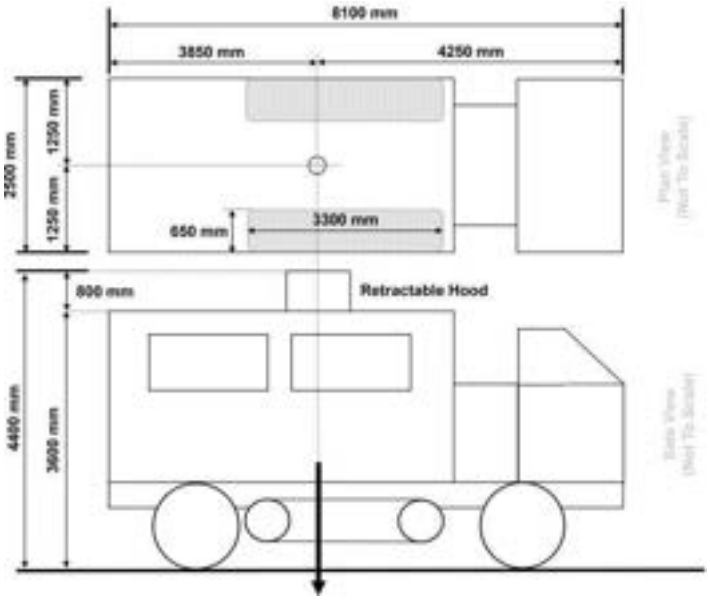
Rig Weight	20.5 T
Maximum Operating Ram Capacity	17 T
Maximum Travelling Speed	86 km/h
Track Material	Steel
Track Length	3.30 m
Track Width	0.65 m
Jack Plate Dimensions	Tracks act as jacks
Jack Arrangements	1 on each side
Maximum Ground Clearance On Jacks	0.21 m
Maximum Ground Bearing Pressure	Tracking/ Pushing – 47 kPa Pulling – 88 kPa
Maximum Testing Gradient	10 degrees
Maximum Traversing Gradient	30 degrees (operator assessed)
Noise Output at 2 m	Testing – 74 dBA Driving – 87 dBA
Clamp Arrangement	36/55 Push Pull Clamp
Ram Stroke	1.20 m
Maximum Casing Size	55 mm

Our track-truck is suitable for most geotechnical sites. This rig is driven as a self-contained HGV to site where it can deploy its tracks to cope with soft or uneven terrain.

The track-truck can be driven from the front and back, and is fitted with a chalwyn valve and spark arrestor to enable testing on potentially hazardous sites such as oil and gas refineries.

Performance Rates

An expected 100m+ of standard CPTu testing can be executed in a day (dependent on site conditions and access).



Applications

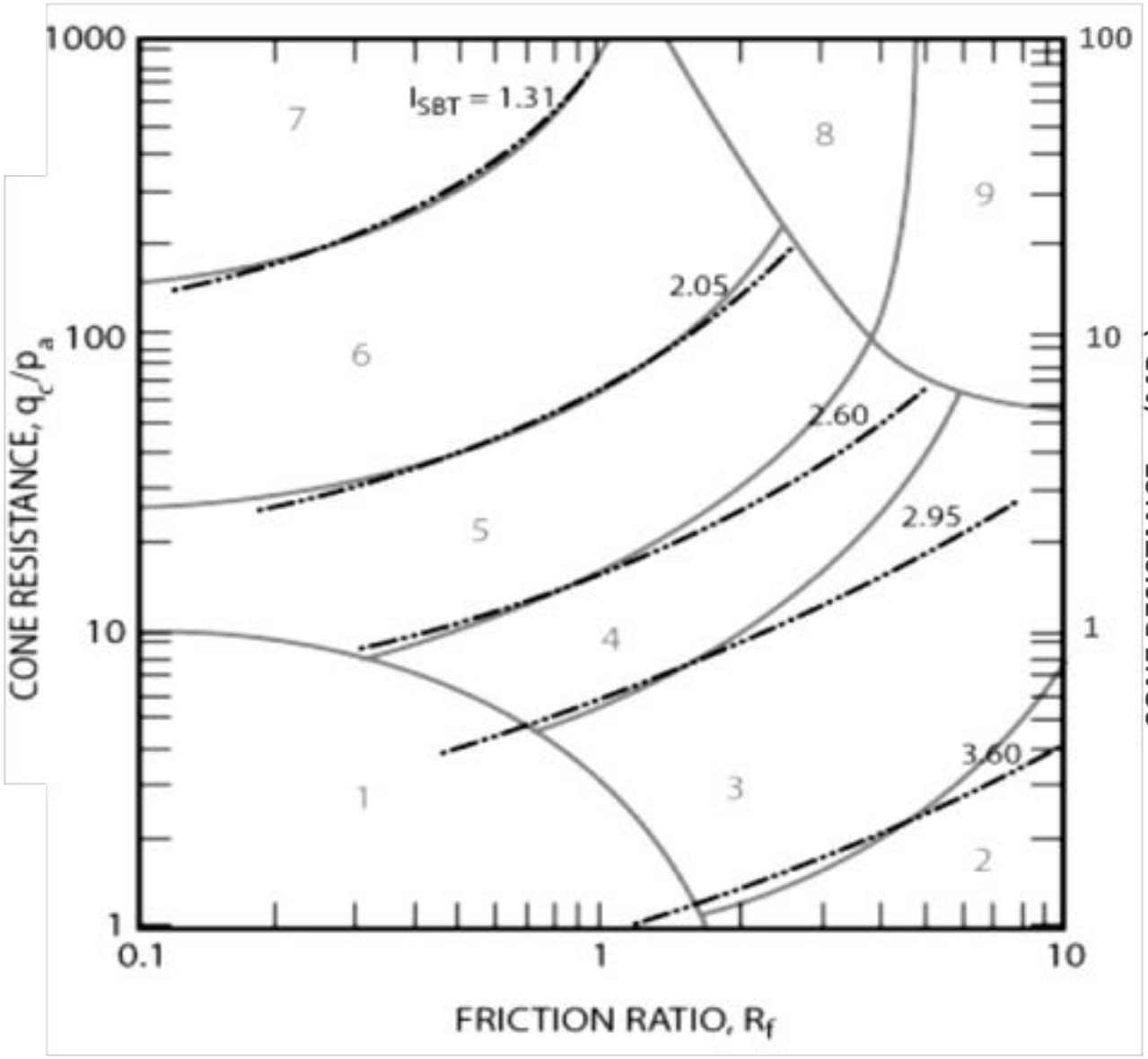
- Specialist testing
  - Seismic
  - Pressuremeter
  - Magnetometer
  - Videocone
  - Wing cone
  - Push-in Vane
- Installations
  - VWP
  - Piezometer
  - Inclinometer
- Sampling
  - MOSTAP
  - Shelby

[redacted]

Tel: **+44 (0)1797 280050** Fax: **+44 (0)1797 280195** Email: **info@lankelma.com**

Lankelma Limited, Cold Harbour Barn, Cold Harbour Lane, Iden, East Sussex. TN31 7UT

CPT SOIL BEHAVIOUR TYPE CHART



Non-normalised SBT chart by Robertson *et al.* (2010) based on dimensionless cone resistance (qc/Pa) and friction ration, Rf, showing contours of *Ic* index. The chart is also applicable to stress-normalised tip/sleeve values Q_t and F_r.

Zone	Soil Behaviour Type (SBT)		
1	Sensitive fine-grained	6	Sands: clean sand to sandy silt
2	Clay – organic soil	7	Dense sand to gravelly sand
3	Clays: Clay to silty clay	8	Stiff sand to clayey sand*
4	Silt mixtures: clayey silt to silty clay	9	Stiff fine grained*
5	Sand mixtures: Silty sand to sandy silt	*Overconsolidated or cemented	

GLOSSARY OF CPT TERMS AND SYMBOLS

SYMBOLS

q_c :- **Cone resistance.** 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)**.

f_s :- **Friction sleeve resistance.** The total frictional force acting on the friction sleeve, F_s, divided by its surface area, A_s.**f_s= F_s/A_s**.

q_t :- **Corrected cone resistance.** The cone resistance q_c corrected for unequal pore water pressure effects on the cone face and shoulder.

R_f :- **Friction ratio** The ratio, expressed as a percentage, of the sleeve friction, f_s, to the cone resistance, q_c, both measured at the same depth; **[R_f= (f_s/q_c) · 100].**

Q_t :- **Stress normalised cone resistance** (Method 1) **= (q_c – σ_v)/σ'_v**

q_{t1}:- **Stress normalised cone resistance** (Method 2) **= (q_t)/(σ'_v)$^{0.5}$**

F_r:- **Normalised friction sleeve resistance = f_s /(q_c- σ_v)**

σ_v:- **Total overburden stress**

σ'_v:- **Effective overburden stress**

σ_{atm}, or, P_a:- **Reference atmospheric stress = 100kPa**

***I_c*:-** **Soil Behaviour Type Index**

B_q :- **Pore pressure ratio.** The net pore pressure normalized with respect to the net cone resistance. = **(u_2 – u_0)/(q_t .σ_v)**

TERMS

Cone tip:- The conical tip section of the cone penetrometer.

Friction sleeve:- The section of the cone penetrometer upon which the sleeve friction is measured, located behind the cone tip.

Piezocone:- A cone penetrometer with a pore pressure measurement system.

Dynamic pore pressure:- The pore pressure generated during penetration and measured by a pore pressure sensor. u_1 when measured on the conical tip face, u_2 when measured just behind the conical tip.

APPENDIX B CONE PENETRATION TEST RESULTS

RAW DATA PLOTS

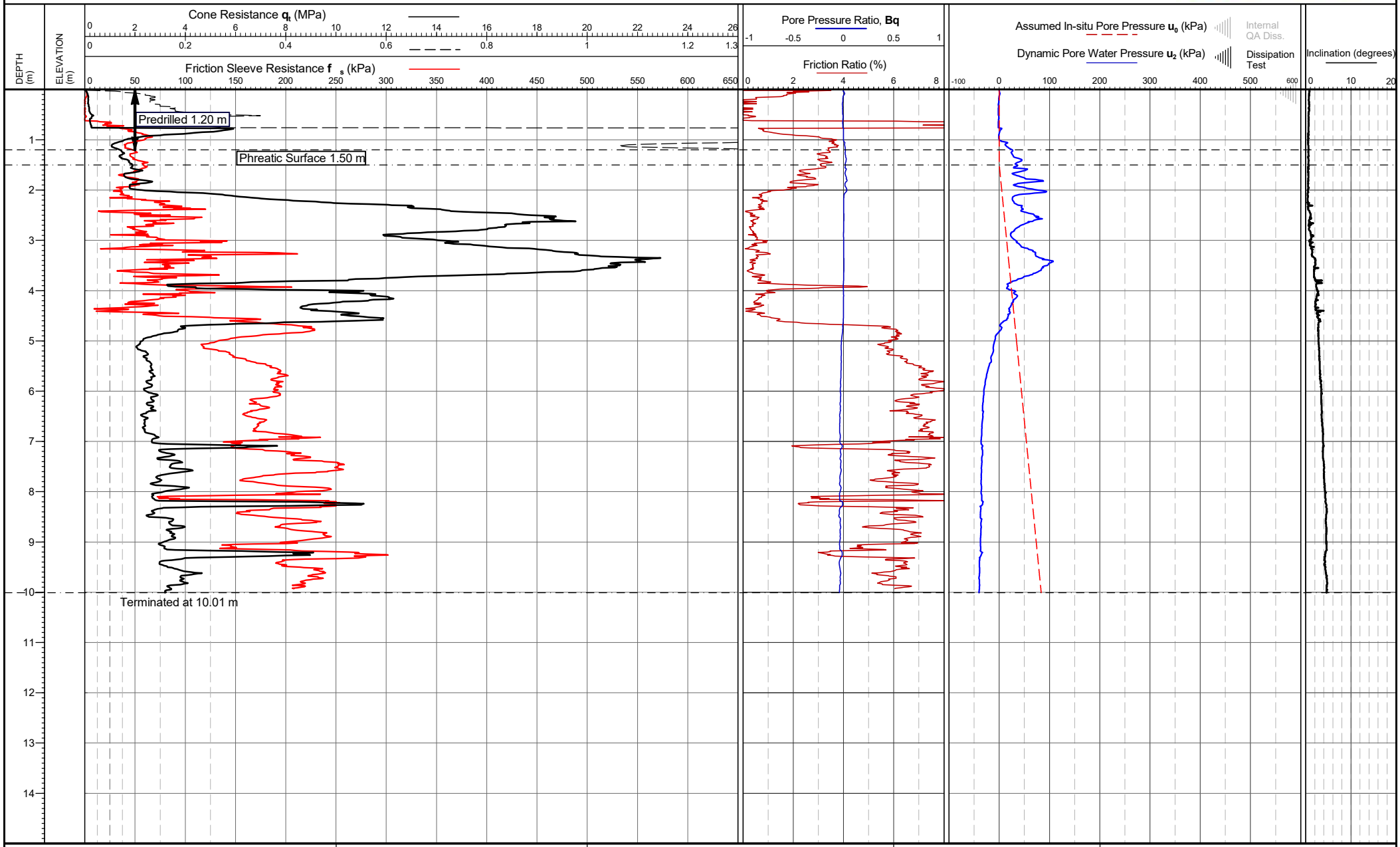
LIST OF FIGURES:

Test ID		Pages included
Cone Penetration Test	CPT1	1
Cone Penetration Test	CPT2	1
Cone Penetration Test	CPT3	1
Cone Penetration Test	CPT4	1
Cone Penetration Test	CPT5	1

Client: SOILS LIMITED

Project: A47 WANSFORD

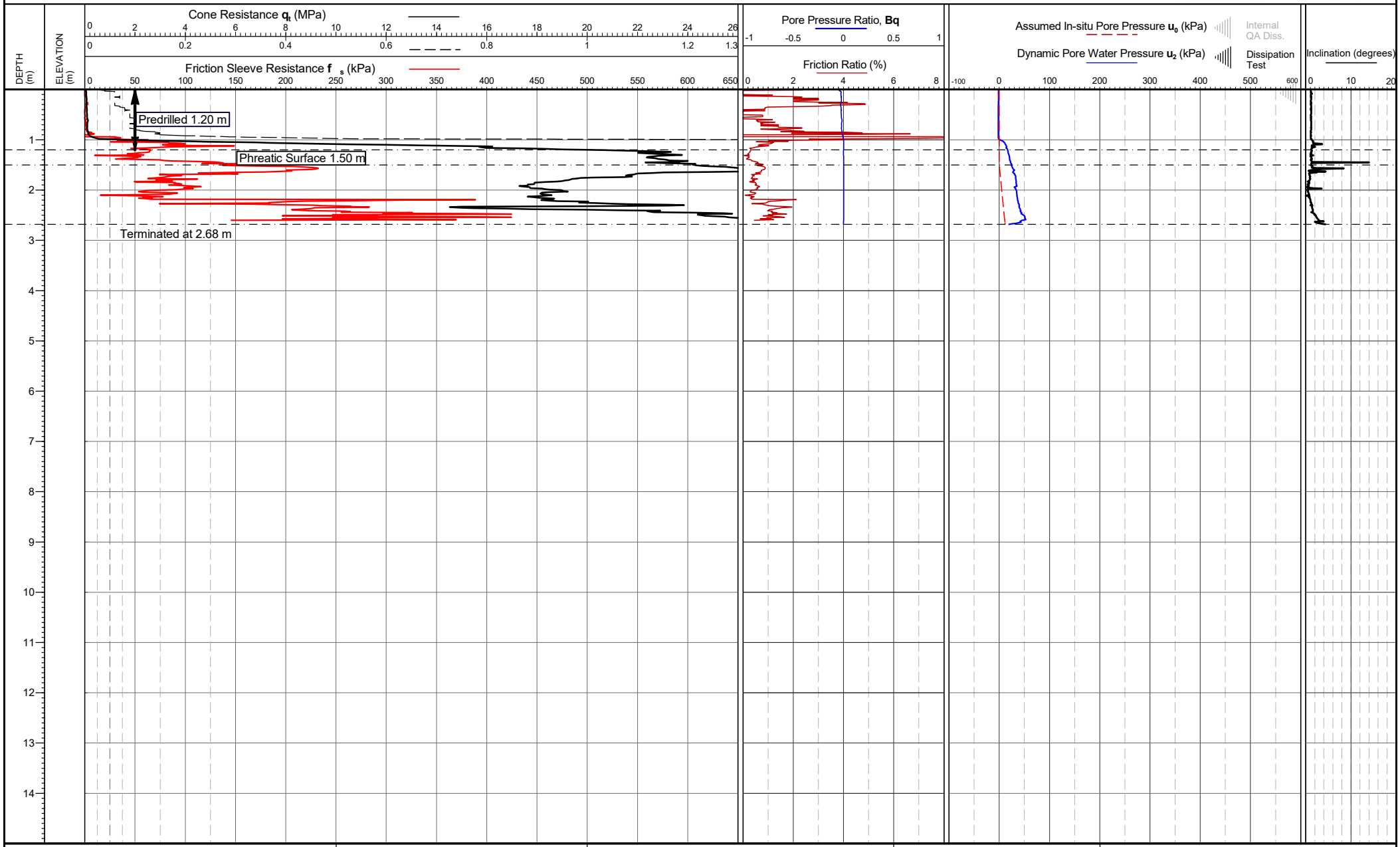
LANKELMA



Cone area (mm2):1500 Cone ID: S15-CFIP.1687 Operator: Walter Geddes Rig Used: UK3 Date of test: 13/09/2018 10:07:55	Location: Cambridgeshire, UK Coordinates: , Elevation:	Remarks: *Phreatic surface origin: Arbitrary value Termination Remark: Target depth	Date of plot: 10-07-19 Lankelma Project Ref: P-107008-1 Checked by: Chris Player	**TEST ID: CPT1** Page 1 of 1

Client: SOILS LIMITED

Project: A47 WANSFORD



Cone area (mm2):1500
Cone ID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 14/09/2018 09:58:37

Location: Cambridgeshire, UK

Coordinates: ,

Elevation:

Remarks:
*Phreatic surface origin: Arbitrary value

Termination Remark: Tip load

Date of plot: 10-07-19

Lankelma Project Ref: P-107008-1

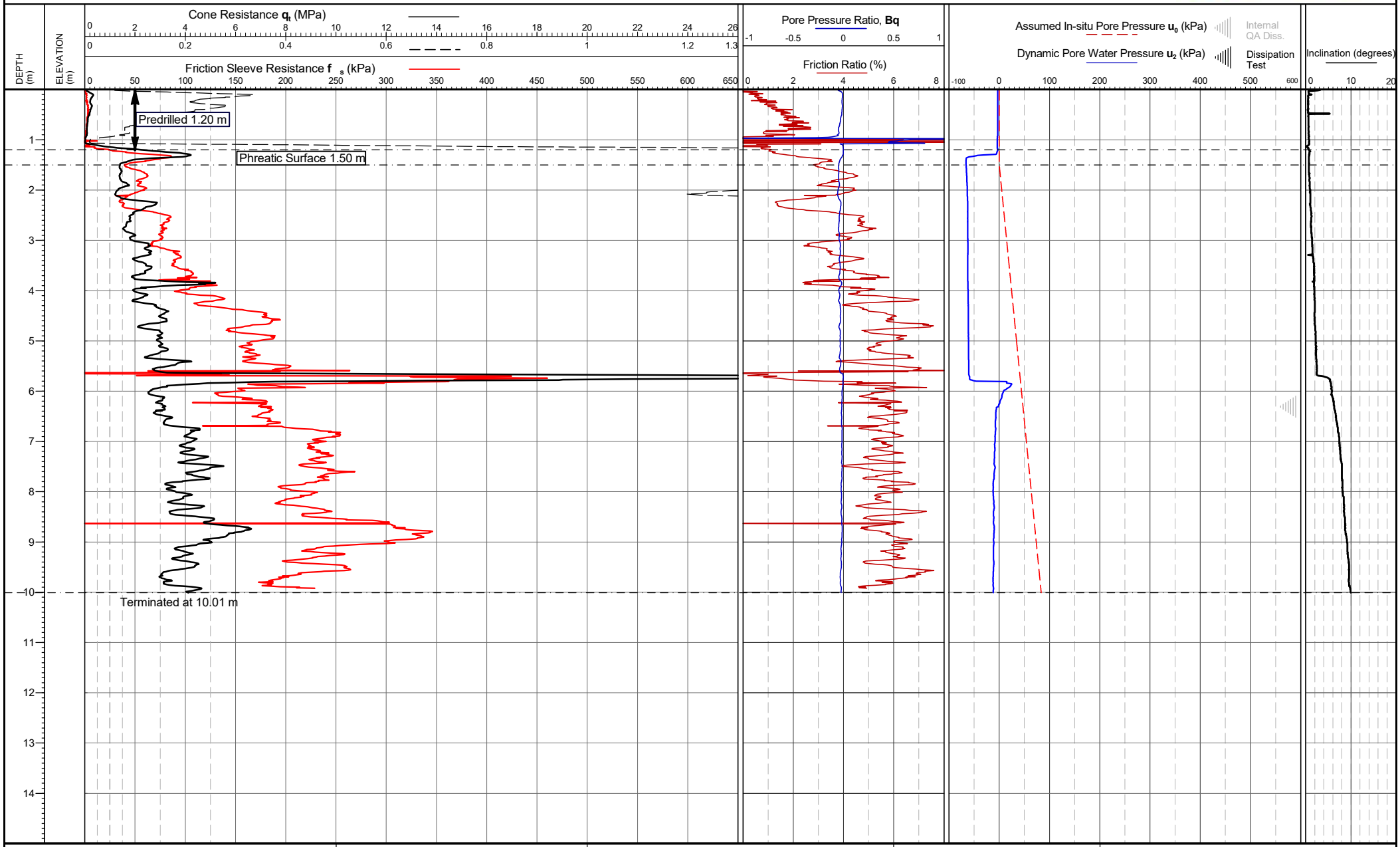
Checked by: Chris Player

TEST ID: CPT2

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
Cone ID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 13:30:00

Location: Cambridgeshire, UK

Coordinates: ,

Elevation:

Remarks:
Averaged zero values from CPT1 & CPT2 used. *Phreatic surface origin: Arbitrary value

Termination Remark: Target depth

Date of plot: 10-07-19

Lankelma Project Ref: P-107008-1

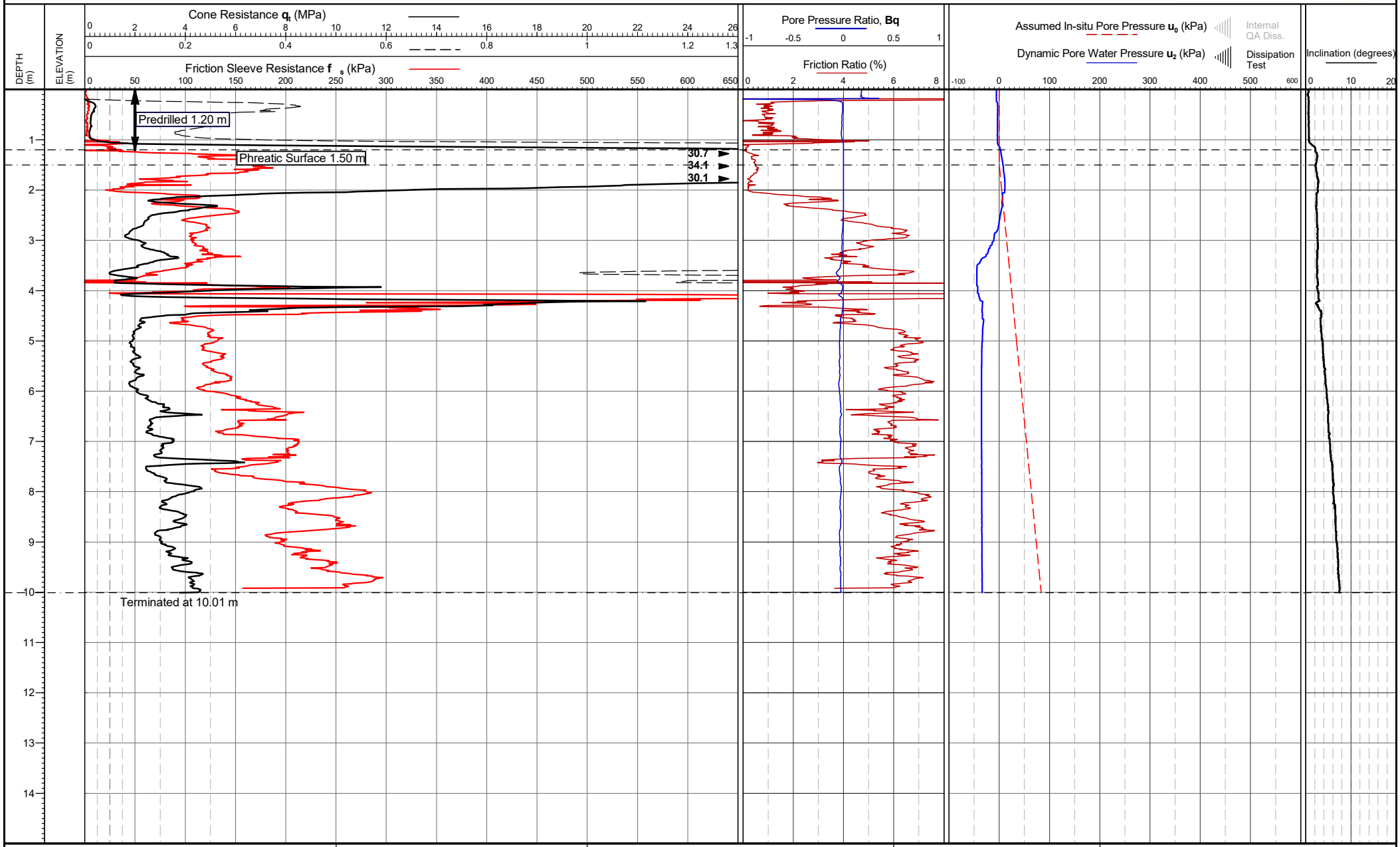
Checked by: Chris Player

TEST ID: CPT3

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
Cone ID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 11:18:00

Location: Cambridgeshire, UK

Coordinates: ,

Elevation:

Remarks:
Averaged zero values from CPT1 & CPT2 used. *Phreatic surface origin: Arbitrary value

Termination Remark: Target depth

Date of plot: 10-07-19

Lankelma Project Ref: P-107008-1

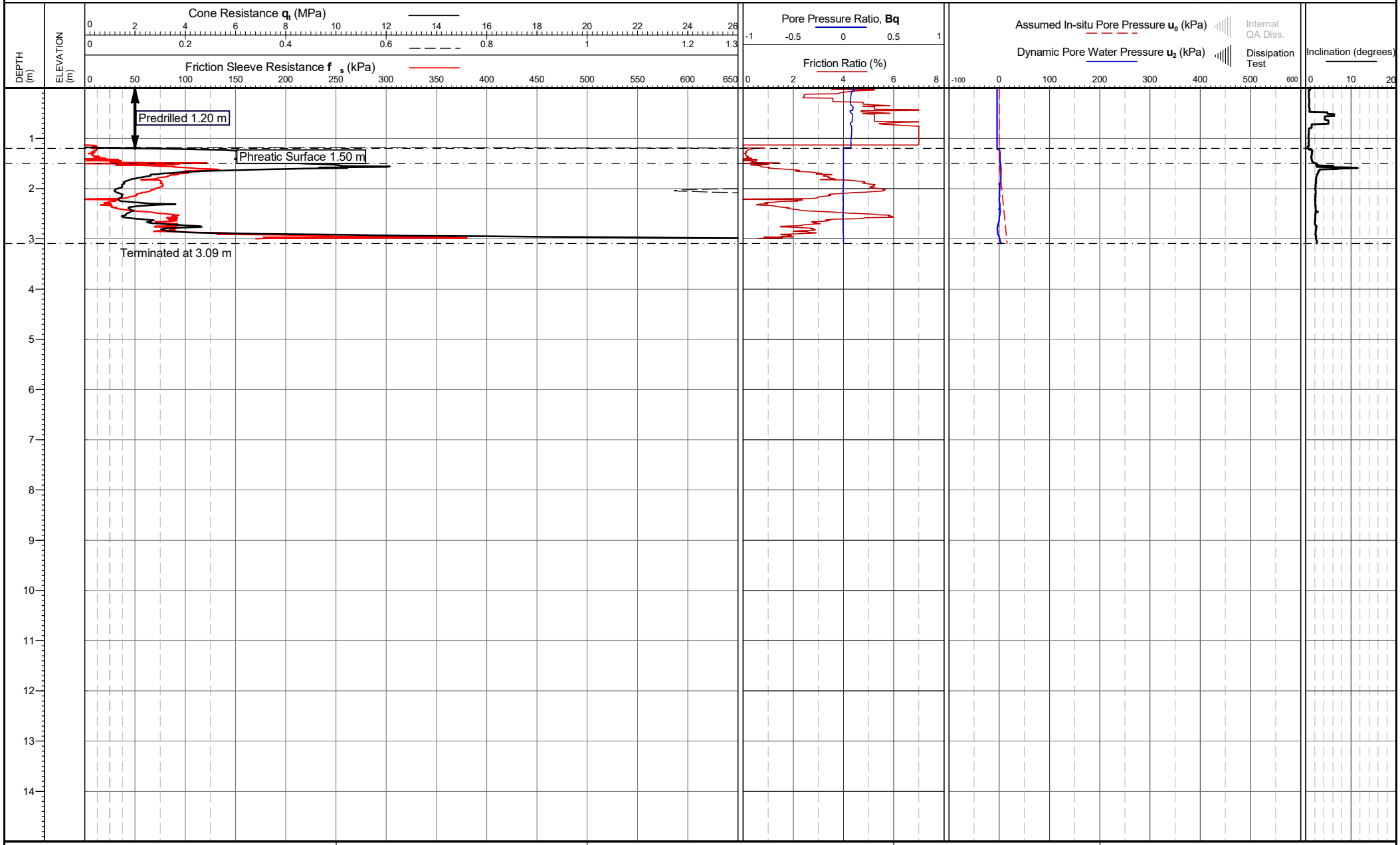
Checked by: Chris Player

TEST ID: CPT4

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
Cone ID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 12:47:00

Location: Cambridgeshire, UK

Coordinates: ,

Elevation:

Remarks:
Averaged zero values from CPT1 & CPT2 used. *Phreatic surface origin: Arbitrary value

Termination Remark: Tip load

Date of plot: 10-07-19

Lankelma Project Ref: P-107008-1

Checked by: Chris Player

TEST ID: CPT5

APPENDIX C STANDARD INTERPRETATION RESULTS (SET 1)

UNDRAINED SHEAR STRENGTH
SENSITIVITY
COEFFICIENT OF VOLUME CHANGE
OVERCONSOLIDATION RATIO

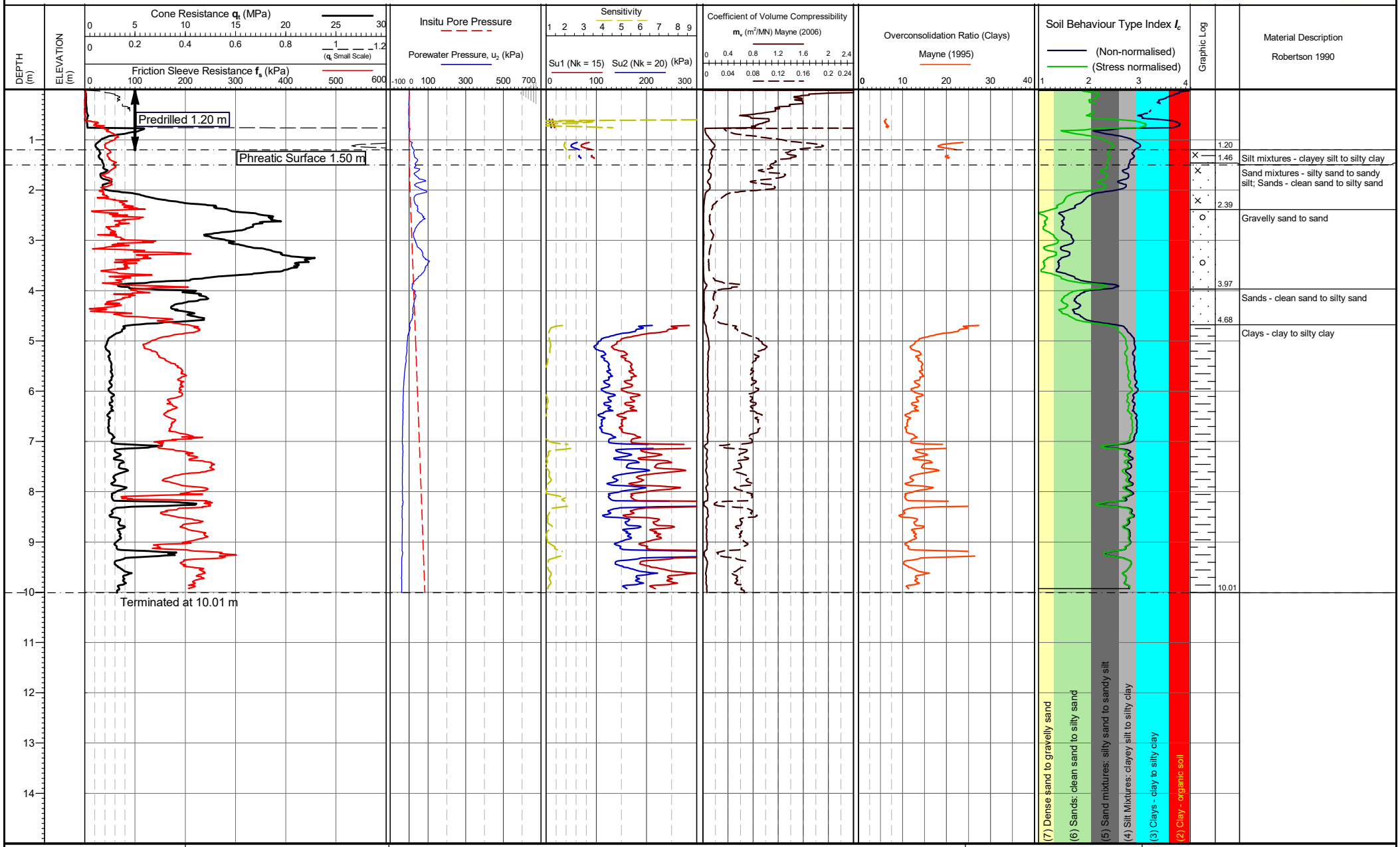
LIST OF FIGURES:

Test ID		Pages included
Cone Penetration Test	CPT1	1
Cone Penetration Test	CPT2	1
Cone Penetration Test	CPT3	1
Cone Penetration Test	CPT4	1
Cone Penetration Test	CPT5	1

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
ConeID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 10:07:55

Location: Cambridgeshire, UK

Coordinates: ,

Elevation:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Target depth

Internal QA Diss.

Dissipation Test

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.05-2.95. See report section 'Drained and Undrained Behaviour' for discussion.

See report section 'Interperative Data' for methods and discussion of parameter evaluation.

Date of plot: 10-07-19

Checked by: Chris Player

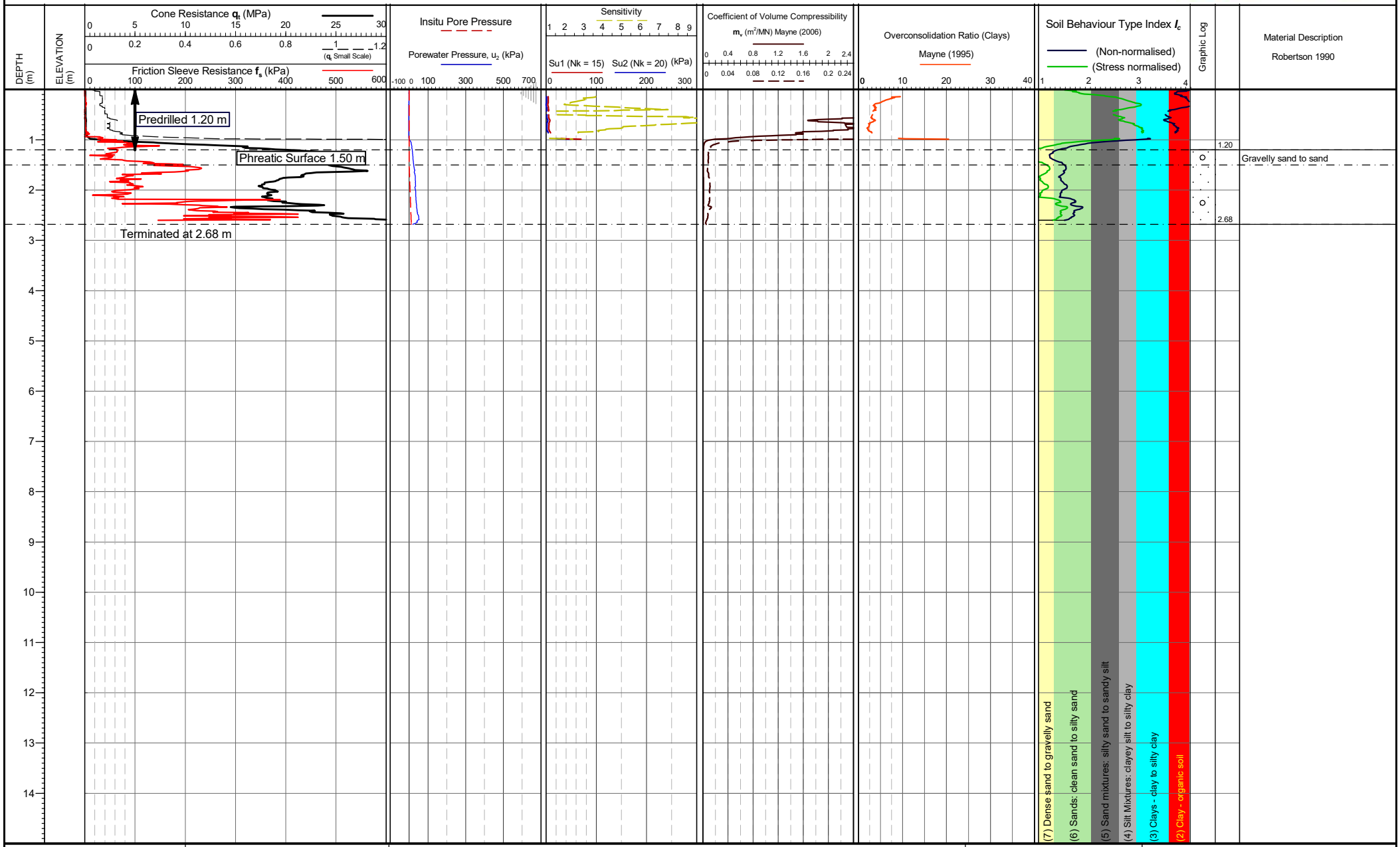
Lankelma Project Ref: P-107008-1

TEST ID: CPT1

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
ConeID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 14/09/2018 09:58:37

Location: Cambridgeshire, UK

Coordinates: ,

Elevation:

Remarks: *Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.

Dissipation Test

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.05-2.95. See report section 'Drained and Undrained Behaviour' for discussion.

See report section 'Interperative Data' for methods and discussion of parameter evaluation.

Date of plot: 10-07-19

Checked by: Chris Player

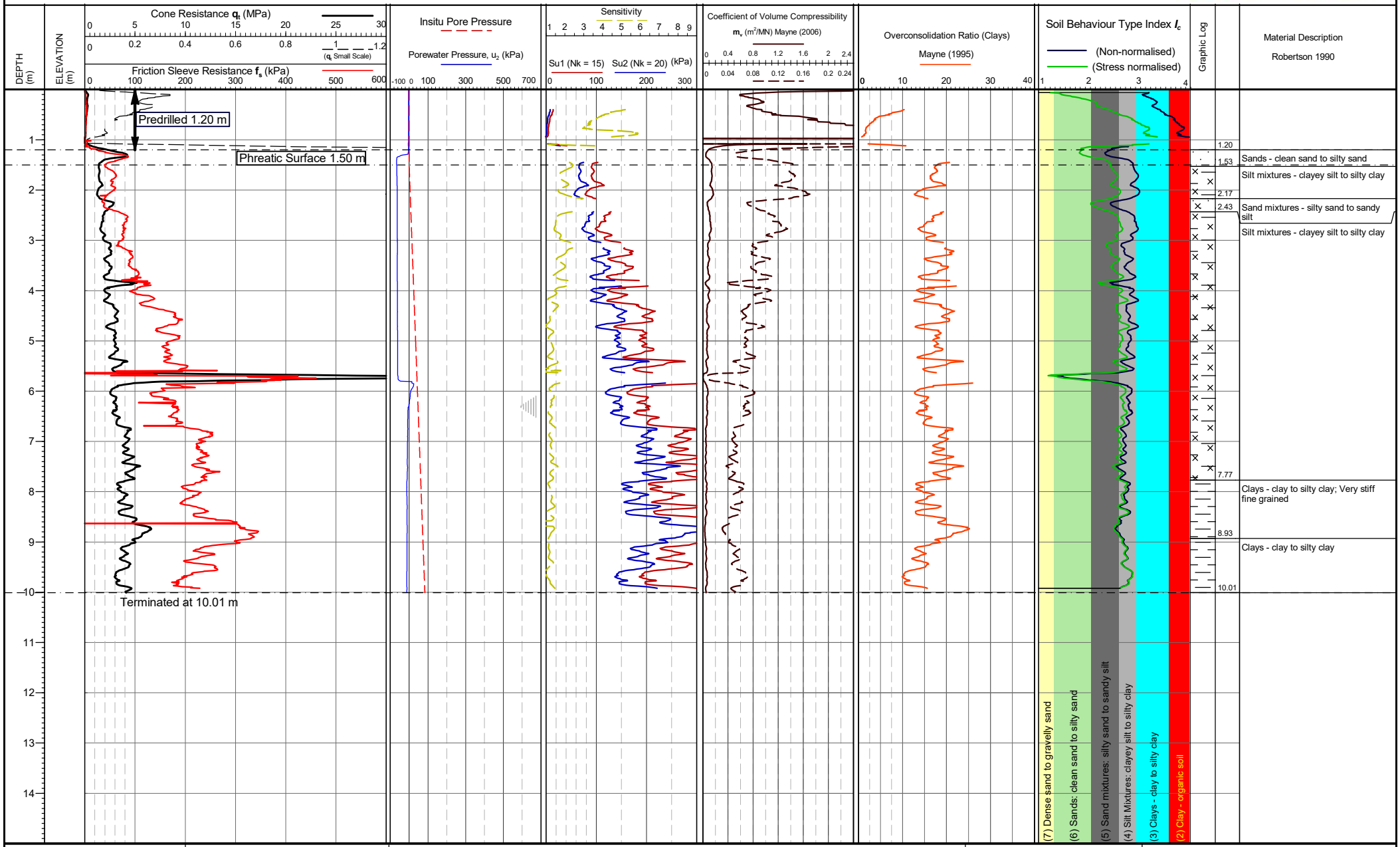
Lankelma Project Ref: P-107008-1

TEST ID: CPT2

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
ConeID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 13:30:00

Location: Cambridgeshire, UK

Coordinates: ,
Elevation:

Remarks: Averaged zero values from CPT1 & CPT2 used.
*Phreatic surface origin: Arbitrary value

Termination Remark:
Target depth

Internal QA Diss.

Dissipation Test

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.05-2.95. See report section 'Drained and Undrained Behaviour' for discussion.

See report section 'Interperative Data' for methods and discussion of parameter evaluation.

Date of plot: 10-07-19

Lankelma Project Ref: P-107008-1

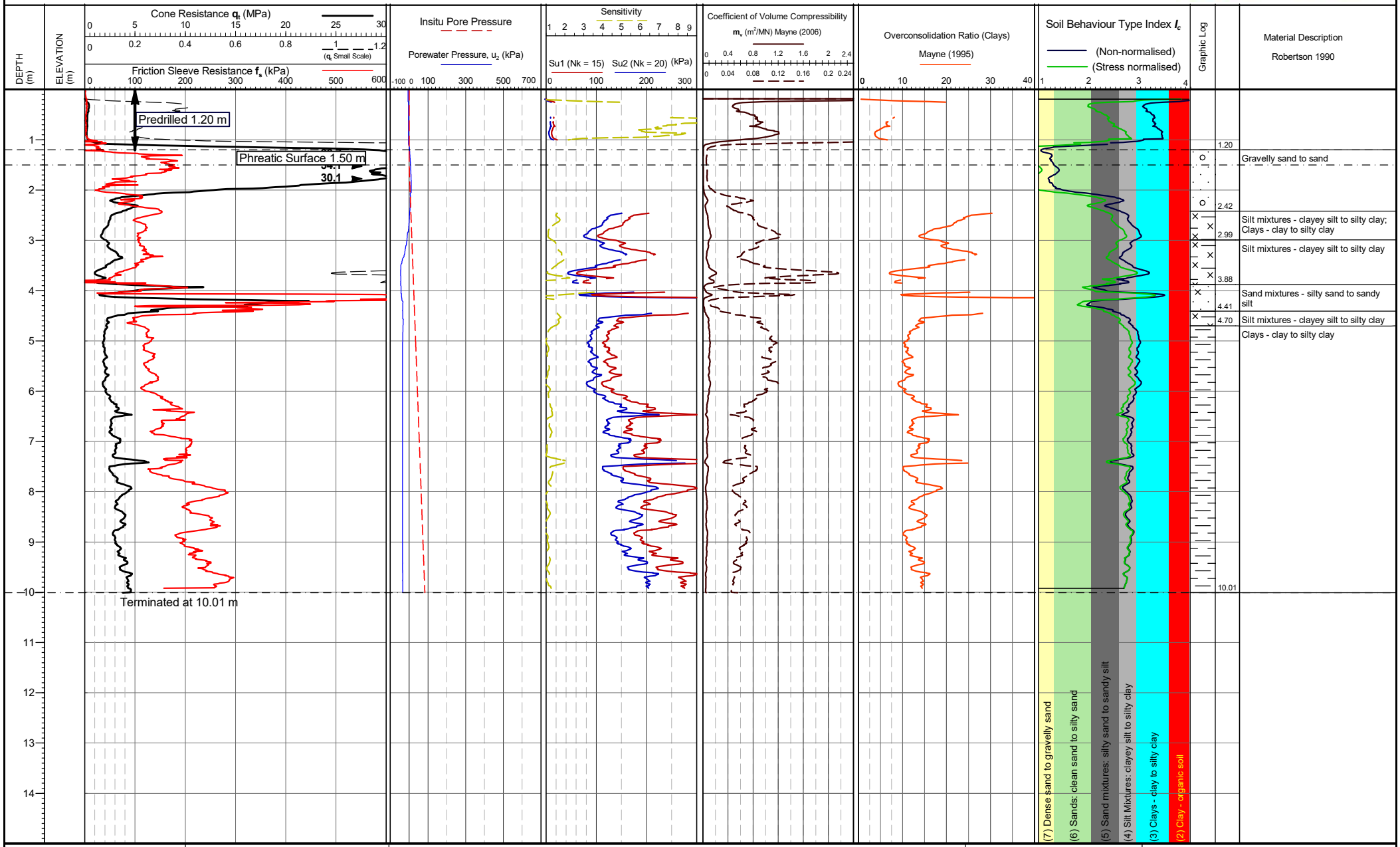
Checked by: Chris Player

TEST ID: CPT3

Client: SOILS LIMITED

Project: A47 WANSFORD

LANKELMA



Cone area (mm2):1500
ConeID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 11:18:00

Location: Cambridgeshire, UK

Coordinates: ,
Elevation:

Remarks: Averaged zero values from CPT1 & CPT2 used.
*Phreatic surface origin: Arbitrary value

Termination Remark:
Target depth

Internal QA Diss.

Dissipation Test

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.05-2.95. See report section 'Drained and Undrained Behaviour' for discussion.

See report section 'Interperative Data' for methods and discussion of parameter evaluation.

Date of plot: 10-07-19

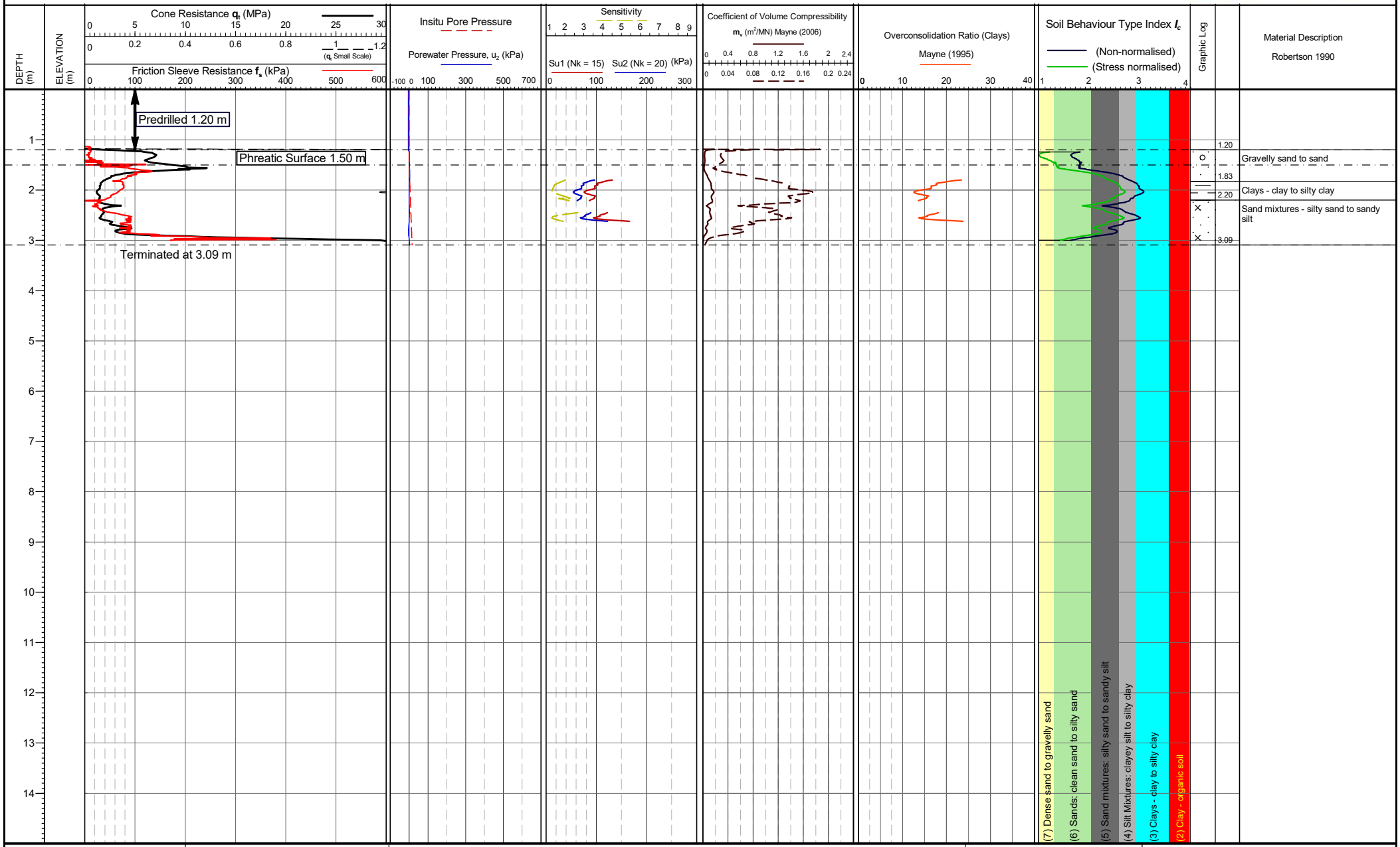
Lankelma Project Ref: P-107008-1

Checked by: Chris Player

TEST ID: CPT4

Client: SOILS LIMITED

Project: A47 WANSFORD



Cone area (mm2):1500
ConeID: S15-CFIP.1687
Operator: Walter Geddes
Rig Used: UK3
Date of test: 13/09/2018 12:47:00

Location: Cambridgeshire, UK

Coordinates: ,
Elevation:

Remarks: Averaged zero values from CPT1 & CPT2 used.
*Phreatic surface origin: Arbitrary value

Termination Remark:
Tip load

Internal QA Diss.

Dissipation Test

Both drained and undrained parameters are calculated for mixed SBTs = Ic 2.05-2.95. See report section 'Drained and Undrained Behaviour' for discussion.

See report section 'Interperative Data' for methods and discussion of parameter evaluation.

Date of plot: 10-07-19

Lankelma Project Ref: P-107008-1

Checked by: Chris Player

TEST ID: CPT5

APPENDIX D STANDARD INTERPRETATION RESULTS (SET 2)

SPT N60
PEAK FRICTION ANGLE
RELATIVE DENSITY
YOUNG'S MODULUS

LIST OF FIGURES:

Test ID		Pages included
Cone Penetration Test	CPT1	1
Cone Penetration Test	CPT2	1
Cone Penetration Test	CPT3	1
Cone Penetration Test	CPT4	1
Cone Penetration Test	CPT5	1

Appendix A.4 Infiltration Testing

Soakaway Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton
Soakaway Test Location	TP14

Field Test

Depth of Pit	1.44 m
Width of Pit	0.70 m
Length of Pit	1.85 m

Field Data

	Test 1		Test 2		Test 3	
	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)
Start Depth	0.34	0.00	0.33	0.00		
	0.42	1.22	0.38	0.40		
	0.50	2.23	0.44	1.27		
	0.55	2.95	0.52	1.75		
	0.58	3.77	0.55	2.37		
	0.65	5.83	0.60	3.65		
	0.72	8.82	0.64	4.47		
	0.77	11.38	0.66	5.12		
	0.79	14.45	0.68	6.17		
	0.82	16.57	0.70	6.67		
	0.84	19.90	0.75	9.77		
	0.86	21.97	0.83	18.13		
	0.875	26.75	0.93	32.30		
	0.90	31.30	0.95	40.57		
	0.94	48.58	0.99	57.47		
	0.96	51.58	1.02	75.03		
	0.99	66.58	1.08	98.83		
	1.04	88.58	1.12	126.92		
	1.06	100.58	1.14	141.15		
	1.10	125.58	1.19	172.55		
	1.13	142.58	1.21	184.07		
	1.16	154.07	1.24	210.88		
	1.18	167.75				

Comments

Two tests only were undertaken within TP14 at the instruction of the IS.

SOILS LIMITED
Newton House, Cross Road, Tadworth **Telephone: 01737 814 221**
Surrey, KT20 5SR

Soakaway Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton
Soakaway Test Location	TP27

Field Test

Depth of Pit	1.50 m
Width of Pit	0.60 m
Length of Pit	1.55 m

Field Data

	Test 1		Test 2		Test 3	
	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)
Start Depth	1.15	0.00	0.84	0.00	0.51	0.00
	1.22	0.53	0.92	0.33	0.52	0.15
	1.26	0.90	0.99	0.63	0.53	0.47
	1.30	1.23	1.05	1.03	0.53	0.53
	1.35	1.53	1.10	1.50	0.54	0.68
	1.39	1.90	1.17	1.97	0.54	0.83
	1.43	2.32	1.20	2.18	0.50	1.13
	1.50	2.70	1.27	2.62	0.55	1.32
			1.30	2.88	0.56	1.48
			1.35	3.28	0.57	1.63
			1.40	3.73	0.57	1.80
			1.45	4.00	0.58	1.97
			1.50	4.30	0.58	2.12
					0.59	2.68
					0.63	4.08
					0.65	5.80
					0.72	8.30
					0.78	11.78
					0.82	13.60
					0.86	16.57
					0.87	18.32
					0.91	20.30
					0.96	23.98
					1.00	27.00
					1.05	31.22
					1.09	36.00
					1.14	39.78

Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR
Telephone: 01737 814 221

Soakaway Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton
Soakaway Test Location	TP28

Field Test

Depth of Pit	1.50 m
Width of Pit	0.60 m
Length of Pit	1.85 m

Field Data

	Test 1		Test 2		Test 3	
	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)
Start Depth	0.50	0.00	0.53	0.00	0.51	0.00
	0.52	0.32	0.56	0.30	0.52	0.15
	0.52	0.48	0.58	0.75	0.53	0.47
	0.53	0.58	0.59	1.00	0.53	0.53
	0.53	0.70	0.63	2.00	0.54	0.68
	0.71	7.18	0.67	3.00	0.54	0.83
	0.72	7.48	0.75	4.50	0.50	1.13
	0.73	7.83	0.77	5.50	0.55	1.32
	0.74	8.32	0.84	7.67	0.56	1.48
	0.74	8.77	0.92	10.67	0.57	1.63
	0.76	8.95	0.95	13.17	0.57	1.80
	0.76	9.23	1.07	20.16	0.58	1.97
	0.77	9.78	1.15	26.10	0.58	2.12
	0.77	10.42	1.20	37.32	0.59	2.68
	1.17	50.47	1.37	72.44	0.63	4.08
	1.18	56.07			0.65	5.80
	1.19	58.93			0.72	8.30
	1.20	62.13			0.78	11.78
	1.23	74.48			0.82	13.60
	1.26	79.48			0.86	16.57
	1.29	88.58			0.87	18.32
	1.31	93.98			0.91	20.30
					0.96	23.98
					1.00	27.00
					1.05	31.22
					1.09	36.00

Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR
Telephone: 01737 814 221

Soakaway Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton
Soakaway Test Location	TP29

Field Test

Depth of Pit	1.46 m
Width of Pit	0.60 m
Length of Pit	1.85 m

Field Data

	Test 1		Test 2		Test 3	
	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)
Start Depth	0.47	0.41	0.00	0.42	0.00	0.40
	1.10	0.43	0.52	0.47	0.23	0.41
	1.73	0.45	0.70	0.49	0.57	0.42
	2.57	0.47	1.02	0.51	1.27	0.44
	3.42	0.49	1.45	0.54	2.37	0.46
	4.10	0.51	2.00	0.58	2.87	0.47
	4.92	0.53	2.42	0.60	3.48	0.48
	5.27	0.54	2.73	0.62	4.07	0.49
	6.02	0.56	3.20	0.65	5.22	0.51
	6.93	0.58	3.70	0.68	5.70	0.52
	7.57	0.60	4.12	0.70	6.10	0.53
	8.02	0.61	4.52	0.73	6.78	0.54
	9.03	0.63	5.17	0.74	7.43	0.55
	9.93	0.65	5.85	0.78	8.35	0.57
	10.32	0.66	6.38	0.80	9.63	0.59
	12.48	0.70	7.07	0.82	10.33	0.60
	15.10	0.74	8.68	0.87	12.98	0.64
	17.38	0.77	10.58	0.92	14.27	0.66
	20.23	0.81	12.90	0.99	17.92	0.71
	23.20	0.85	14.58	1.02	20.42	0.74
	25.47	0.88	17.50	1.09	24.03	0.78
	27.02	0.90	20.62	1.13	29.17	0.83
	30.13	0.94	25.73	1.19	34.57	0.88
	36.90	1.00	28.23	1.22	38.87	0.92
	38.90	1.03	30.32	1.24	42.83	0.95
	44.23	1.07	37.02	1.25	47.68	0.99
	49.67	1.11	41.82	1.28	52.17	1.01
	62.55	1.18	49.57	1.32	58.80	1.05
	71.25	1.22	58.57	1.39	62.93	1.07
	80.97	1.26	65.75	1.41	67.73	1.09
	91.22	1.30	73.13	1.43	72.72	1.11
	105.28	1.39	82.37	1.47	80.28	1.14
	115.60	1.43	88.70	1.50	84.88	1.15

Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth **Telephone: 01737 814 221**
Surrey, KT20 5SR

Soakaway Raw Data

Contract No.	17076
Contract:	A47 Wansford to Sutton
Soakaway Test Location	TP30

Field Test

Depth of Pit	1.46 m
Width of Pit	0.60 m
Length of Pit	1.85 m

Field Data

	Test 1		Test 2		Test 3	
	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)	Depth to Water (m)	Elapsed Time (min)
Start Depth	0.00	0.40	0.00	0.30	0.00	0.43
	0.25	0.43	0.30	0.31	0.33	0.45
	0.57	0.44	0.55	0.32	1.28	0.47
	0.93	0.45	0.87	0.33	1.33	0.49
	1.20	0.46	1.15	0.34	1.45	0.50
	1.47	0.47	1.77	0.37	1.93	0.53
	1.98	0.48	2.92	0.40	2.37	0.54
	2.32	0.49	3.73	0.42	2.88	0.58
	2.78	0.50	4.83	0.44	3.73	0.61
	3.52	0.52	5.80	0.46	6.47	0.68
	4.02	0.53	6.72	0.48	7.37	0.71
	4.77	0.54	7.15	0.49	9.07	0.75
	5.18	0.56	8.13	0.51	13.93	0.85
	5.92	0.57	9.32	0.54	15.10	0.87
	6.30	0.58	10.03	0.56	19.37	0.90
	7.07	0.59	11.33	0.59	22.43	0.97
	7.67	0.60	12.13	0.61	24.37	0.98
	8.45	0.61	13.93	0.64	27.62	1.02
	9.55	0.62	18.58	0.73	30.23	1.04
	9.98	0.63	22.48	0.77	31.87	1.06
	10.72	0.64	26.73	0.83	34.25	1.08
	11.83	0.66	30.83	0.86	36.03	1.10
	13.18	0.68	35.52	0.90	44.07	1.16
	14.53	0.70	40.05	0.93	50.90	1.21
	19.12	0.78	51.43	1.03	55.98	1.24
	24.65	0.83			62.15	1.28
	28.62	0.86			66.57	1.31
	32.67	0.90			71.08	1.33
	40.07	0.95			77.28	1.37
	46.20	1.00				
	58.27	1.06				
	70.03	1.11				
	78.95	1.15				

Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth **Telephone: 01737 814 221**
Surrey, KT20 5SR

Appendix B Geotechnical Laboratory Testing

Laboratory Report

GEO Site & Testing Services Ltd

Contract Number: 41731

Client Ref:

Client PO: **17076**

Report Date: **20-12-2018**

Client **Soils Limited**
Newton House
Cross Road
Tadworth
Surrey
KT20 5SR

Contract Title: **A47 Wansford**

For the attention of: **John Hills**

Date Received: **20-11-2018**

Date Commenced: **20-11-2018**

Date Completed: **20-12-2018**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	174
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	174
Particle Density (Gas Jar) BS 1377:1990 - Part 2 : 8.2 - * UKAS	9
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	84
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	65
Dry Den/MC (4.5kg Rammer Method CBR Mould) BS 1377:1990 - Part 4 : 3.6 - * UKAS	3

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant)
Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk g[redacted]

Laboratory Report

Disposal of samples for job

GEO Site & Testing Services Ltd

Contract Number: 41731

Test Description	Qty
Dry Den/MC (Vibrating Hammer Method) BS 1377:1990 - Part 4 : 3.7 - * UKAS	2
CBR: Remoulded Specimen and tested at top only BS 1377:1990 - Part 4 : 7 - * UKAS	1
CBR: Rem specified MC and tested at top only BS 1377:1990 - Part 4 : 7 - * UKAS	5
One-dimensional Consolidation 75mm or 50mm diameter specimens (5 days) BS 1377:1990 - Part 5 : 3 - * UKAS	10
Quick Undrained Triaxial Compression Test - Multi-stage Loading of a single specimen (100mm diameter) BS 1377:1990 - Part 7 : 9 - * UKAS	32
CD 100mm Consolidated drained Triaxial compression test on a single 100 mm diameter specimens Multistage loading with the measurement of volume change and pore water pressure including saturation and consolidation, test duration FOUR days. **PLEASE NOTE IT IS LIKELY THIS TEST WILL INCUR EXTRA OVER DAY CHARGES.** BS 1377:1990 - Part 8 : 7	5
Determination of Point Load Value Axial or Diametrical including WC ISRM Suggested Method for Point Load Strength - * UKAS	42
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	6
Extra over items for test duration in excess of four days.	12
BRE Full Suite **includes pH, water & acid soluble sulphate, total sulphur, magnesium, chloride and nitrate** BRE - BR279 - @ Non Accredited Test	40
Loss on Ignition BS 1377:1990 - Part 3 : 4 - @ Non Accredited Test	1
Measurement of Swelling Pressure (2 days) BS 1377:1990 - Part 5 : 4.3 - @ Non Accredited Test	3
Organic Matter Content-dichromate method BS 1377:1990 - Part 3 : 3 - @ Non Accredited Test	5

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk [redacted]

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH01A		SPT	1.90	-		Grey silty CLAY.
BH01A		D	4.10	-		Grey silty CLAY.
BH01A		SPT	6.50	-		Brown silty CLAY.
BH01A		SPT	9.50	-		Grey silty CLAY.
BH02		D	2.00	-	2.10	Black silty CLAY with organic material.
BH02		D	2.60	-	2.70	Brown silty organic CLAY with rootlets.
BH02		D	3.20	-		Grey fine to medium gravelly sandy silty CLAY.
BH02		D	4.70	-		Grey silty CLAY.
BH02		D	6.20	-	6.70	Grey silty CLAY.
BH02		SPT	7.50	-		Grey silty CLAY.
BH02		SPT	10.00	-		Grey silty CLAY.
BH03A		D	12.10	-	12.20	Grey silty CLAY.
BH03A		D	14.80	-	14.90	Grey silty CLAY.
BH04		D	2.10	-	2.20	Grey silty CLAY.
BH07		SPT	6.00	-		Grey clayey SILT.
BH07		SPT	7.50	-		Grey sandy silty CLAY.
BH07		D	9.10	-		Grey silty CLAY.
BH07		SPT	12.00	-		Grey silty CLAY.
BH08		D	7.90	-		Grey silty CLAY.
BH08		D	10.00	-		Grey silty CLAY.
BH09		D	2.00	-		Brown silty CLAY with rootlets.
BH09		D	6.00	-	6.10	Grey fine to coarse gravelly silty CLAY.
BH09		SPT	9.00	-		Grey silty CLAY.
BH09		SPT	10.50	-		Grey silty CLAY.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

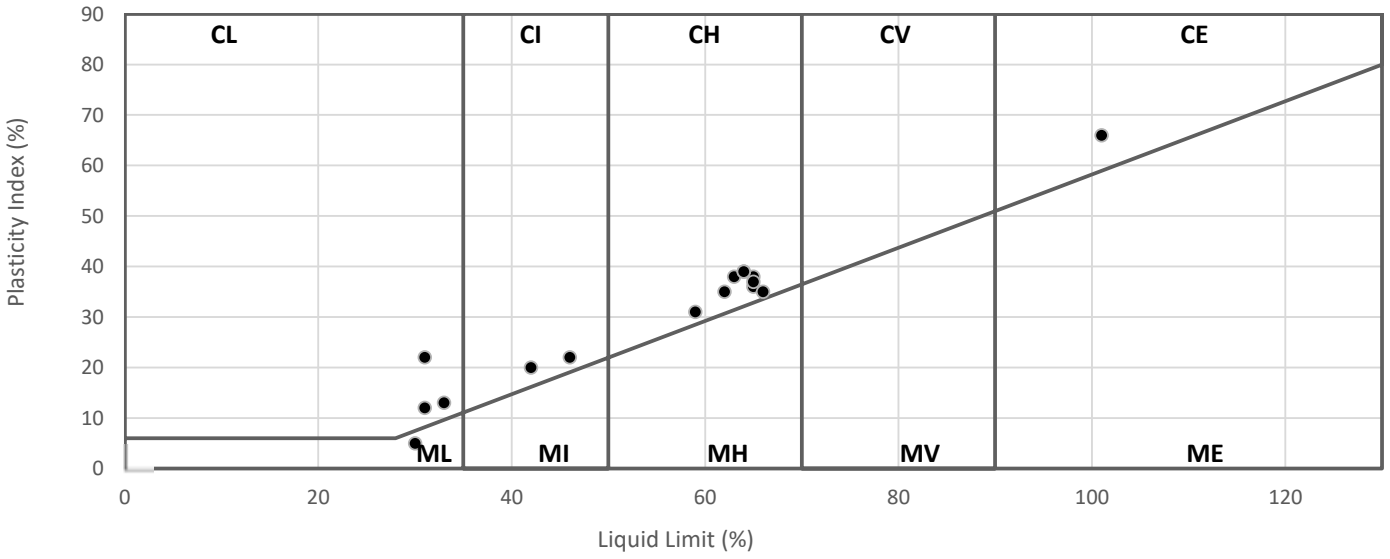
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH01A		SPT	1.90	-		31					
BH01A		D	4.10	-		23	63	25	38	100	CH High Plasticity
BH01A		SPT	6.50	-		25	59	28	31	100	CH High Plasticity
BH01A		SPT	9.50	-		22					
BH02		D	2.00	-	2.10	189					
BH02		D	2.60	-	2.70	128	101	35	66	100	CE Extremely High Plasticity
BH02		D	3.20	-		48	46	24	22	79	CI Intermediate Plasticity
BH02		D	4.70	-		25	65	27	38	100	CH High Plasticity
BH02		D	6.20	-	6.70	27					
BH02		SPT	7.50	-		22	65	29	36	100	CH High Plasticity
BH02		SPT	10.00	-		22					
BH03A		D	12.10	-	12.20	26	64	25	39	100	CH High Plasticity
BH03A		D	14.80	-	14.90	25	62	27	35	100	CH High Plasticity
BH04		D	2.10	-	2.20	11	31	9	22	100	CL Low Plasticity
BH07		SPT	6.00	-		22	30	25	5	100	ML Low Plasticity
BH07		SPT	7.50	-		18	31	19	12	100	CL Low Plasticity
BH07		D	9.10	-		20					
BH07		SPT	12.00	-		19	65	28	37	100	CH High Plasticity
BH08		D	7.90	-		22	64	25	39	100	CH High Plasticity
BH08		D	10.00	-		21					
BH09		D	2.00	-		24	33	20	13	82	CL Low Plasticity
BH09		D	6.00	-	6.10	28	42	22	20	84	CI Intermediate Plasticity
BH09		SPT	9.00	-		25	66	31	35	100	CH High Plasticity
BH09		SPT	10.50	-		24					

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH11		SPT	4.50	-		Grey sandy silty CLAY.
BH11		SPT	7.50	-		Grey silty CLAY.
BH12		D	7.60	-		Grey silty CLAY.
BH12		D	9.60	-		Grey silty CLAY.
BH13		D	7.90	-	8.00	Grey silty CLAY.
BH13		D	10.80	-	10.90	Grey silty CLAY.
BH13		D	12.40	-	12.50	Grey silty CLAY.
BH13		D	13.90	-	14.00	Grey silty CLAY.
BH13		D	17.00	-		Grey silty CLAY.
BH13		D	18.80	-	19.00	Grey silty CLAY.
BH14		D	7.30	-	7.50	Grey sandy clayey SILT.
BH14		UT	9.00	-	9.50	Grey fine to medium gravelly sandy silty CLAY.
BH14		D	11.50	-	11.50	Grey silty CLAY.
BH14		SHOE	14.20	-	14.60	Grey silty CLAY.
BH14		D	15.20	-		Grey silty CLAY.
BH14		D	18.20	-		Grey silty CLAY.
BH14		D	22.10	-	22.20	Grey silty CLAY.
BH14		D	24.20	-	24.30	Grey silty CLAY.
BH14A		D	7.70	-	7.80	Grey silty CLAY.
BH14A		D	8.25	-	8.35	Grey silty CLAY.
BH14A		D	9.90	-	10.00	Grey fine to medium gravelly sandy silty CLAY.
BH14A		D	13.30	-	13.40	Grey silty CLAY.
BH14A		D	15.70	-	15.80	Grey silty CLAY.
BH14A		D	20.90	-	21.00	Grey silty CLAY.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

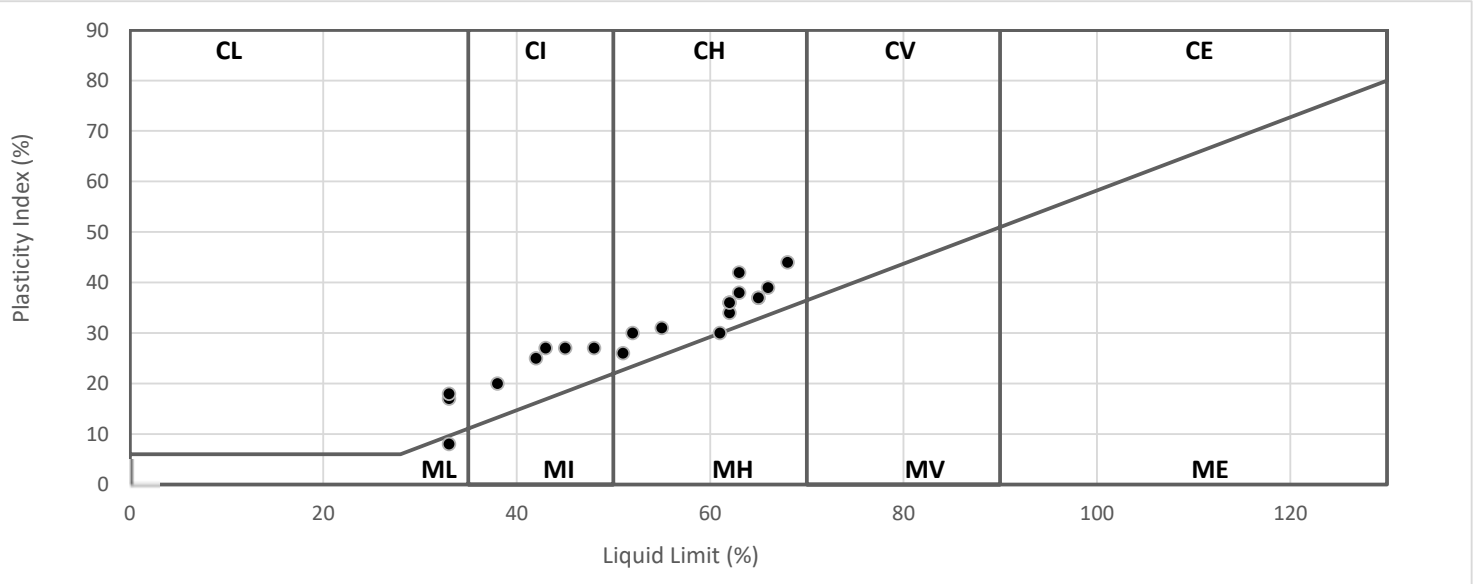
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH11		SPT	4.50	-		22	33	16	17	100	CL Low Plasticity
BH11		SPT	7.50	-		28	61	31	30	100	CH High Plasticity
BH12		D	7.60	-		21	43	16	27	100	CI Intermediate Plasticity
BH12		D	9.60	-		33	55	24	31	100	CH High Plasticity
BH13		D	7.90	-	8.00	17	63	21	42	100	CH High Plasticity
BH13		D	10.80	-	10.90	31	51	25	26	100	CH High Plasticity
BH13		D	12.40	-	12.50	28					
BH13		D	13.90	-	14.00	21	62	26	36	100	CH High Plasticity
BH13		D	17.00	-		20					
BH13		D	18.80	-	19.00	19	62	28	34	100	CH High Plasticity
BH14		D	7.30	-	7.50	24	33	25	8	100	ML Low Plasticity
BH14		UT	9.00	-	9.50	25	42	17	25	81	CI Intermediate Plasticity
BH14		D	11.50	-	11.50	30	68	24	44	100	CH High Plasticity
BH14		SHOE	14.20	-	14.60	21	66	27	39	100	CH High Plasticity
BH14		D	15.20	-		22	65	28	37	100	CH High Plasticity
BH14		D	18.20	-		17	62	26	36	100	CH High Plasticity
BH14		D	22.10	-	22.20	20	63	25	38	100	CH High Plasticity
BH14		D	24.20	-	24.30	20	65	28	37	100	CH High Plasticity
BH14A		D	7.70	-	7.80	22	38	18	20	100	CI Intermediate Plasticity
BH14A		D	8.25	-	8.35	23	48	21	27	100	CI Intermediate Plasticity
BH14A		D	9.90	-	10.00	7.6	33	15	18	90	CL Low Plasticity
BH14A		D	13.30	-	13.40	10					
BH14A		D	15.70	-	15.80	14	45	18	27	100	CI Intermediate Plasticity
BH14A		D	20.90	-	21.00	23	52	22	30	100	CH High Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH14A		D	24.80	-	24.90	Grey silty CLAY.
BH15		D	8.20	-	8.30	Grey fine sandy silty CLAY.
BH15		D	10.25	-	10.35	Grey silty CLAY.
BH15		D	13.40	-	13.50	Grey silty CLAY.
BH15		D	18.00	-	18.10	Grey silty CLAY.
BH15		D	22.10	-	22.20	Grey silty CLAY.
BH15		D	24.45	-	24.55	Grey silty CLAY.
BH16		D	12.20	-	12.30	Grey silty CLAY.
BH16		SPT	12.50	-		Grey silty CLAY.
BH16		SPT	15.50	-	15.90	Grey silty CLAY.
BH16		SPT	17.00	-		Grey silty CLAY.
BH17		D	7.70	-	7.80	Grey sandy silty CLAY.
BH17		D	9.60	-	9.70	Grey silty CLAY.
BH17		D	10.90	-	11.00	Grey sandy silty CLAY.
BH17		D	11.50	-	11.60	Grey silty CLAY.
BH17		D	12.80	-	12.90	Grey silty CLAY.
BH17		D	14.20	-	14.30	Grey fine to coarse gravelly silty CLAY.
BH18		D	8.50	-		Grey silty CLAY.
BH18		D	9.50	-		Grey fine sandy silty CLAY.
BH18		D	11.50	-		Grey fine to medium gravelly sandy silty CLAY.
BH19		B	8.10	-	8.20	Grey clayey SILT.
BH19		B	9.40	-	9.50	Grey silty CLAY.
BH19		B	10.80	-	10.90	Grey silty CLAY.
BH20		D	0.50	-		Brown fine to coarse gravelly SAND.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

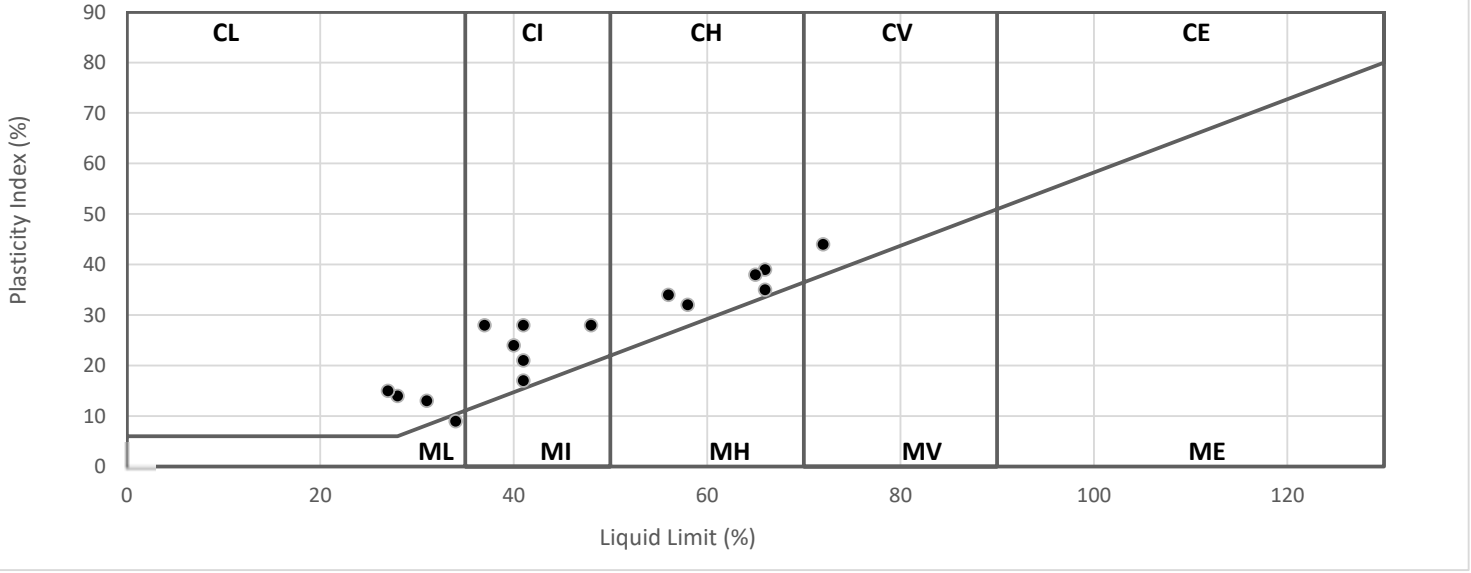
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH14A		D	24.80	-	24.90	19					
BH15		D	8.20	-	8.30	50	66	31	35	100	CH High Plasticity
BH15		D	10.25	-	10.35	10	41	13	28	100	CI Intermediate Plasticity
BH15		D	13.40	-	13.50	21	58	26	32	100	CH High Plasticity
BH15		D	18.00	-	18.10	21	48	20	28	100	CI Intermediate Plasticity
BH15		D	22.10	-	22.20	20	56	22	34	100	CH High Plasticity
BH15		D	24.45	-	24.55	20					
BH16		D	12.20	-	12.30	18					
BH16		SPT	12.50	-		18	72	28	44	100	CV Very High Plasticity
BH16		SPT	15.50	-	15.90	21					
BH16		SPT	17.00	-		19	66	27	39	100	CH High Plasticity
BH17		D	7.70	-	7.80	23	41	24	17	100	CI Intermediate Plasticity
BH17		D	9.60	-	9.70	16					
BH17		D	10.90	-	11.00	10	28	14	14	100	CL Low Plasticity
BH17		D	11.50	-	11.60	15	31	18	13	100	CL Low Plasticity
BH17		D	12.80	-	12.90	18					
BH17		D	14.20	-	14.30	19	41	20	21	86	CI Intermediate Plasticity
BH18		D	8.50	-		17					
BH18		D	9.50	-		21	37	9	28	100	CI Intermediate Plasticity
BH18		D	11.50	-		14	40	16	24	87	CI Intermediate Plasticity
BH19		B	8.10	-	8.20	23	34	25	9	100	ML Low Plasticity
BH19		B	9.40	-	9.50	13	27	12	15	100	CL Low Plasticity
BH19		B	10.80	-	10.90	19	65	27	38	100	CH High Plasticity
BH20		D	0.50	-		30					

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH20		D	5.20	-		Grey silty CLAY.
BH20		D	8.50	-		Grey silty CLAY.
BH21		D	2.80	-		Brown fine to coarse gravelly silty CLAY.
BH21		D	8.00	-		Brown fine to coarse gravelly silty CLAY with organic material.
BH21		D	11.00	-		Grey silty CLAY.
BH21		D	13.00	-	13.45	Grey fine to medium gravelly sandy silty CLAY.
BH22		D	7.00	-		Brown silty clayey SAND.
BH22		D	7.50	-	7.95	Grey silty CLAY.
BH22		D	9.30	-		Grey silty CLAY.
BH22		D	11.40	-		Grey silty CLAY.
BH22		D	14.30	-		Grey silty CLAY.
BH24		D	3.50	-		Brown fine to coarse gravelly silty CLAY.
BH24		D	4.00	-	4.45	Grey silty CLAY.
BH24		D	6.50	-		Grey silty CLAY.
BH24		D	8.50	-		Grey silty CLAY.
BH24		D	14.00	-		Dark brown silty CLAY.
BH25		B&D	5.00	-	5.55	Grey silty CLAY.
BH25		UT	6.50	-	6.80	Grey silty CLAY.
BH25		B&D	8.00	-	8.70	Grey fine to medium gravelly silty CLAY.
BH26		D	3.80	-	3.90	Grey silty CLAY.
BH26		D	5.50	-	5.60	Grey silty CLAY.
BH26		D	8.10	-	8.20	Grey silty CLAY.
BH26		D	10.10	-	10.20	Grey silty CLAY.
BH26		D	11.20	-	11.30	Grey silty CLAY.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

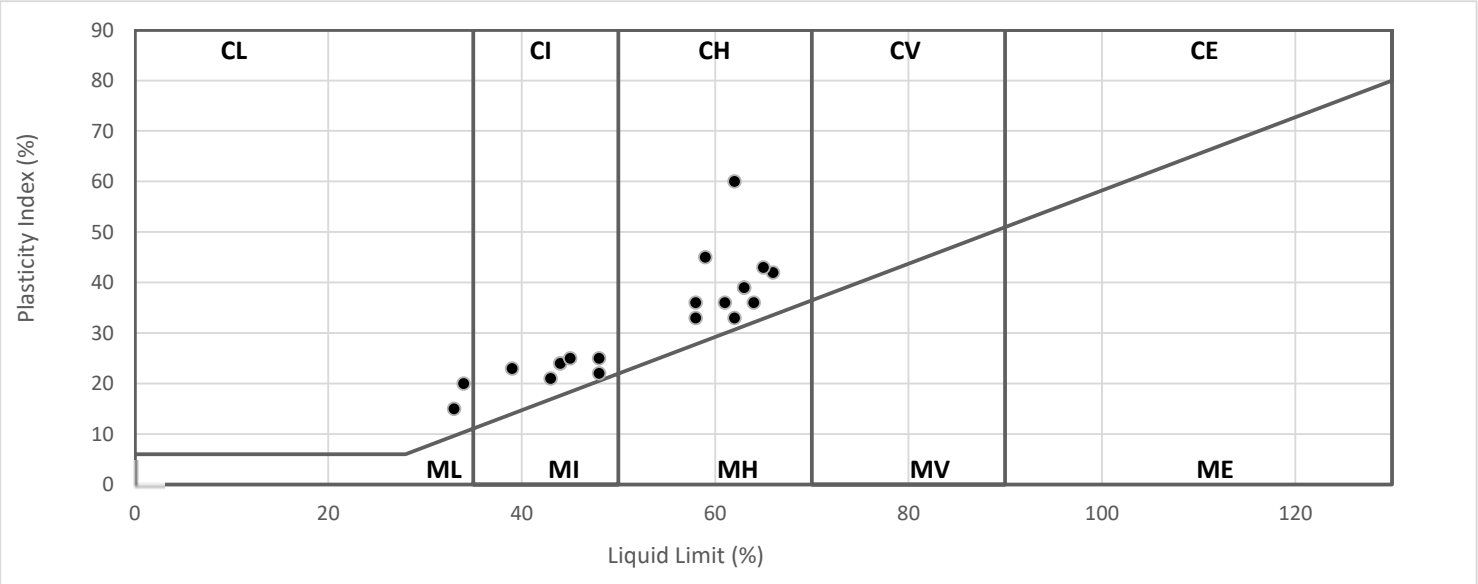
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH20		D	5.20	-		11	34	14	20	100	CL Low Plasticity
BH20		D	8.50	-		21	59	14	45	100	CH High Plasticity
BH21		D	2.80	-		17	44	20	24	77	CI Intermediate Plasticity
BH21		D	8.00	-		33	63	24	39	100	CH High Plasticity
BH21		D	11.00	-		27	63	24	39	100	CH High Plasticity
BH21		D	13.00	-	13.45	23	66	24	42	76	CH High Plasticity
BH22		D	7.00	-		22		NP		100	
BH22		D	7.50	-	7.95	17	39	16	23	100	CI Intermediate Plasticity
BH22		D	9.30	-		19	48	23	25	100	CI Intermediate Plasticity
BH22		D	11.40	-		22	44	20	24	100	CI Intermediate Plasticity
BH22		D	14.30	-		20	43	22	21	100	CI Intermediate Plasticity
BH24		D	3.50	-		32					
BH24		D	4.00	-	4.45	19	33	18	15	81	CL Low Plasticity
BH24		D	6.50	-		28	65	22	43	100	CH High Plasticity
BH24		D	8.50	-		24	58	22	36	100	CH High Plasticity
BH24		D	14.00	-		24	62	22	40	100	CH High Plasticity
BH25		B&D	5.00	-	5.55	28	62	29	33	100	CH High Plasticity
BH25		UT	6.50	-	6.80	20	64	28	36	100	CH High Plasticity
BH25		B&D	8.00	-	8.70	23	61	25	36	89	CH High Plasticity
BH26		D	3.80	-	3.90	29	48	26	22	100	CI Intermediate Plasticity
BH26		D	5.50	-	5.60	23					
BH26		D	8.10	-	8.20	23	58	25	33	100	CH High Plasticity
BH26		D	10.10	-	10.20	19					
BH26		D	11.20	-	11.30	21	45	20	25	100	CI Intermediate Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH26		D	12.90	-		Grey silty CLAY.
BH26		D	14.70	-		Grey silty CLAY.
BH27		D	2.00	-		Brown silty CLAY.
BH27		D	3.50	-		Brown fine to coarse gravelly sandy silty CLAY.
BH27		D	5.00	-		Grey fine to coarse gravelly sandy silty CLAY.
BH27		D	6.45	-		Grey silty CLAY.
BH27		D	8.50	-		Grey silty CLAY.
BH27		D	11.50	-		Grey silty CLAY.
BH27		D	13.50	-		Grey silty CLAY.
BH28		D	2.00	-		Brown fine gravelly clayey SAND.
BH28		D	3.00	-		Grey clayey SILT.
BH29		UT	2.00	-	2.45	Brown fine gravelly silty CLAY.
BH29		D	3.20	-		Grey silty CLAY.
BH29		SPT	6.00	-		Grey silty CLAY.
BH29		B	7.50	-		Grey silty CLAY.
BH29		SPT	10.00	-		Grey silty CLAY.
BH29		SPT	13.00	-		Grey silty CLAY.
BH30		D	4.10	-		Brown fine to coarse gravelly silty CLAY.
BH30		D	4.80	-		Grey silty CLAY.
BH30		SPT	8.00	-		Grey silty CLAY.
BH30		D	14.50	-		Grey silty CLAY.
BH31		D	7.50	-	7.80	Grey silty SAND.
BH31		D	9.00	-	9.70	Grey silty CLAY.
BH31		D	12.50	-		Grey silty CLAY.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

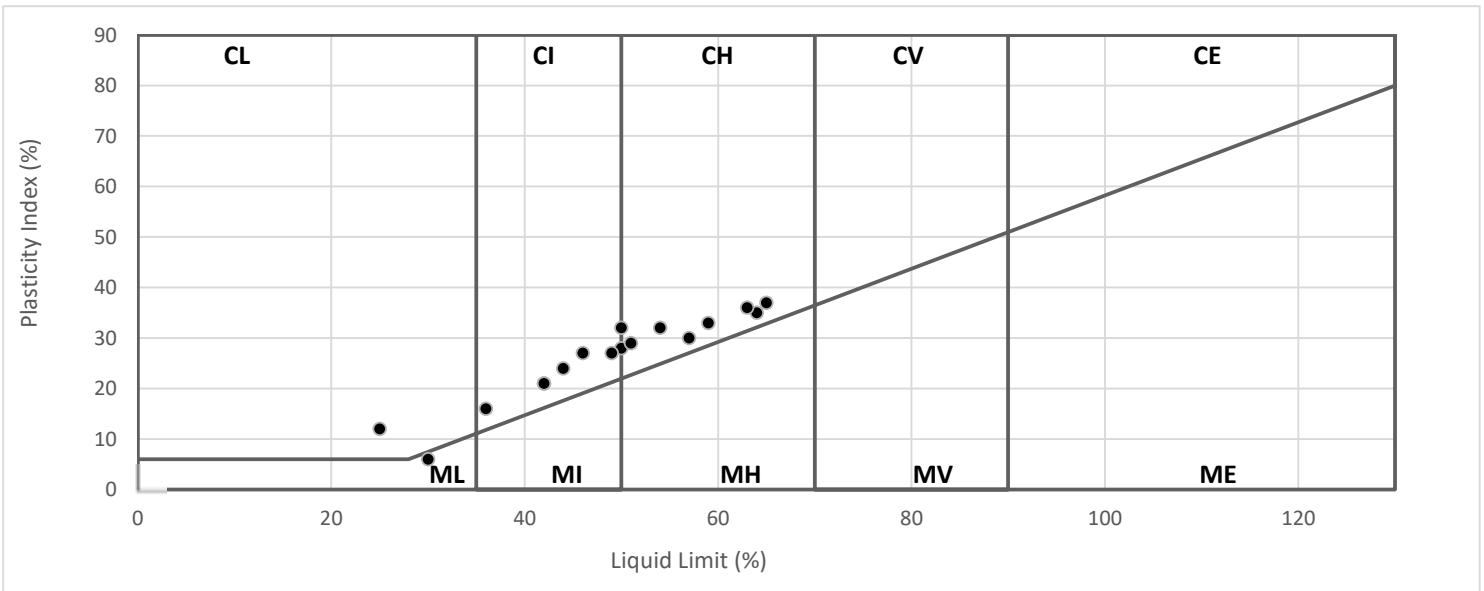
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH26		D	12.90	-		18	50	22	28	100	CI/H Inter/High Plasticity
BH26		D	14.70	-		21					
BH27		D	2.00	-		21	44	20	24	100	CI Intermediate Plasticity
BH27		D	3.50	-		25	42	21	21	82	CI Intermediate Plasticity
BH27		D	5.00	-		21					
BH27		D	6.45	-		21	46	19	27	100	CI Intermediate Plasticity
BH27		D	8.50	-		20					
BH27		D	11.50	-		19	50	18	32	100	CI/H Inter/High Plasticity
BH27		D	13.50	-		18					
BH28		D	2.00	-		10		NP		81	
BH28		D	3.00	-		22	30	24	6	100	ML Low Plasticity
BH29		UT	2.00	-	2.45	24	36	20	16	86	CI Intermediate Plasticity
BH29		D	3.20	-		26	65	28	37	100	CH High Plasticity
BH29		SPT	6.00	-		21	64	29	35	100	CH High Plasticity
BH29		B	7.50	-		23					
BH29		SPT	10.00	-		18	63	27	36	100	CH High Plasticity
BH29		SPT	13.00	-		17	59	26	33	100	CH High Plasticity
BH30		D	4.10	-		20	49	22	27	86	CI Intermediate Plasticity
BH30		D	4.80	-		22	42	21	21	100	CI Intermediate Plasticity
BH30		SPT	8.00	-		20	57	27	30	100	CH High Plasticity
BH30		D	14.50	-		17	51	22	29	100	CH High Plasticity
BH31		D	7.50	-	7.80	26		NP		100	
BH31		D	9.00	-	9.70	12	25	13	12	100	CL Low Plasticity
BH31		D	12.50	-		21	54	22	32	100	CH High Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH31		D	15.00	-	15.45	Grey silty CLAY.
BH31		D	17.50	-		Grey silty CLAY.
BH31		D	20.50	-		Grey silty CLAY.
BH32		D	11.40	-		Grey fine to medium gravelly silty CLAY.
BH32		D	13.00	-		Grey silty CLAY.
BH32		D	17.00	-		Grey silty CLAY.
BH32		D	20.00	-		Grey silty CLAY.
BH32		D	22.50	-		Grey silty CLAY.
BH32		D	22.50	-		Grey silty CLAY.
BH32		D	7.80	-		Grey fine sandy clayey SILT.
BH33		D	0.50	-		Brown fine to medium gravelly sandy silty CLAY.
BH33		D	8.00	-		Grey silty clayey fine SAND.
BH33		D	8.86	-		Grey silty clayey fine SAND.
BH33		D	12.50	-		Grey silty CLAY.
BH33		D	15.00	-	15.10	Grey fine sandy silty CLAY.
BH33		D	18.50	-		Grey silty CLAY.
BH33		SPT	20.10	-		Grey silty CLAY.
BH34		U	12.35	-	12.70	Grey silty CLAY.
BH34		D	13.20	-		Grey fine to coarse gravelly silty CLAY.
BH34		D	14.80	-		Grey silty CLAY.
BH34		SPT	17.50	-		Grey silty CLAY.
BH34		D	19.80	-		Grey silty CLAY.
BH34		D	24.30	-		Grey silty CLAY.
BH35		D	0.50	-		Brown fine to coarse gravelly silty CLAY.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

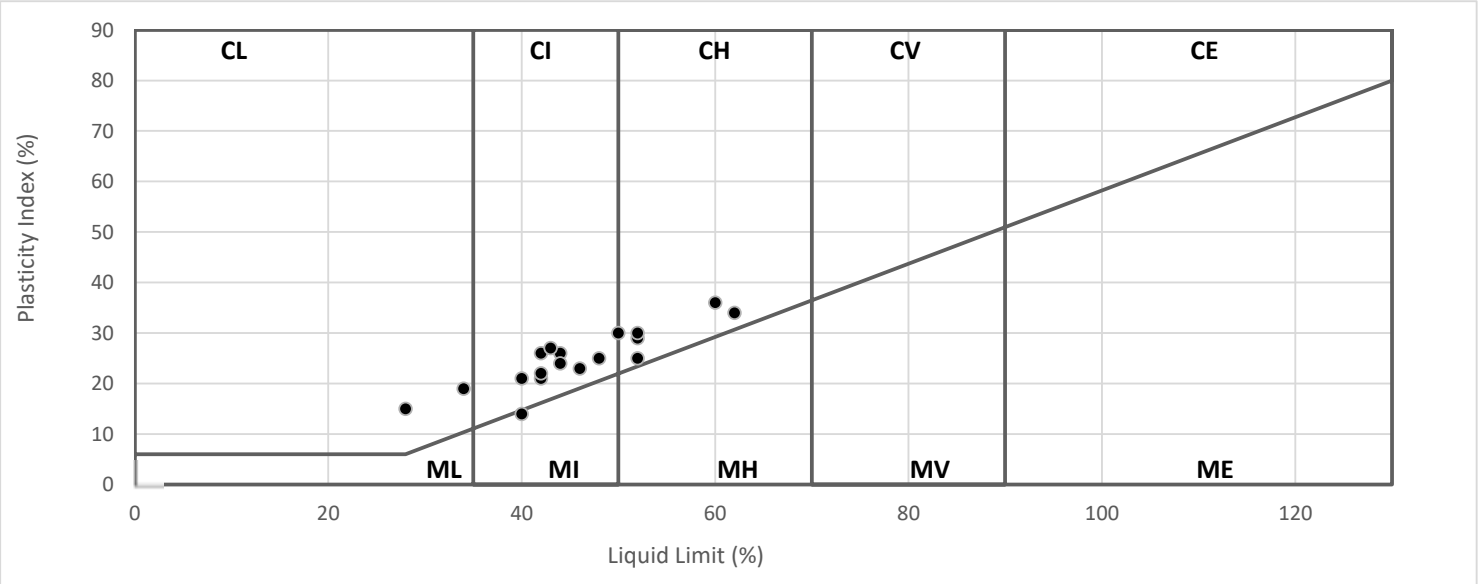
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH31		D	15.00	-	15.45	21	48	23	25	100	CI Intermediate Plasticity
BH31		D	17.50	-		17					
BH31		D	20.50	-		21	44	18	26	100	CI Intermediate Plasticity
BH32		D	11.40	-		18	42	16	26	84	CI Intermediate Plasticity
BH32		D	13.00	-		17	60	24	36	100	CH High Plasticity
BH32		D	17.00	-		21					
BH32		D	20.00	-		24	52	27	25	100	CH High Plasticity
BH32		D	22.50	-		20					
BH32		D	22.50	-		17	62	28	34	100	CH High Plasticity
BH32		D	7.80	-		22	40	26	14	100	MI Intermediate Plasticity
BH33		D	0.50	-		11	43	16	27	88	CI Intermediate Plasticity
BH33		D	8.00	-		18					
BH33		D	8.86	-		21					
BH33		D	12.50	-		21	52	23	29	100	CH High Plasticity
BH33		D	15.00	-	15.10	14	34	15	19	100	CL Low Plasticity
BH33		D	18.50	-		18	52	22	30	100	CH High Plasticity
BH33		SPT	20.10	-		22	42	21	21	100	CI Intermediate Plasticity
BH34		U	12.35	-	12.70	19	46	23	23	100	CI Intermediate Plasticity
BH34		D	13.20	-		21	50	20	30	85	CI/H Inter/High Plasticity
BH34		D	14.80	-		22	42	20	22	100	CI Intermediate Plasticity
BH34		SPT	17.50	-		20	40	19	21	100	CI Intermediate Plasticity
BH34		D	19.80	-		19	44	20	24	100	CI Intermediate Plasticity
BH34		D	24.30	-		20					
BH35		D	0.50	-		10	28	13	15	78	CL Low Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH36		D	3.10	-		Brown fine sandy clayey SILT.
BH37A		D	2.40	-		Off whie silty clayey SAND.
BH37A		D	3.80	-		Brown silty clayey sandy fine to coarse GRAVEL.
BH38		D	0.50	-		Brown fine to coarse gravelly silty CLAY.
BH38		SPT	3.00	-		Brown fine to coarse gravelly silty CLAY.
BH40		D	1.20	-		Brown fine to coarse gravelly silty CLAY.
BH40		D	2.00	-		Brown fine to coarse gravelly silty CLAY.
TP07		D	0.50	-		Brown sandy silty CLAY.
TP09A		D	0.50	-		Brown fine to coarse gravelly silty CLAY.
TP09A		D	2.50	-		Grey silty CLAY.
TP11		D	0.50	-		Brown fine to coarse gravelly sandy silty CLAY.
TP11		D	1.00	-	1.10	Brown silty CLAY.
TP11		D	1.50	-	1.60	Brown silty CLAY.
TP12		D	0.10	-	0.20	Brown silty CLAY.
TP12		D	1.50	-	1.60	Brown clayey SILT.
TP14A		D	3.00	-		Brown silty CLAY.
TP15		D	1.00	-	1.20	Grey silty CLAY.
TP15		D	2.00	-	11.30	Grey silty CLAY.
TP15		D	3.00	-		Grey silty CLAY.
TP16		D	1.00	-		Brown fine to coarse gravelly silty CLAY.
TP17		D	0.50	-		Brown fine to coarse gravelly silty CLAY.
TP18		D	1.00	-		Brown fine to coarse gravelly SAND.
TP19		D	1.00	-		Brown fine to coarse gravelly silty CLAY.
TP19		D	2.00	-		Brown fine to coarse gravelly silty CLAY.

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

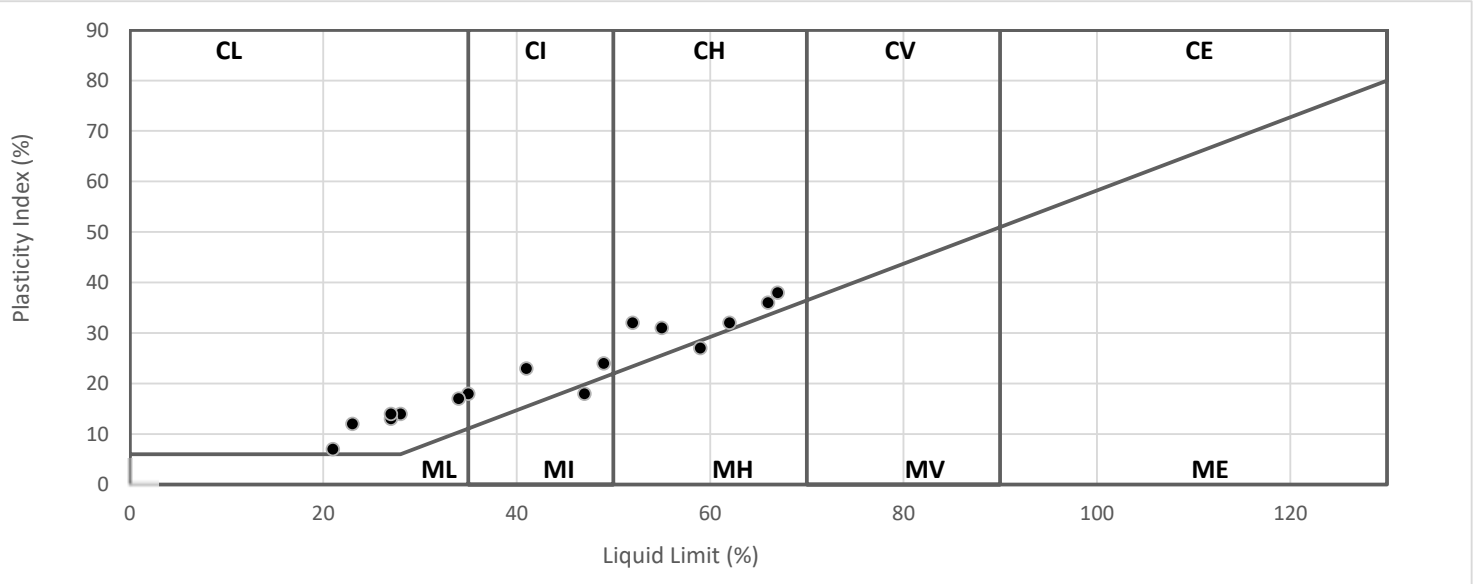
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH36		D	3.10	-		24	47	29	18	100	MI Intermediate Plasticity
BH37A		D	2.40	-		8.6		NP		100	
BH37A		D	3.80	-		14		NP		10	
BH38		D	0.50	-		11	21	14	7	78	CL Low Plasticity
BH38		SPT	3.00	-		13	23	11	12	81	CL Low Plasticity
BH40		D	1.20	-		21					
BH40		D	2.00	-		19	35	17	18	79	CL/I Low/Inter. Plasticity
TP07		D	0.50	-		8.8	28	14	14	100	CL Low Plasticity
TP09A		D	0.50	-		14	27	14	13	69	CL Low Plasticity
TP09A		D	2.50	-		27	49	25	24	100	CI Intermediate Plasticity
TP11		D	0.50	-		6.8	27	13	14	63	CL Low Plasticity
TP11		D	1.00	-	1.10	45	62	30	32	100	CH High Plasticity
TP11		D	1.50	-	1.60	43					
TP12		D	0.10	-	0.20	38	67	29	38	100	CH High Plasticity
TP12		D	1.50	-	1.60	42	59	32	27	100	MH High Plasticity
TP14A		D	3.00	-		13	34	17	17	100	CL Low Plasticity
TP15		D	1.00	-	1.20	29	55	24	31	100	CH High Plasticity
TP15		D	2.00	-	11.30	26	66	30	36	100	CH High Plasticity
TP15		D	3.00	-		23	52	20	32	100	CH High Plasticity
TP16		D	1.00	-		13					
TP17		D	0.50	-		14					
TP18		D	1.00	-		3.4					
TP19		D	1.00	-		11					
TP19		D	2.00	-		16	41	18	23	84	CI Intermediate Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5) DESCRIPTIONS	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
TP20		D	1.00	-		Brown sandy fine to coarse GRAVEL.
TP21		D	0.50	-		Brown silty CLAY.
TP22		D	1.00	-		Brown fine sandy silty CLAY.
TP22		D	3.00	-		Brown fine sandy silty CLAY.
TP26		D	0.50	-		Brown fine to coarse gravelly silty CLAY.
TP29		D	2.80	-		Brown fine sandy silty CLAY.
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

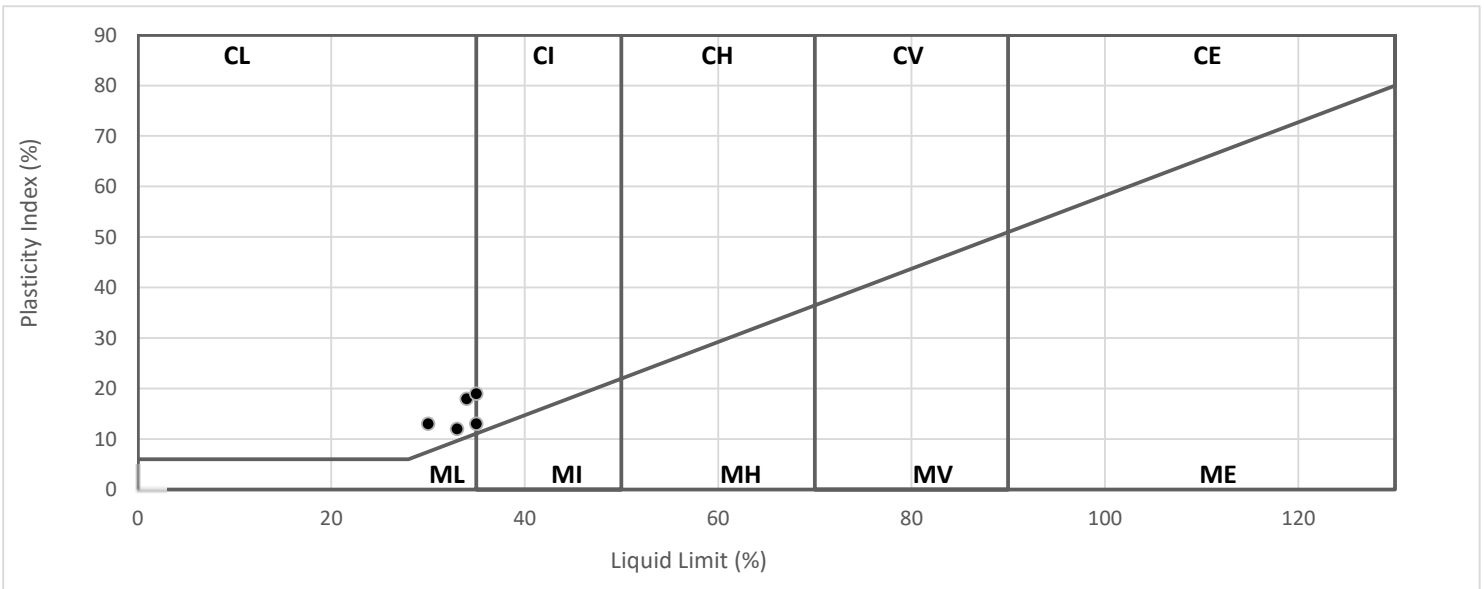
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number		
Site Name	**A47 Wansford**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
TP20		D	1.00	-		3.9					
TP21		D	0.50	-		10	34	16	18	100	CL Low Plasticity
TP22		D	1.00	-		14	35	16	19	100	CL/I Low/Inter. Plasticity
TP22		D	3.00	-		20	33	21	12	100	CL Low Plasticity
TP26		D	0.50	-		11	30	17	13	68	CL Low Plasticity
TP29		D	2.80	-		24	35	22	13	100	CL/I Low/Inter. Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

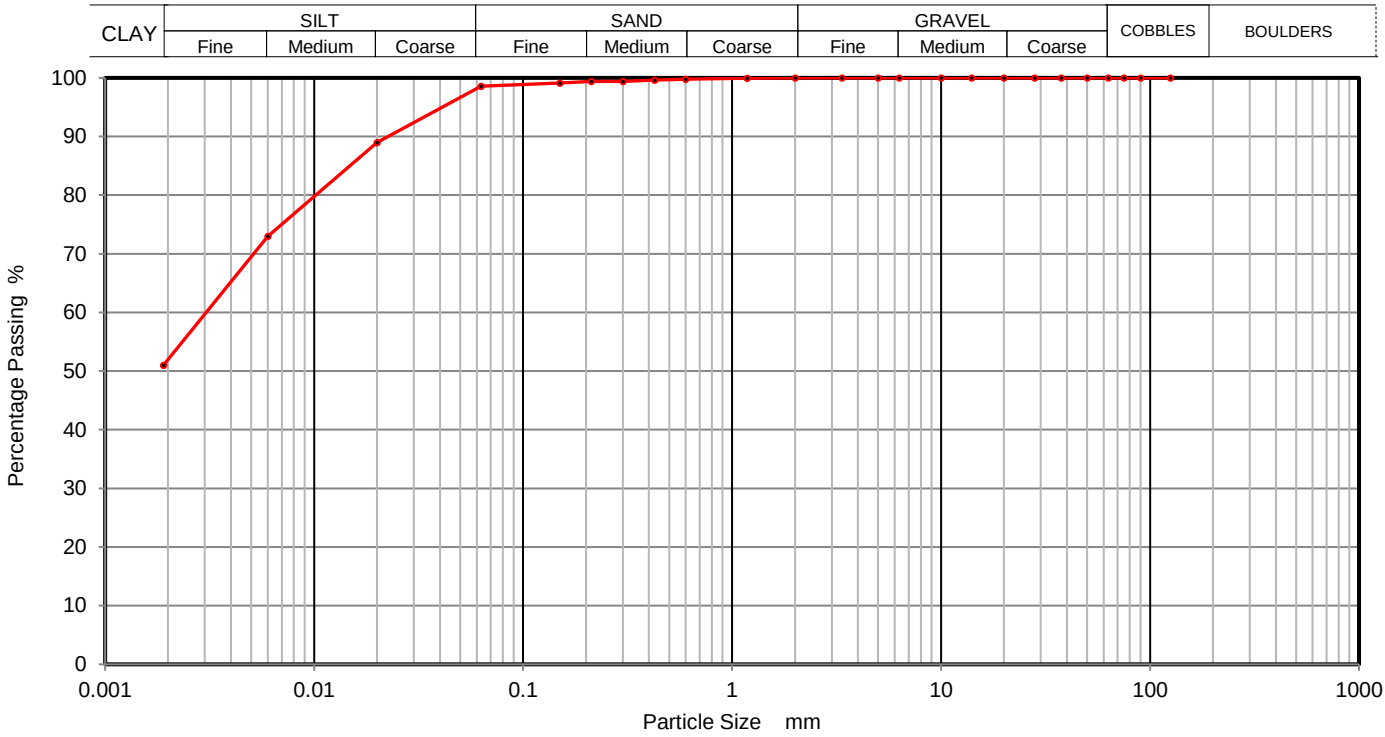
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	13-05-19	Paul Evans (Quality/Technical Manager)
Darren Bourne	Approved	13-05-19	Emma Sharp (Office Manager)

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH02
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey fine slightly sandy silty CLAY.	Depth Top	5.40
		Depth Base	5.50
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	89
90	100	0.0060	73
75	100	0.0019	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	1
Silt	48
Clay	51

Grading Analysis	
Uniformity Coefficient	

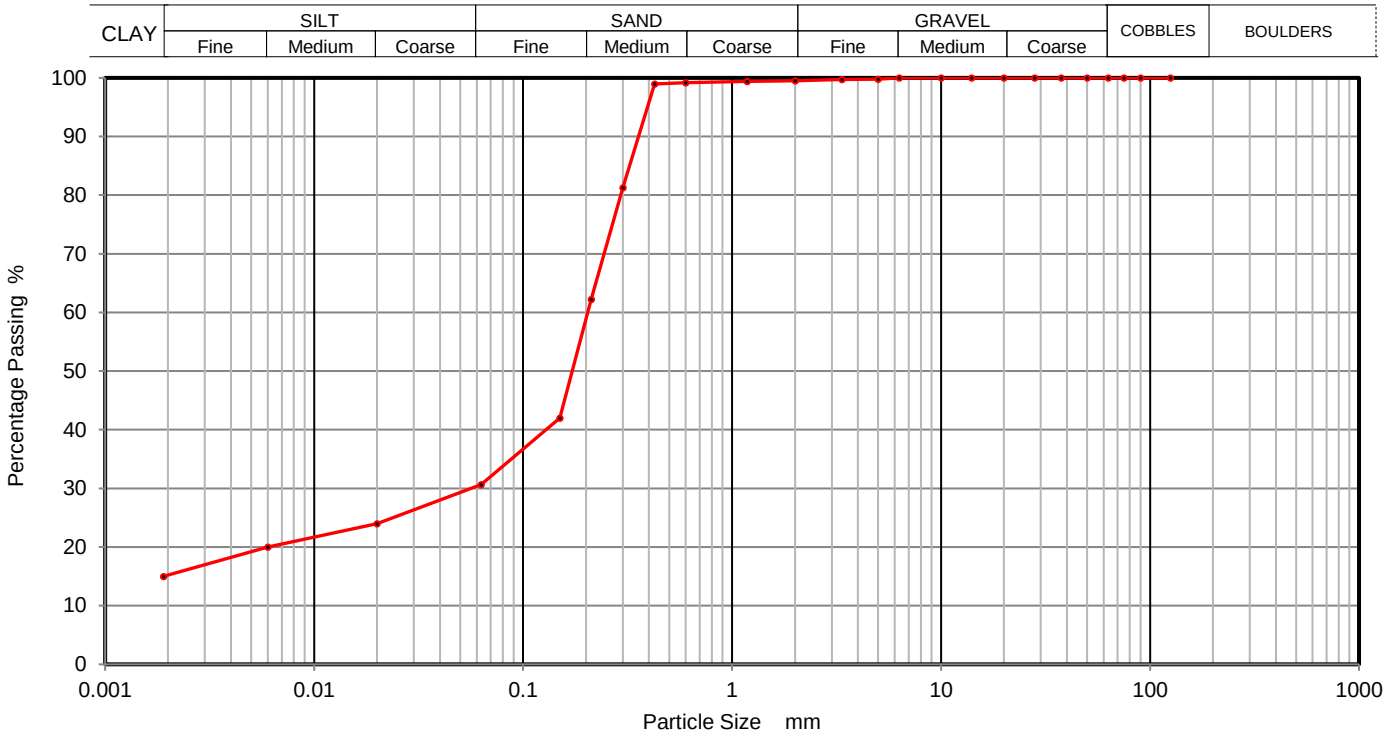
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH03a
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to medium SAND.	Depth Top	9.20
		Depth Base	9.30
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	24
90	100	0.0060	20
75	100	0.0019	15
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	81		
0.212	62		
0.15	42		
0.063	31		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	69
Silt	16
Clay	15

Grading Analysis	
Uniformity Coefficient	

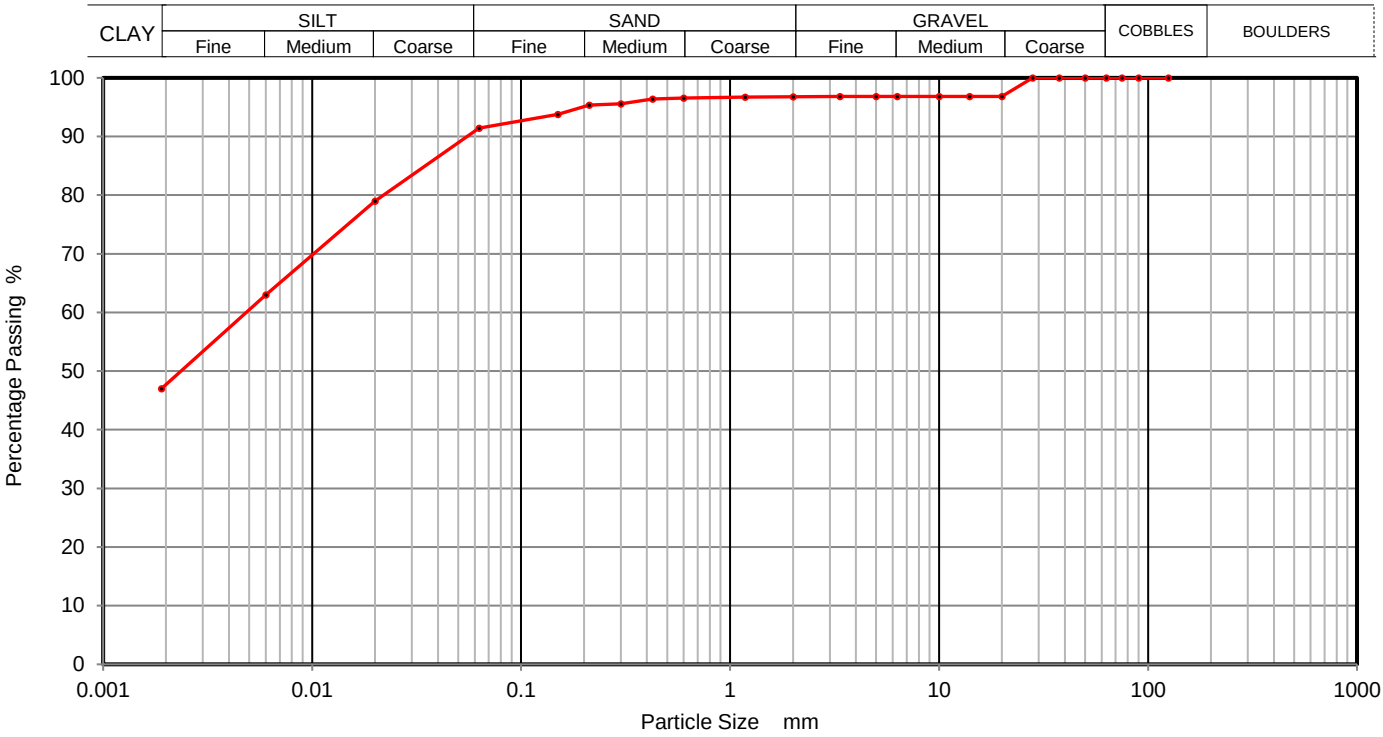
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH07
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	6.20
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	79
90	100	0.0060	63
75	100	0.0019	47
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	97		
10	97		
6.3	97		
5	97		
3.35	97		
2	97		
1.18	97		
0.6	97		
0.425	96		
0.3	96		
0.212	95		
0.15	94		
0.063	91		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	6
Silt	44
Clay	47

Grading Analysis	
Uniformity Coefficient	

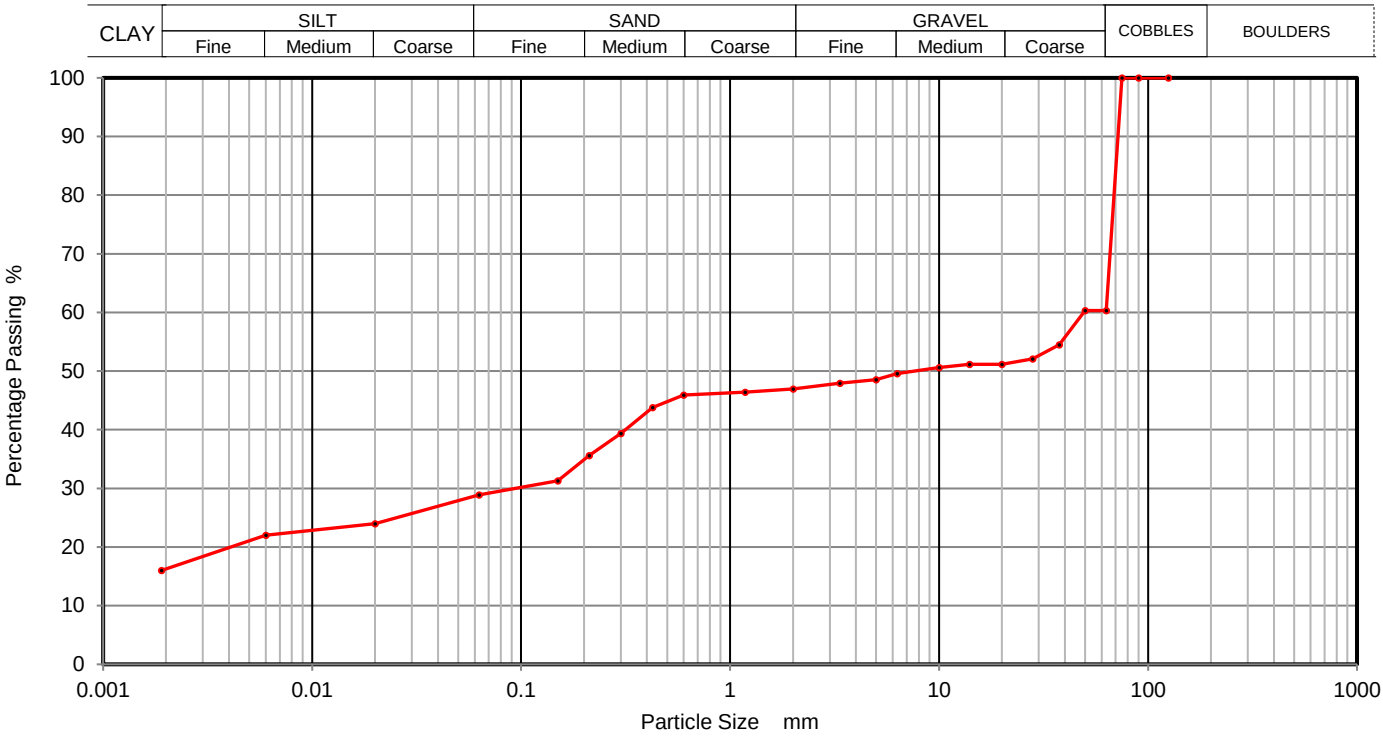
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH08
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse gravelly silty clayey fine to coarse SAND with many cobbles.	Depth Top	4.00
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	24
90	100	0.0060	22
75	100	0.0019	16
63	60		
50	60		
37.5	54		
28	52		
20	51		
14	51		
10	51		
6.3	50		
5	49		
3.35	48		
2	47		
1.18	46		
0.6	46		
0.425	44		
0.3	39		
0.212	36		
0.15	31		
0.063	29		

Sample Proportions	% dry mass
Cobbles	40
Gravel	13
Sand	18
Silt	13
Clay	16

Grading Analysis	
Uniformity Coefficient	

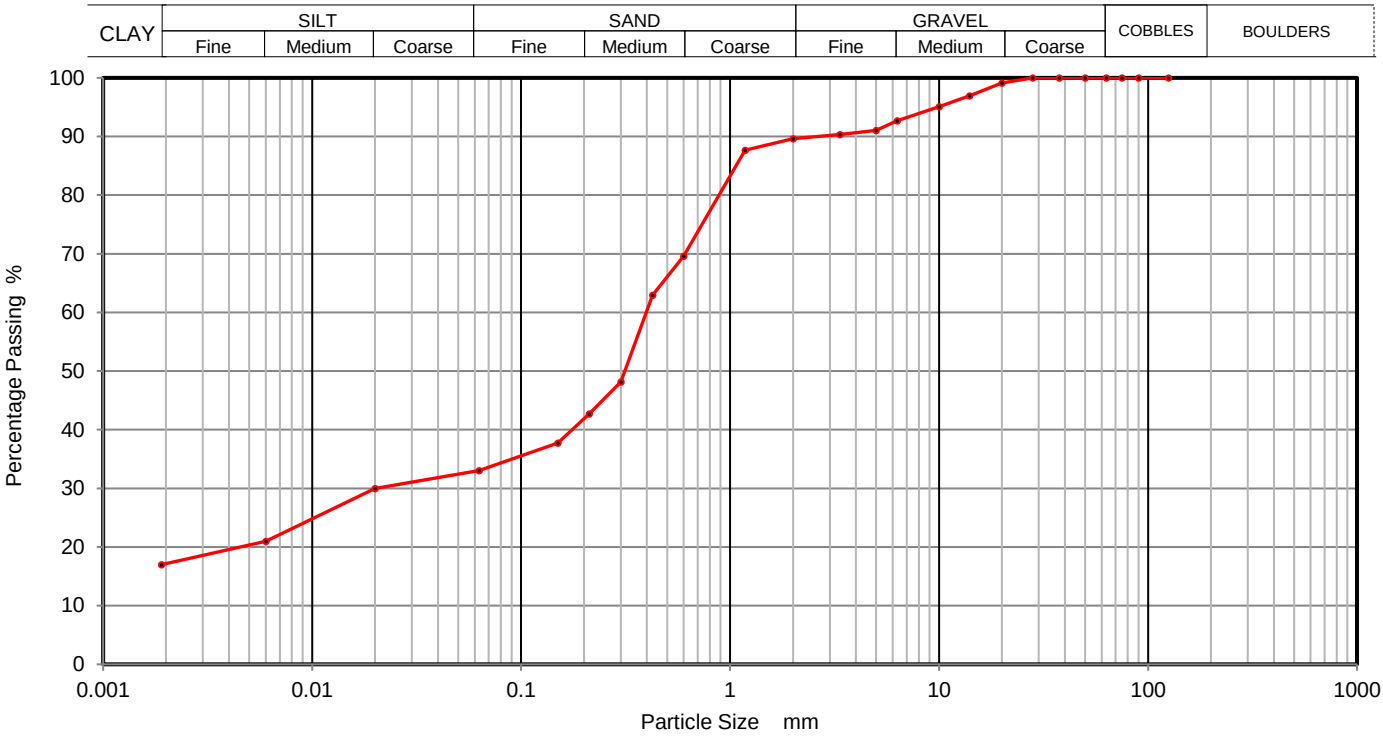
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH09
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse gravelly silty clayey fine to coarse SAND .	Depth Top	2.00
		Depth Base	2.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	30
90	100	0.0060	21
75	100	0.0019	17
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	97		
10	95		
6.3	93		
5	91		
3.35	90		
2	90		
1.18	88		
0.6	70		
0.425	63		
0.3	48		
0.212	43		
0.15	38		
0.063	33		

Sample Proportions	% dry mass
Cobbles	0
Gravel	10
Sand	57
Silt	16
Clay	17

Grading Analysis	
Uniformity Coefficient	

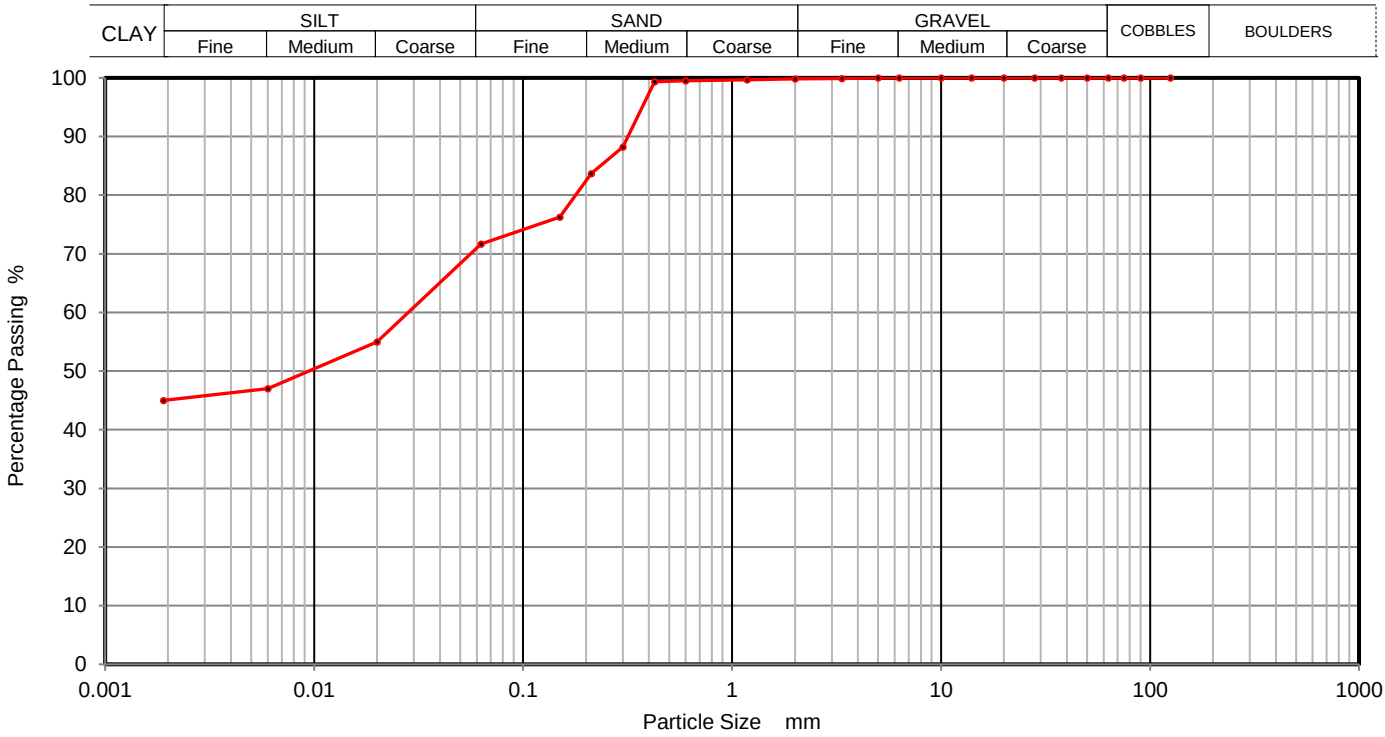
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH09
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium sandy silty CLAY.	Depth Top	6.30
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	55
90	100	0.0060	47
75	100	0.0019	45
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	88		
0.212	84		
0.15	76		
0.063	72		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	28
Silt	27
Clay	45

Grading Analysis	
Uniformity Coefficient	

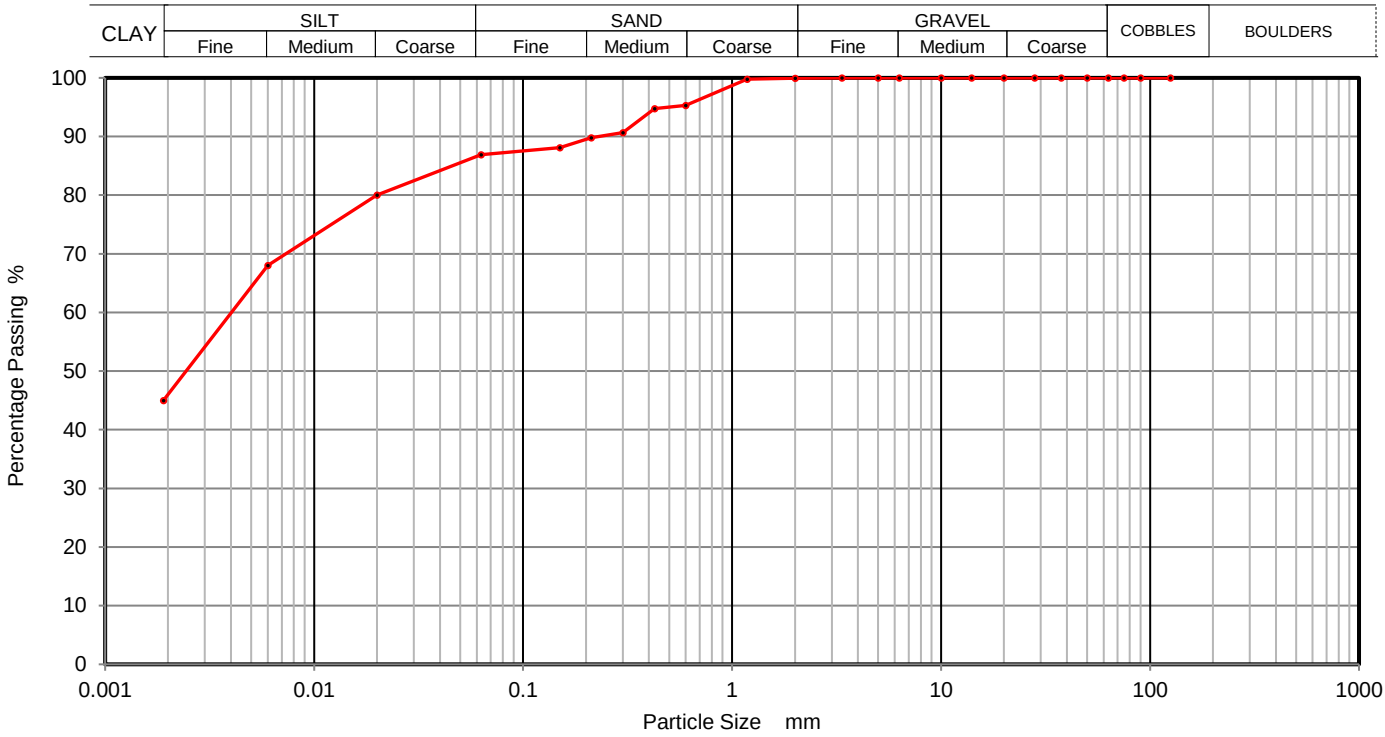
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH11
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse sandy silty CLAY.	Depth Top	10.20
		Depth Base	10.30
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	68
75	100	0.0019	45
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	95		
0.425	95		
0.3	91		
0.212	90		
0.15	88		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	13
Silt	42
Clay	45

Grading Analysis	
Uniformity Coefficient	

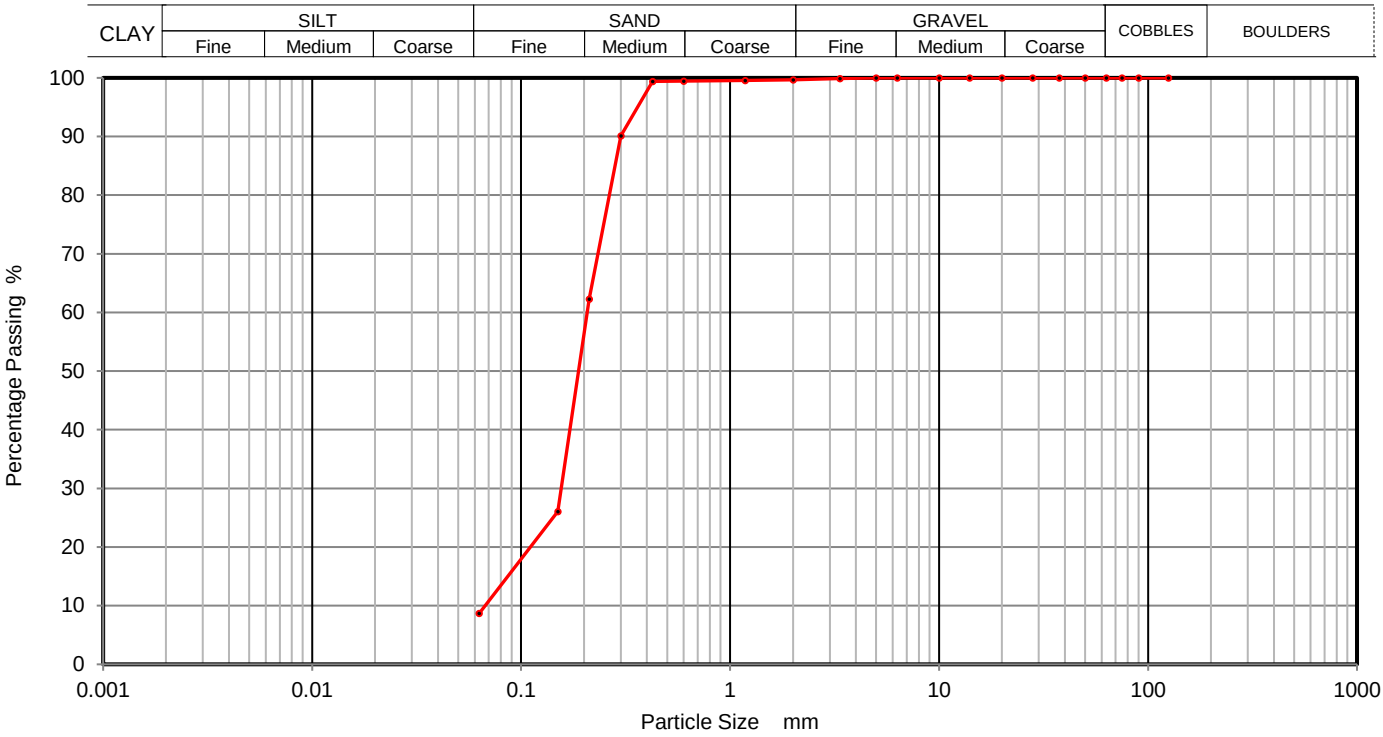
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH11
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to medium GRAVEL.	Depth Top	2.40
		Depth Base	2.74
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	90		
0.212	62		
0.15	26		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	91
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	

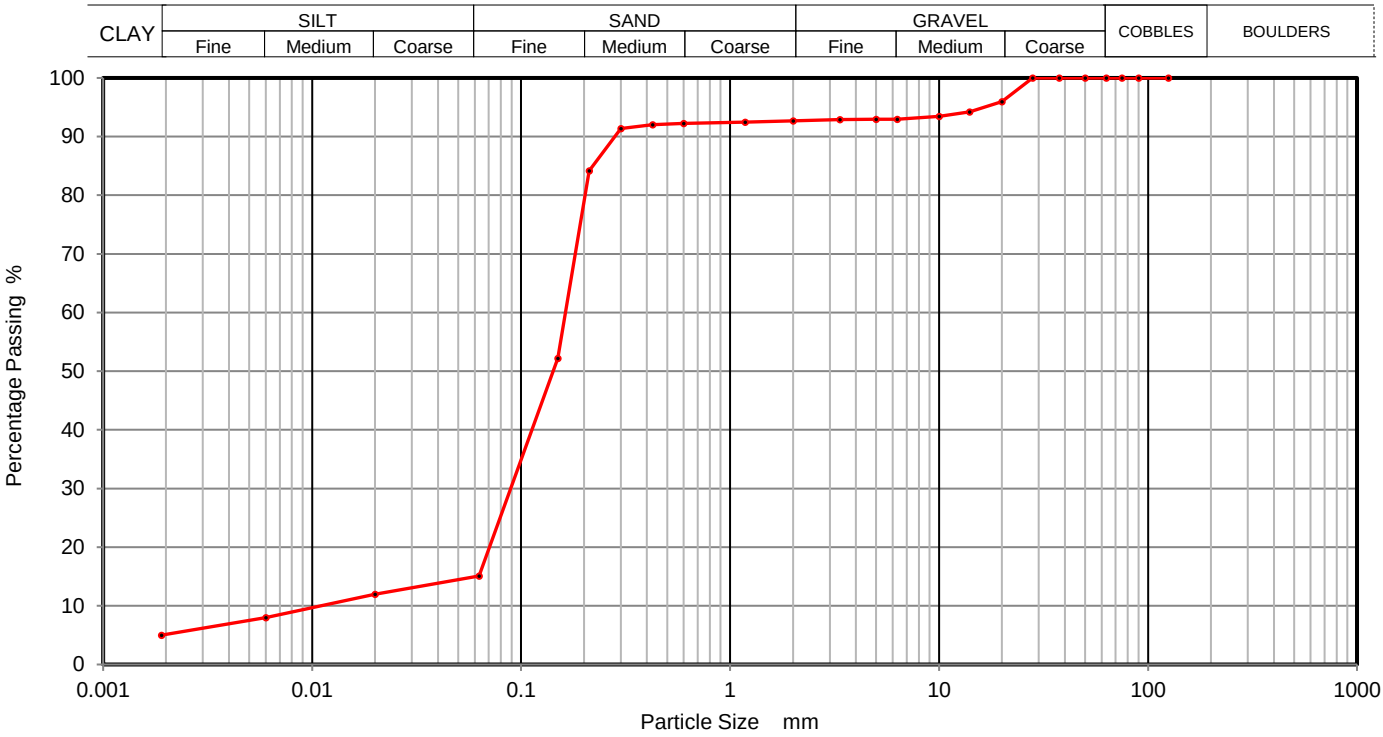
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42204
		Borehole/Pit No.	BH12
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown slightly fine to coarse gravelly slightly clayey/silty fine to coarse SAND.	Depth Top	3.50
		Depth Base	4.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	8
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	94		
10	93		
6.3	93		
5	93		
3.35	93		
2	93		
1.18	92		
0.6	92		
0.425	92		
0.3	91		
0.212	84		
0.15	52		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	7
Sand	78
Silt	10
Clay	5

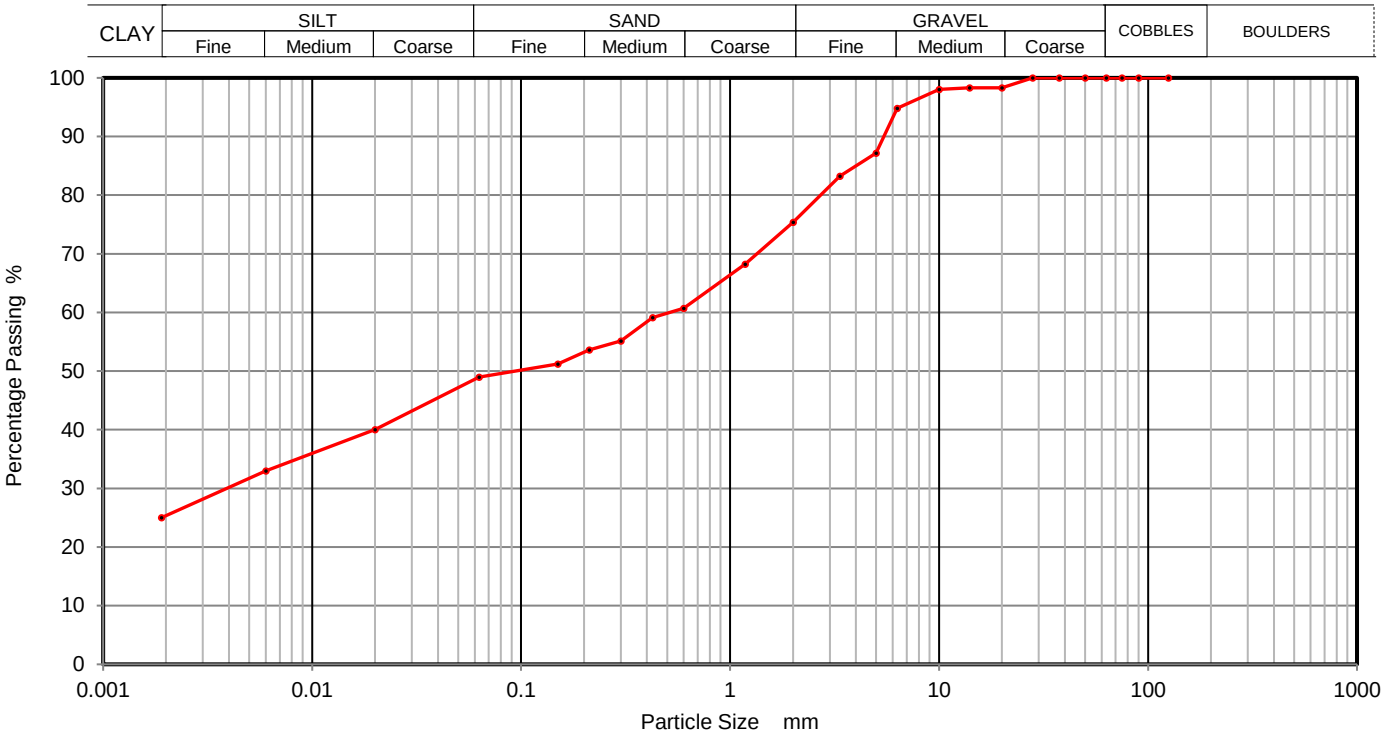
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	14/03/2019	Ben Sharp	[redacted]
RO/MH	Approved	15/03/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH13
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	13.40
		Depth Base	13.50
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	40
90	100	0.0060	33
75	100	0.0019	25
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	98		
6.3	95		
5	87		
3.35	83		
2	75		
1.18	68		
0.6	61		
0.425	59		
0.3	55		
0.212	54		
0.15	51		
0.063	49		

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	26
Silt	24
Clay	25

Grading Analysis	
Uniformity Coefficient	

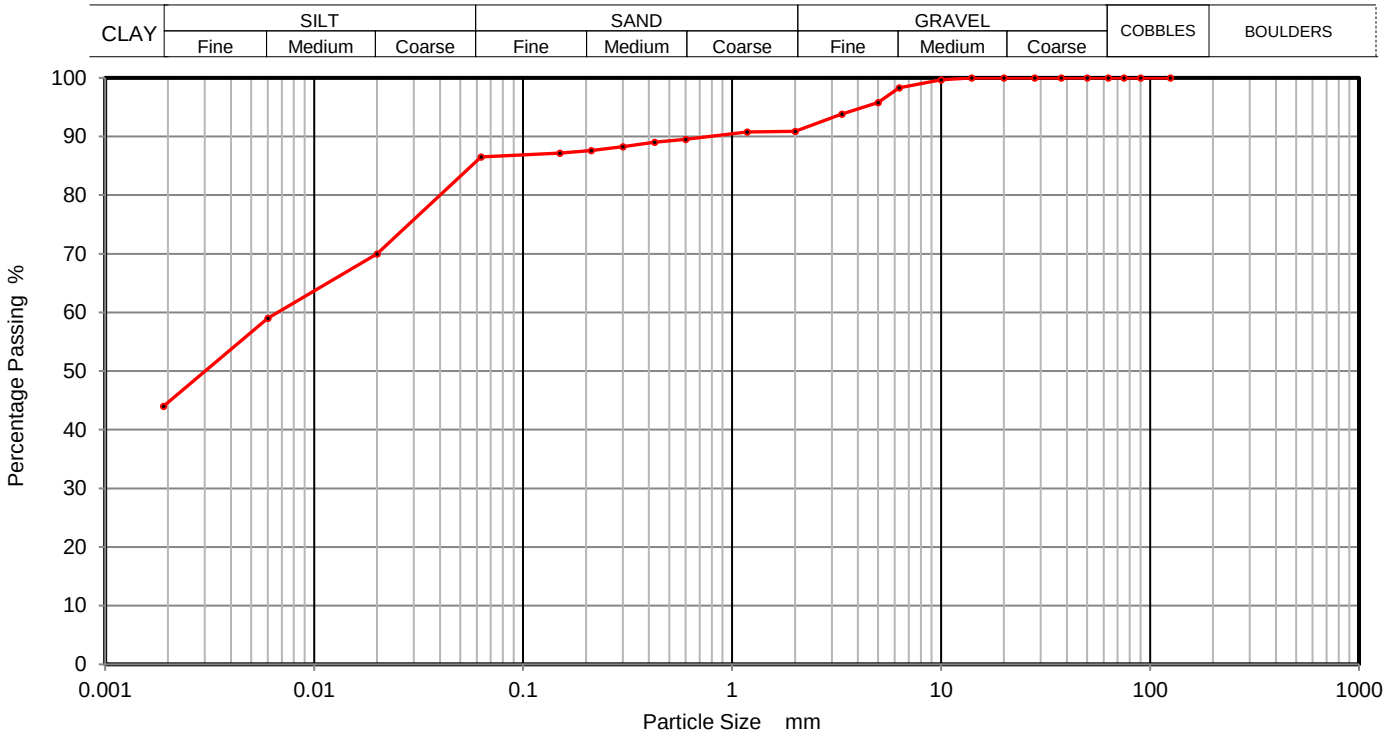
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH13
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly sandy fine to medium slightly gravelly silty CLAY.	Depth Top	18.40
		Depth Base	18.50
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	70
90	100	0.0060	59
75	100	0.0019	44
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	96		
3.35	94		
2	91		
1.18	91		
0.6	90		
0.425	89		
0.3	88		
0.212	88		
0.15	87		
0.063	87		

Sample Proportions	% dry mass
Cobbles	0
Gravel	9
Sand	4
Silt	43
Clay	44

Grading Analysis	
Uniformity Coefficient	

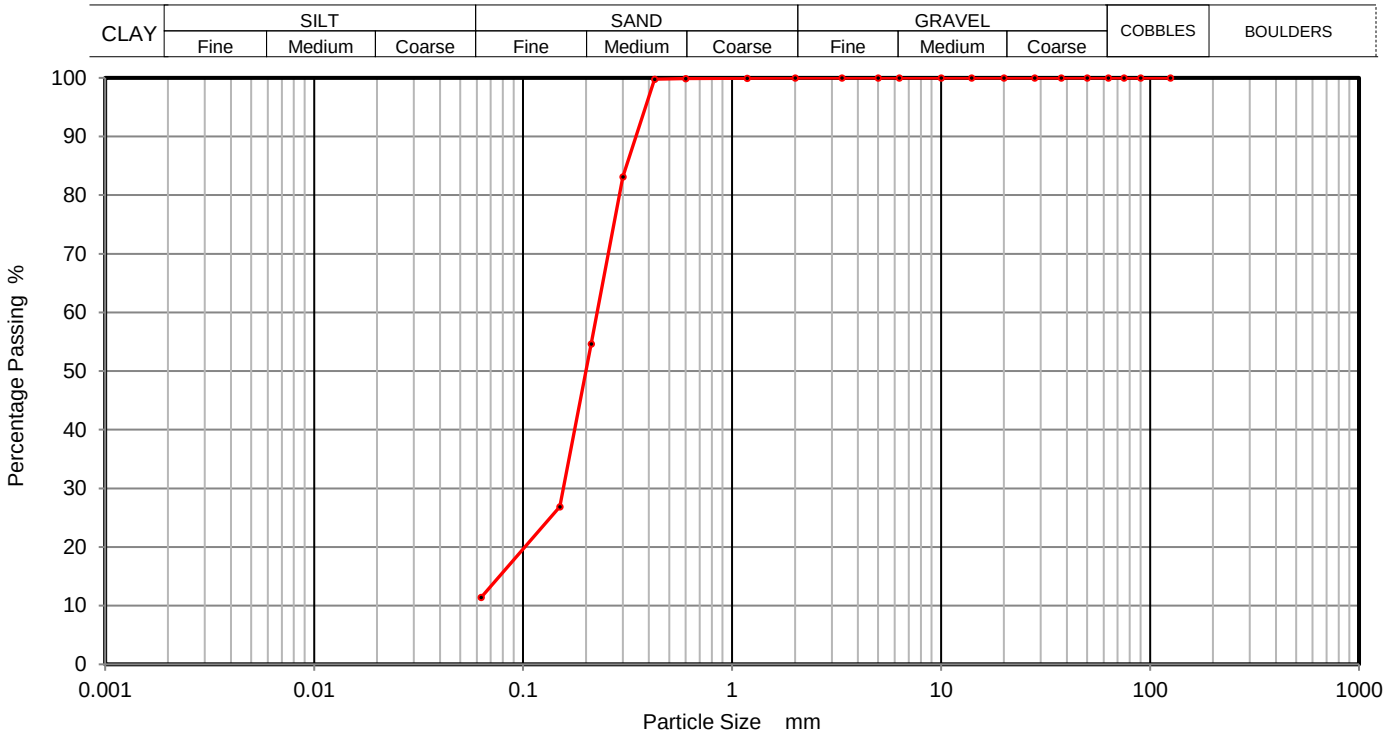
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41210**
		Borehole/Pit No.	**BH13**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty clayey fine to medium SAND.	Depth Top	**5.00**
		Depth Base	**5.20**
		Sample Type	**D**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	83		
0.212	55		
0.15	27		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	89
Silt and Clay	11

Grading Analysis	
Uniformity Coefficient	

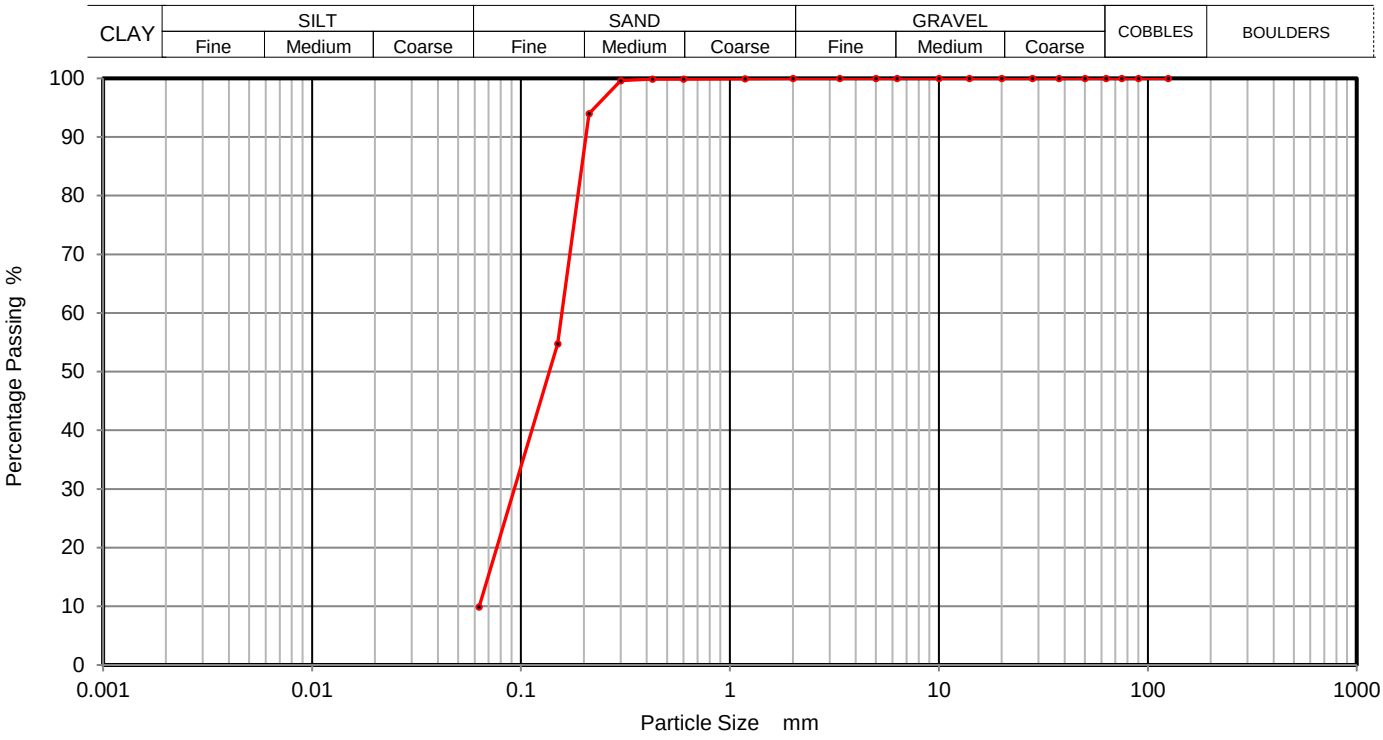
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	42204
		Borehole/Pit No.	BH14
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to medium SAND.	Depth Top	4.00
		Depth Base	4.63
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	94		
0.15	55		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	90
Silt and Clay	10

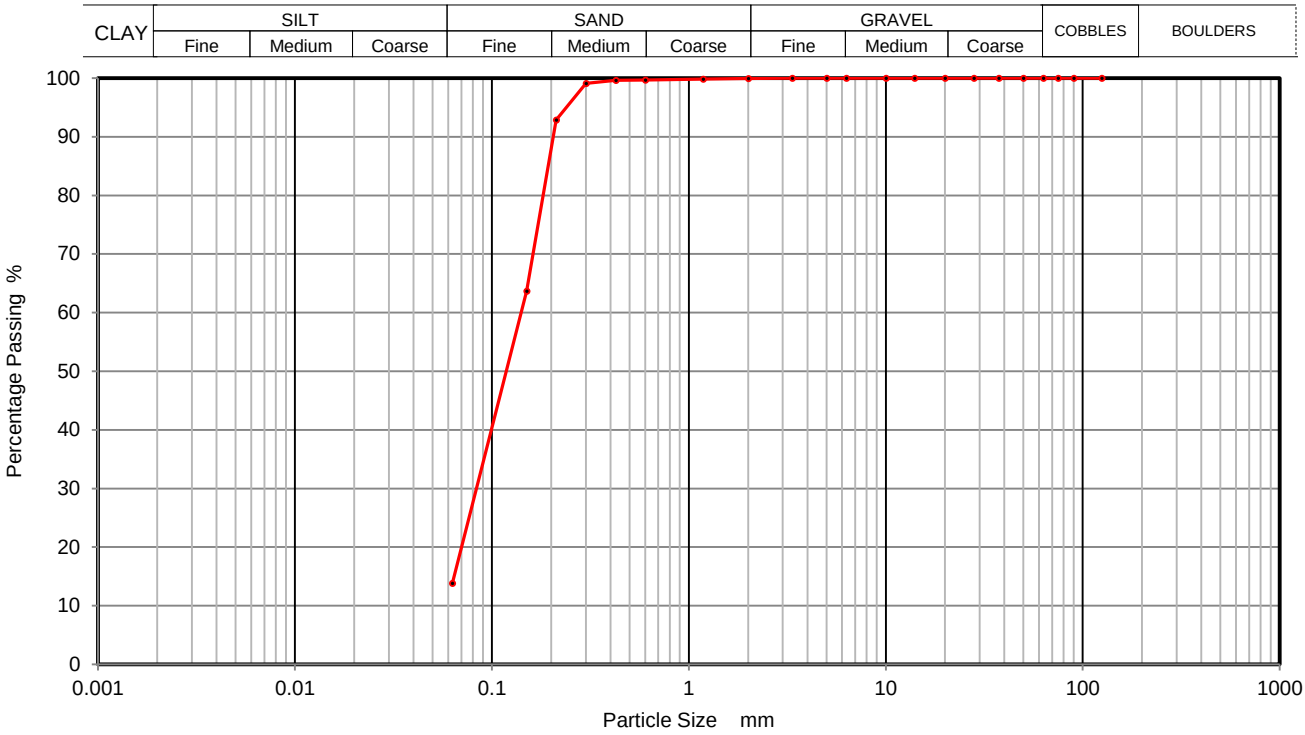
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42204**
		Borehole/Pit No.	**BH14**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown slightly clayey/silty fine to medium SAND.	Depth Top	**5.10**
		Depth Base	**6.00**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	93		
0.15	64		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	86
Silt and Clay	14

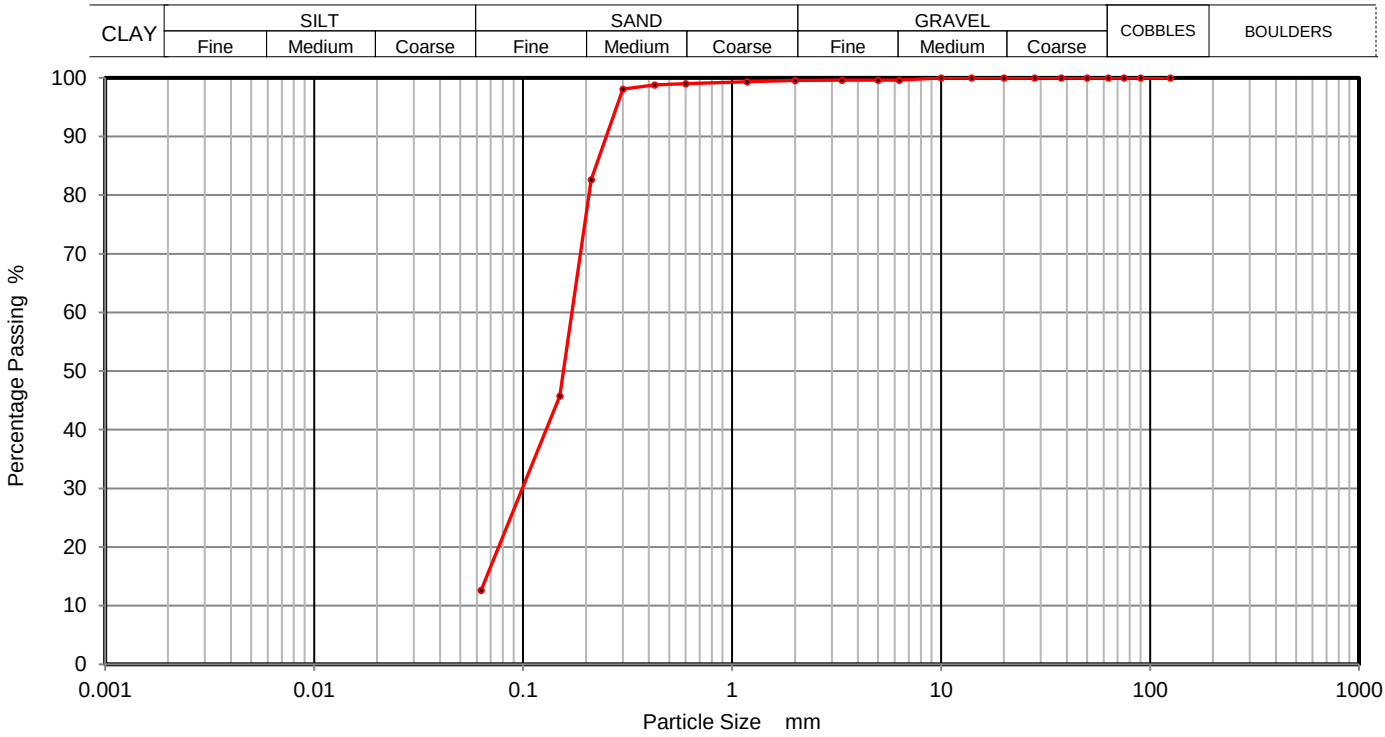
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	13/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	14/01/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH14
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to medium SAND.	Depth Top	6.30
		Depth Base	6.80
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	99		
0.3	98		
0.212	83		
0.15	46		
0.063	13		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	87
Silt and Clay	13

Grading Analysis	
Uniformity Coefficient	

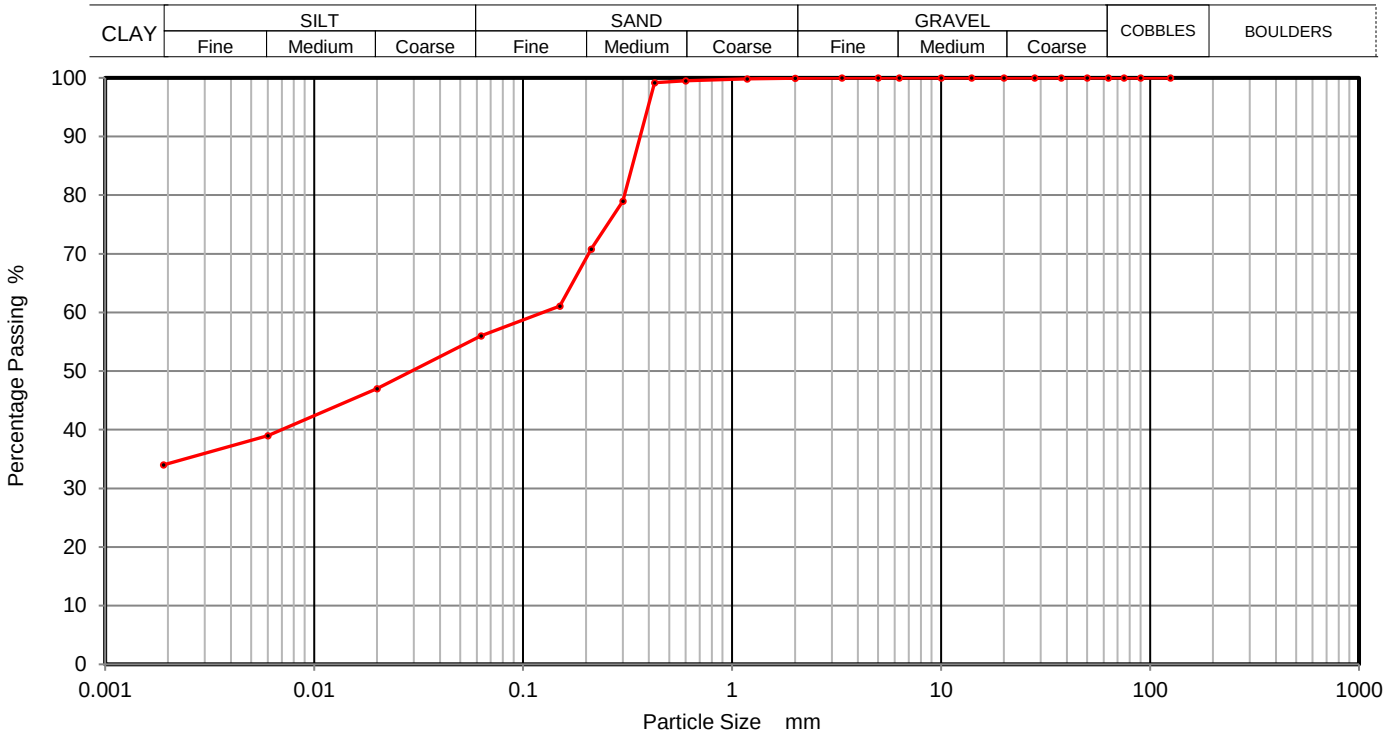
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH14
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to medium SAND.	Depth Top	8.70
		Depth Base	8.80
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	47
90	100	0.0060	39
75	100	0.0019	34
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	79		
0.212	71		
0.15	61		
0.063	56		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	44
Silt	22
Clay	34

Grading Analysis	
Uniformity Coefficient	

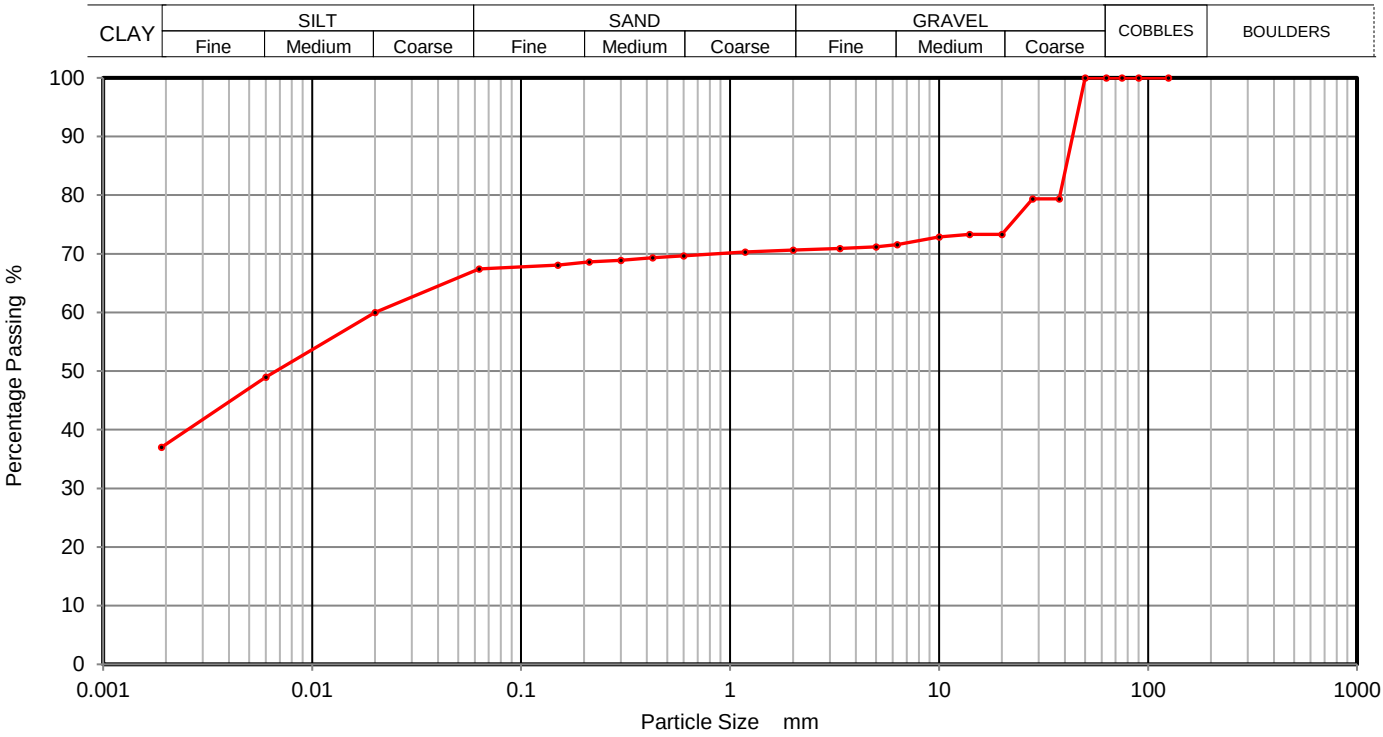
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH14
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly sandy fine to coarse gravelly silty CLAY.	Depth Top	15.70
		Depth Base	15.80
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	60
90	100	0.0060	49
75	100	0.0019	37
63	100		
50	100		
37.5	79		
28	79		
20	73		
14	73		
10	73		
6.3	72		
5	71		
3.35	71		
2	71		
1.18	70		
0.6	70		
0.425	69		
0.3	69		
0.212	69		
0.15	68		
0.063	67		

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	4
Silt	30
Clay	37

Grading Analysis	
Uniformity Coefficient	

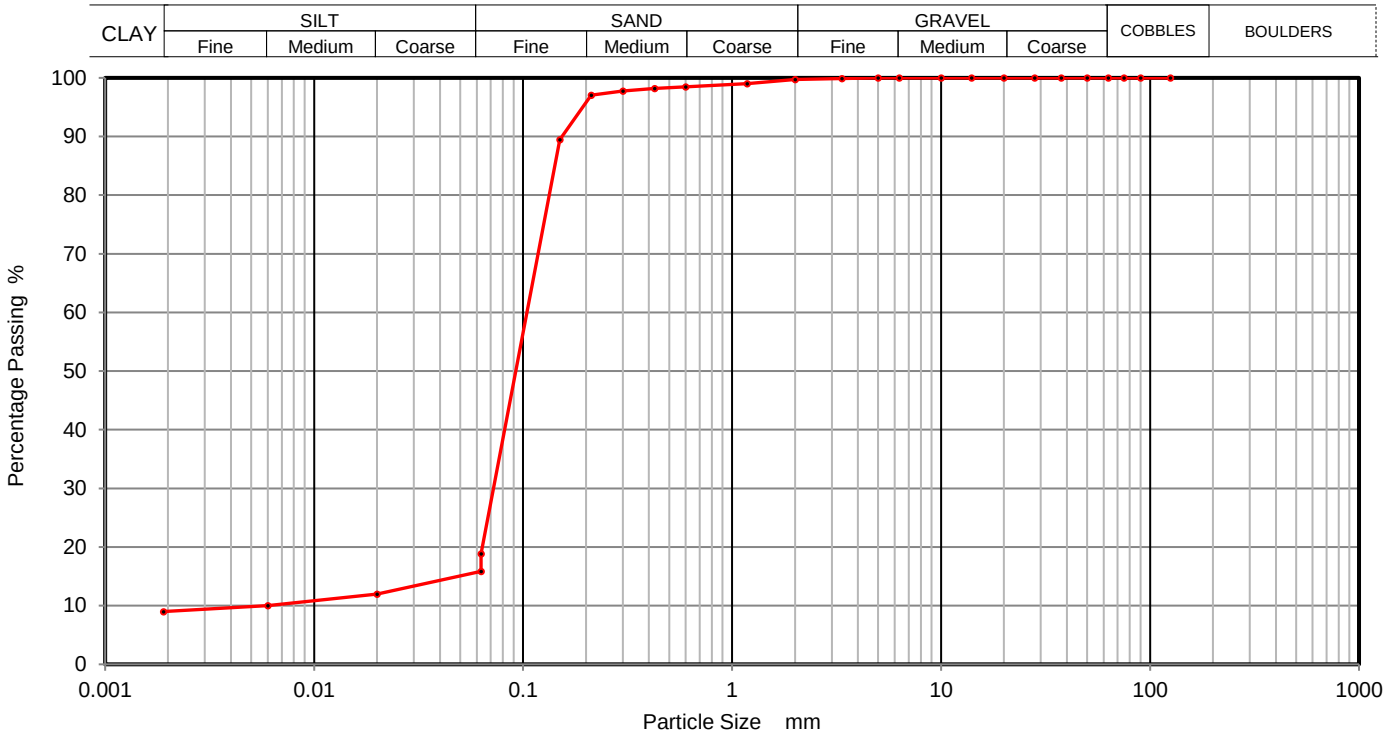
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH15
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown slightly clayey silty fine to coarse SAND.	Depth Top	6.60
		Depth Base	6.70
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	10
75	100	0.0019	9
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98		
0.3	98		
0.212	97		
0.15	89		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	81
Silt	10
Clay	9

Grading Analysis	
Uniformity Coefficient	

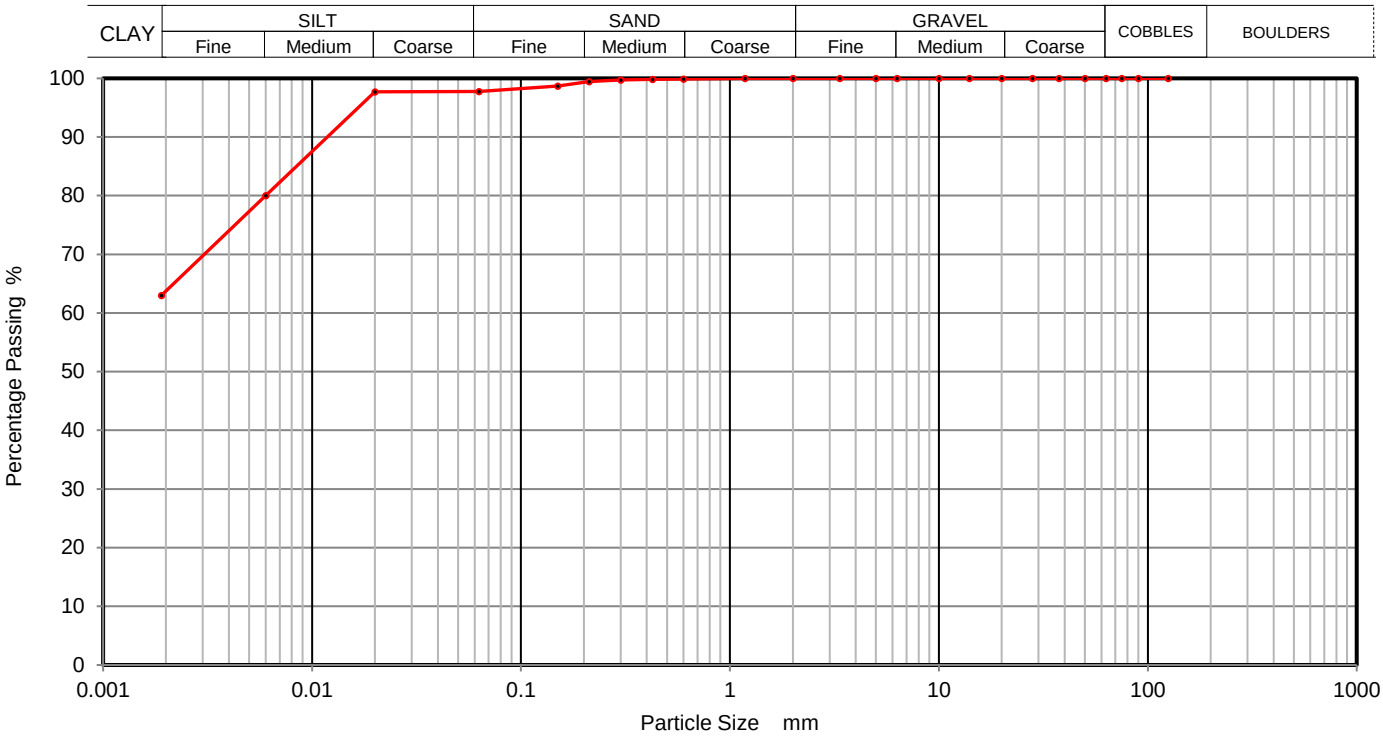
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH15
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine slightly sandy silty CLAY.	Depth Top	15.10
		Depth Base	15.20
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	63
75	100	0.0019	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	99		
0.063	98		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	2
Silt	47
Clay	51

Grading Analysis	
Uniformity Coefficient	

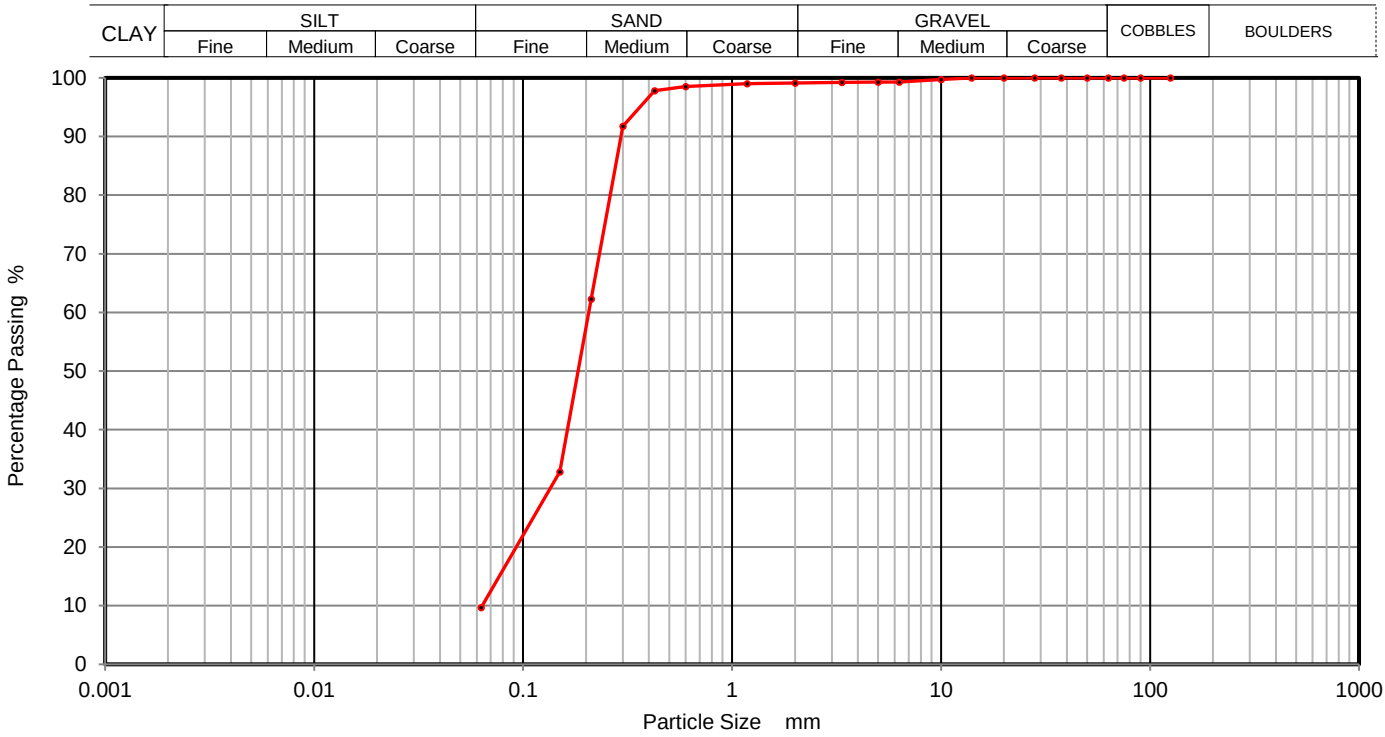
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	10/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	11/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH16
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine slightly gravelly silty clayey fine to coarse SAND.	Depth Top	4.40
		Depth Base	4.50
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	92		
0.212	62		
0.15	33		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	89
Silt and Clay	10

Grading Analysis	
Uniformity Coefficient	

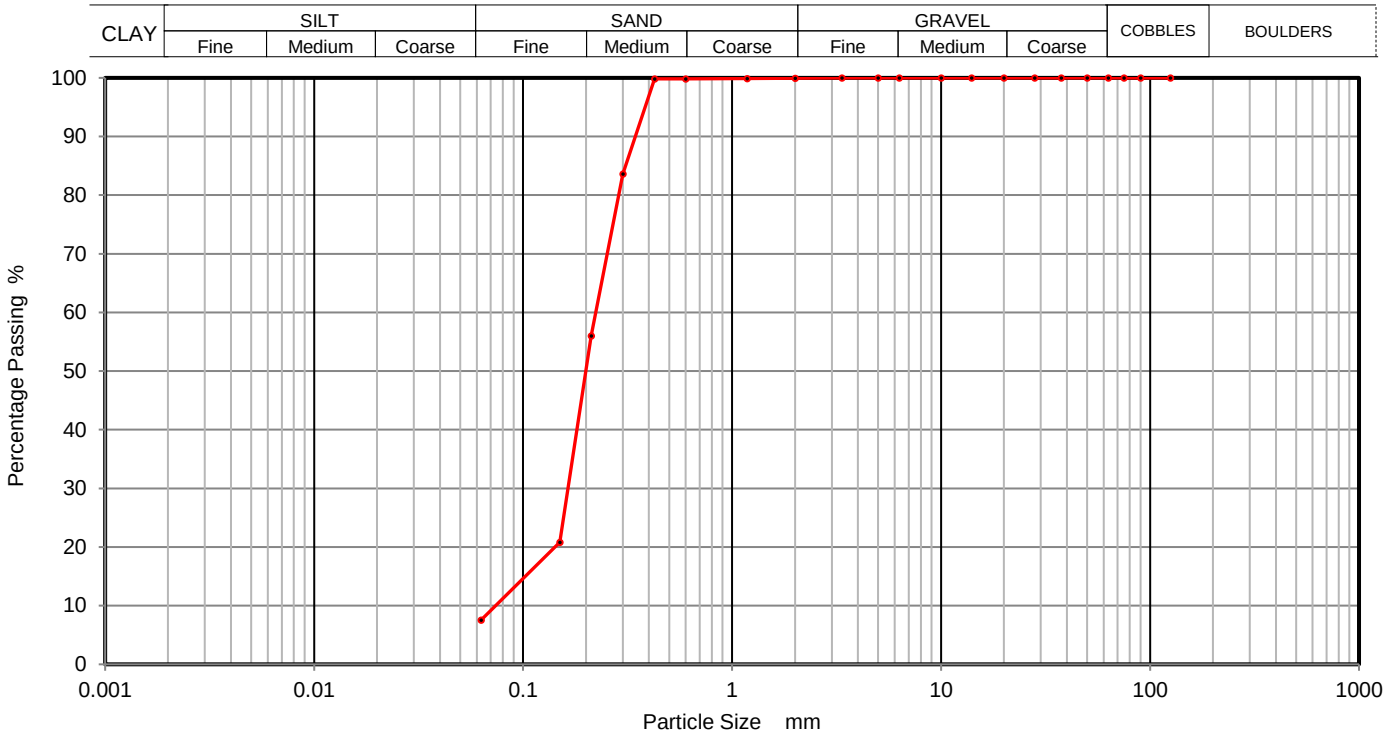
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH16
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to medium SAND.	Depth Top	6.10
		Depth Base	6.20
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	84		
0.212	56		
0.15	21		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	92
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

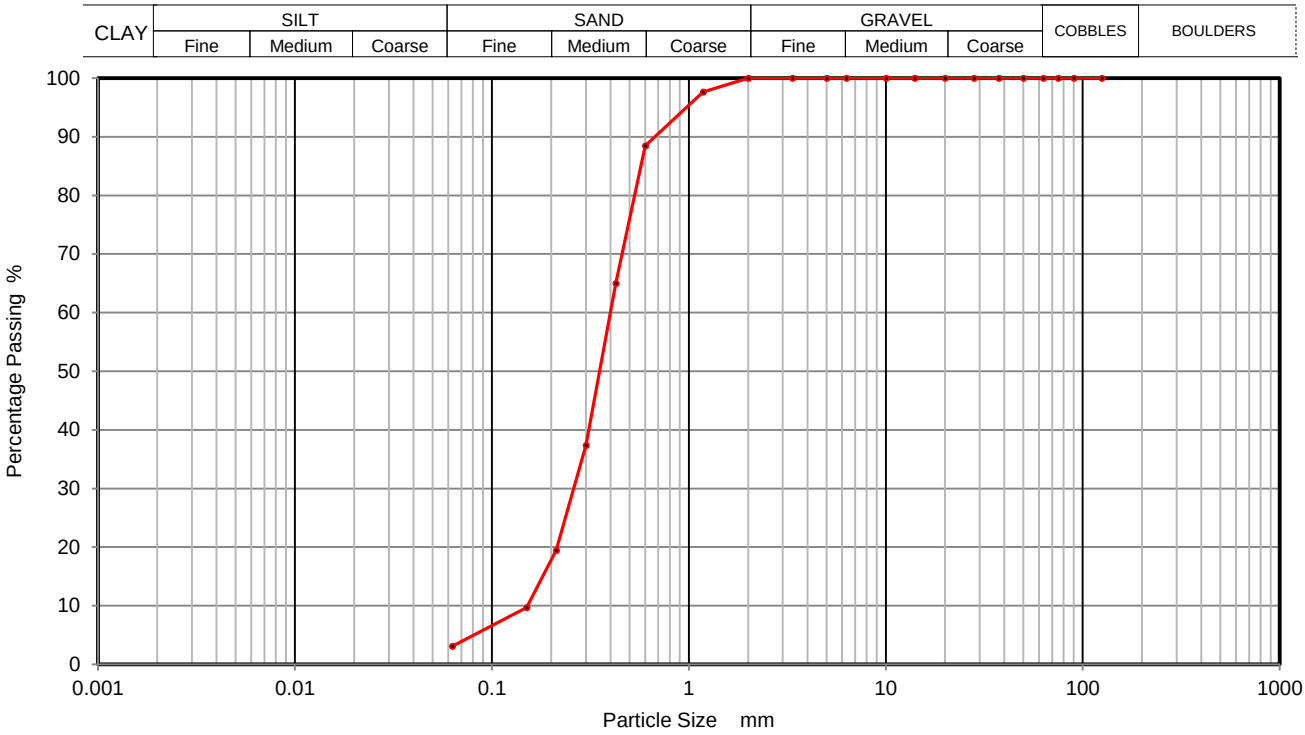
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	42000
		Borehole/Pit No.	BH17
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to coarse SAND.	Depth Top	6.00
		Depth Base	7.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	88		
0.425	65		
0.3	37		
0.212	19		
0.15	10		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	97
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

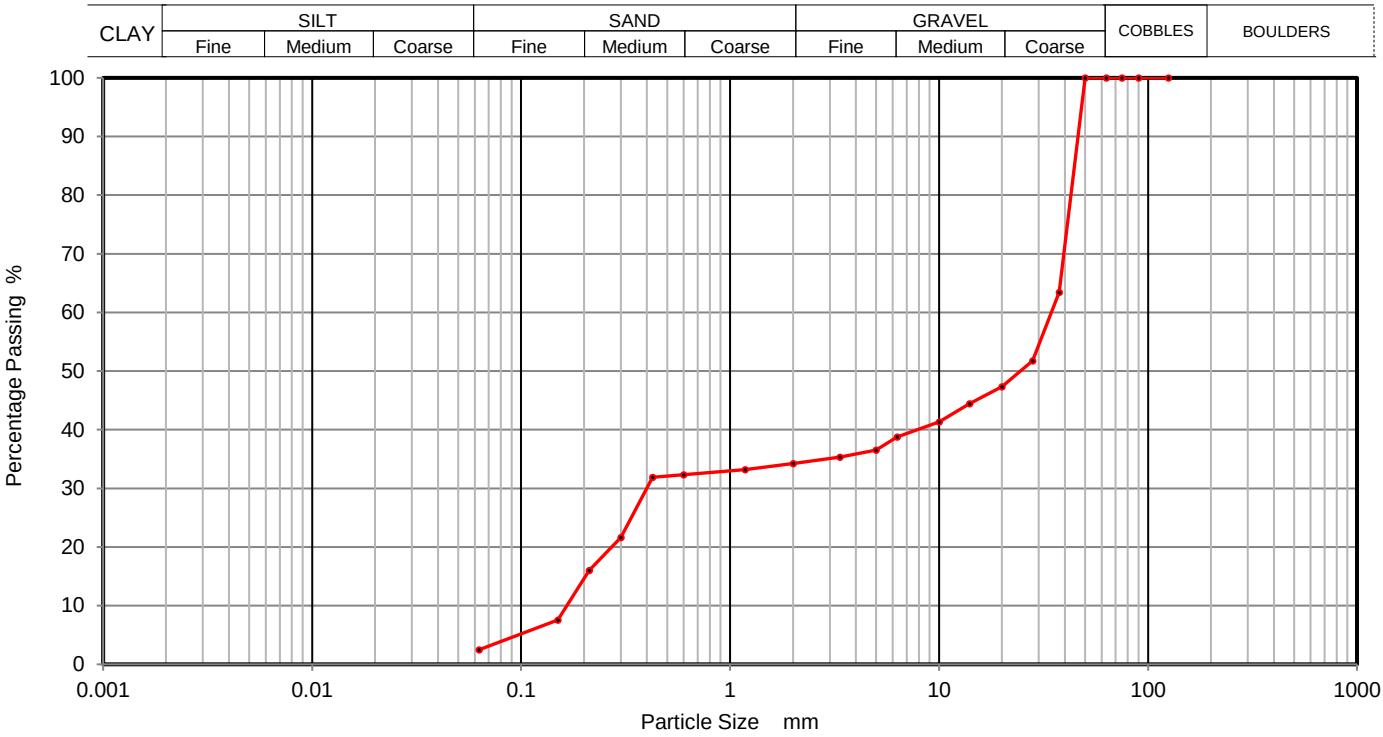
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH19
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	4.80
		Depth Base	4.90
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	63		
28	52		
20	47		
14	44		
10	41		
6.3	39		
5	37		
3.35	35		
2	34		
1.18	33		
0.6	32		
0.425	32		
0.3	22		
0.212	16		
0.15	8		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	66
Sand	32
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

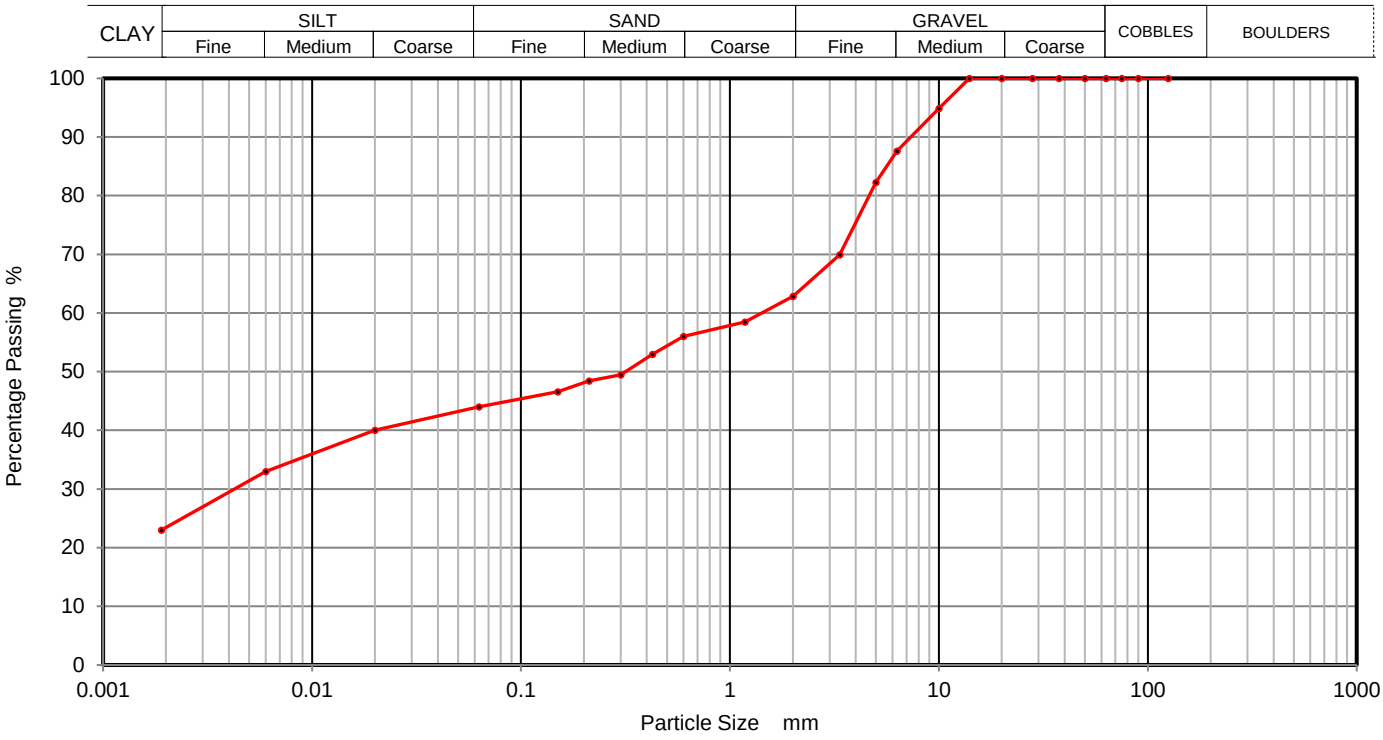
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42204
		Borehole/Pit No.	BH21
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL.	Depth Top	14.00
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	40
90	100	0.0060	33
75	100	0.0020	23
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	95		
6.3	88		
5	82		
3.35	70		
2	63		
1.18	58		
0.6	56		
0.425	53		
0.3	49		
0.212	48		
0.15	47		
0.063	44		

Sample Proportions	% dry mass
Cobbles	0
Gravel	37
Sand	19
Silt	21
Clay	23

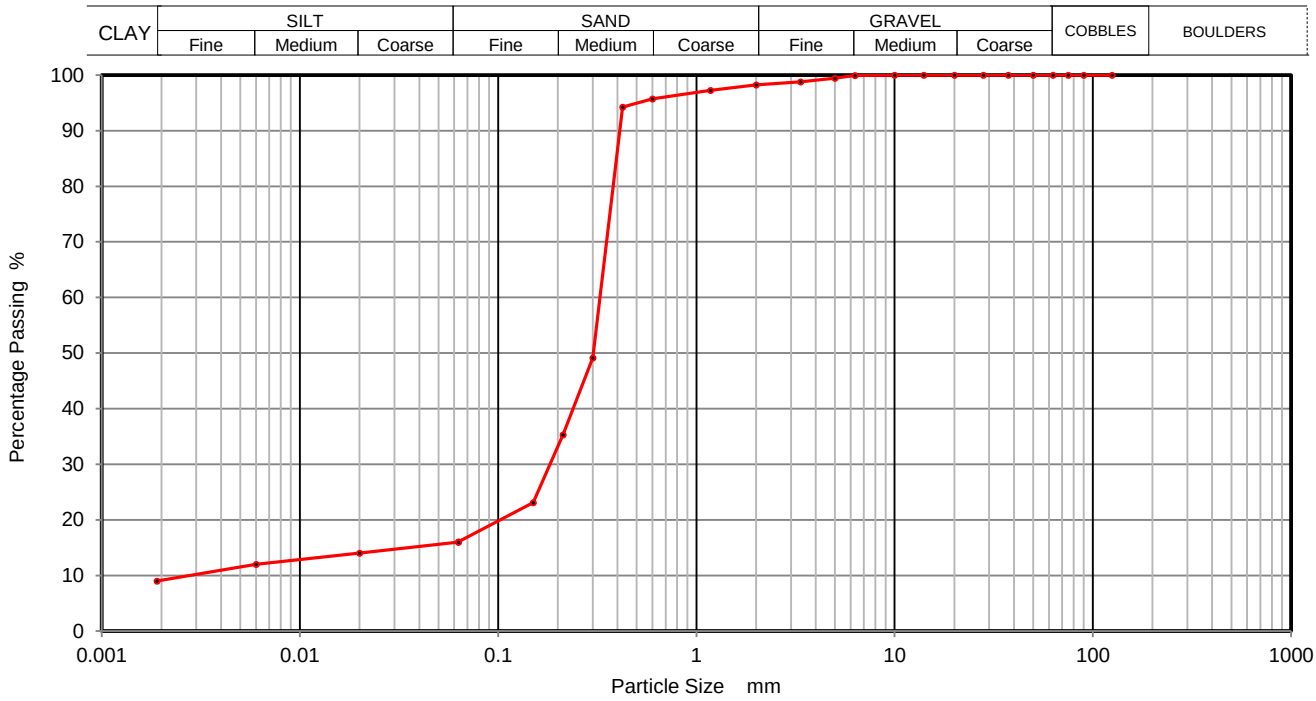
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH22
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly silty clayey fine to coarse SAND.	Depth Top	5.00
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	12
75	100	0.0019	9
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	96		
0.425	94		
0.3	49		
0.212	35		
0.15	23		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	82
Silt	7
Clay	9

Grading Analysis	
Uniformity Coefficient	

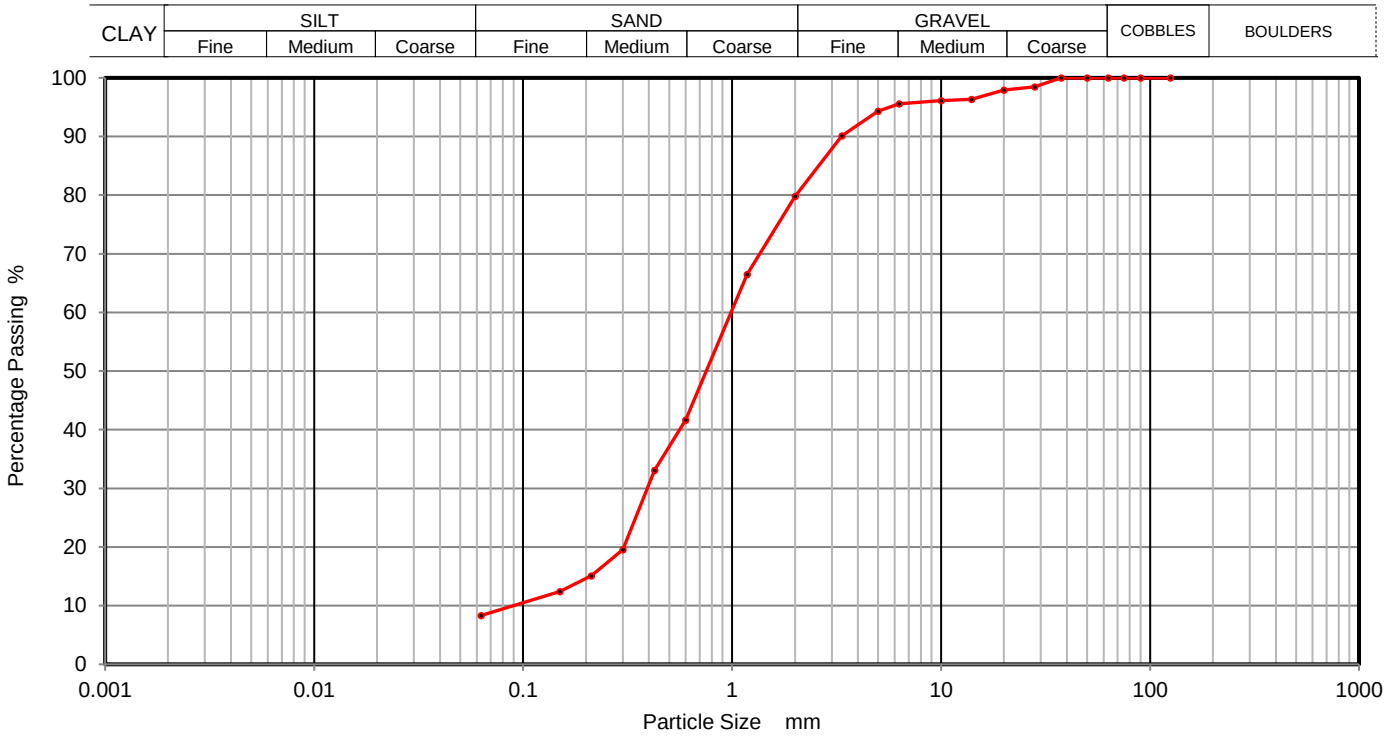
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41210**
		Borehole/Pit No.	**BH25**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse gravelly fine to coarse SAND.	Depth Top	**1.20**
		Depth Base	**1.70**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	98		
20	98		
14	96		
10	96		
6.3	96		
5	94		
3.35	90		
2	80		
1.18	67		
0.6	42		
0.425	33		
0.3	20		
0.212	15		
0.15	12		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	20
Sand	72
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

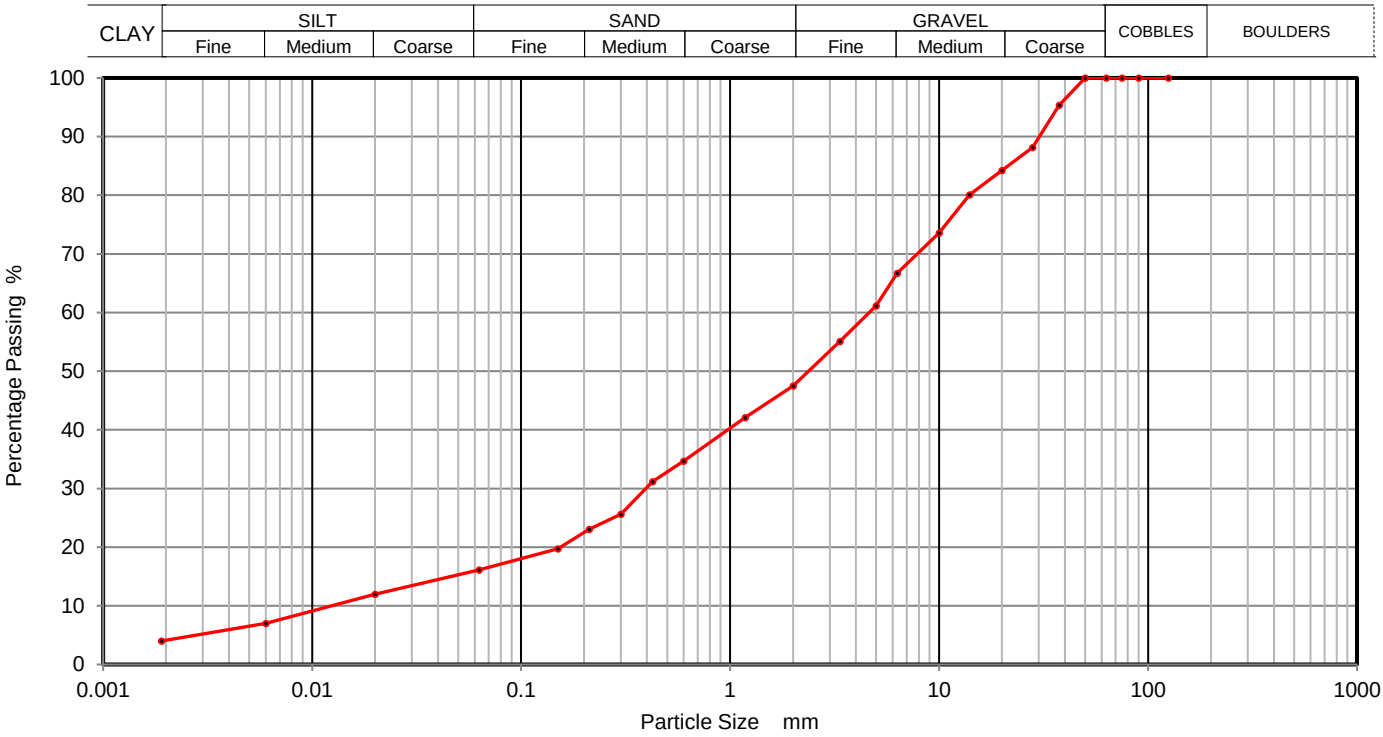
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH25
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	2.50
		Depth Base	2.70
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	7
75	100	0.0019	4
63	100		
50	100		
37.5	95		
28	88		
20	84		
14	80		
10	74		
6.3	67		
5	61		
3.35	55		
2	48		
1.18	42		
0.6	35		
0.425	31		
0.3	26		
0.212	23		
0.15	20		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	52
Sand	32
Silt	12
Clay	4

Grading Analysis	
Uniformity Coefficient	

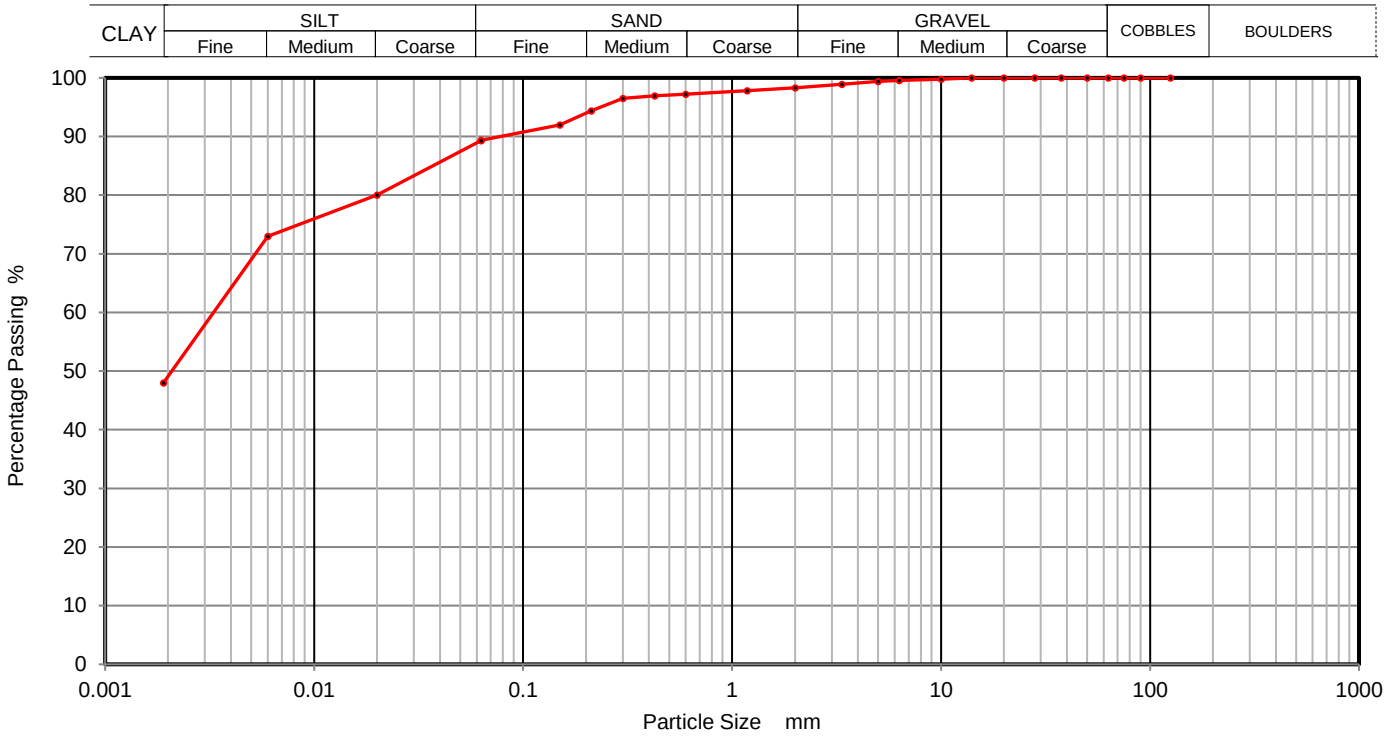
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	14/03/2019	Emma Sharp	[redacted]
RO/MH	Approved	15/03/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH27
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	1.20
		Depth Base	1.70
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	73
75	100	0.0019	48
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	97		
0.3	96		
0.212	94		
0.15	92		
0.063	89		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	9
Silt	41
Clay	48

Grading Analysis	
Uniformity Coefficient	

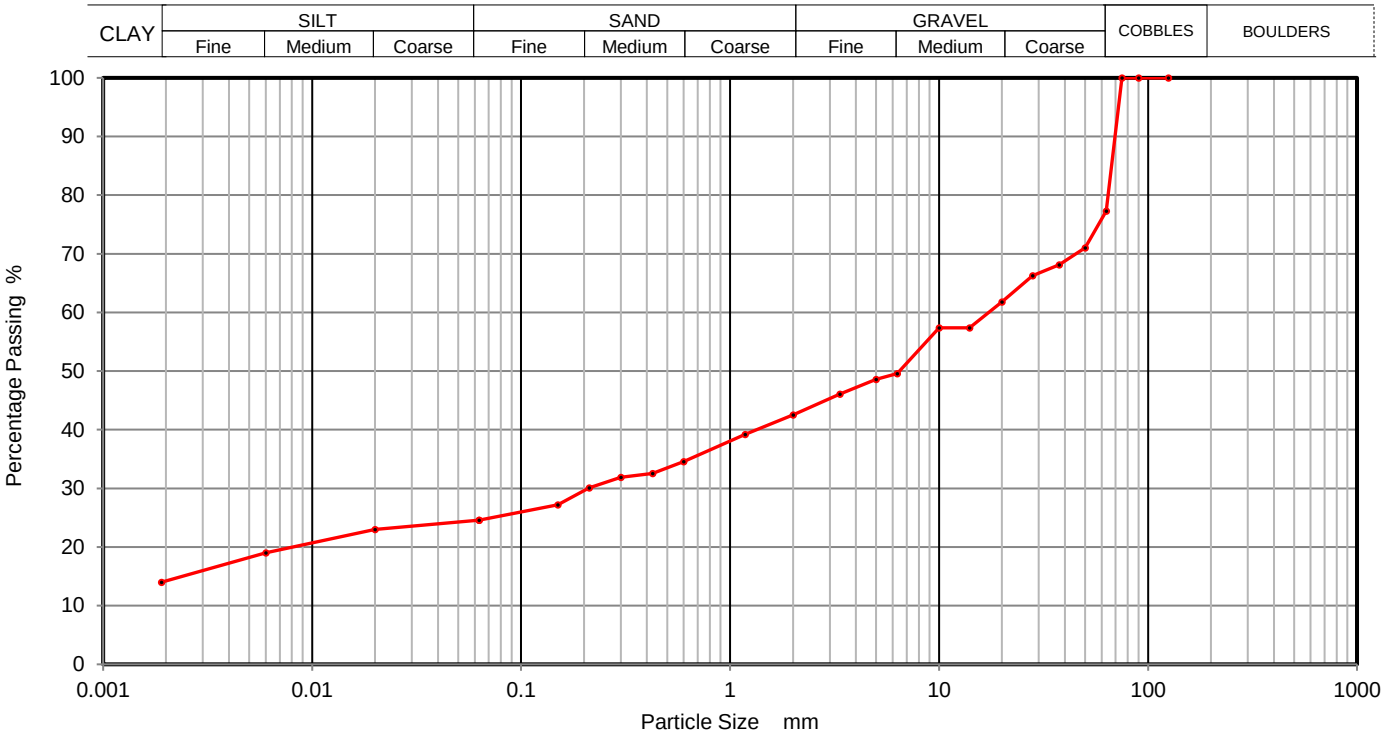
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH27
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL with many cobbles.	Depth Top	4.00
		Depth Base	4.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	23
90	100	0.0060	19
75	100	0.0019	14
63	77		
50	71		
37.5	68		
28	66		
20	62		
14	57		
10	57		
6.3	50		
5	49		
3.35	46		
2	43		
1.18	39		
0.6	35		
0.425	33		
0.3	32		
0.212	30		
0.15	27		
0.063	25		

Sample Proportions	% dry mass
Cobbles	23
Gravel	34
Sand	18
Silt	11
Clay	14

Grading Analysis	
Uniformity Coefficient	

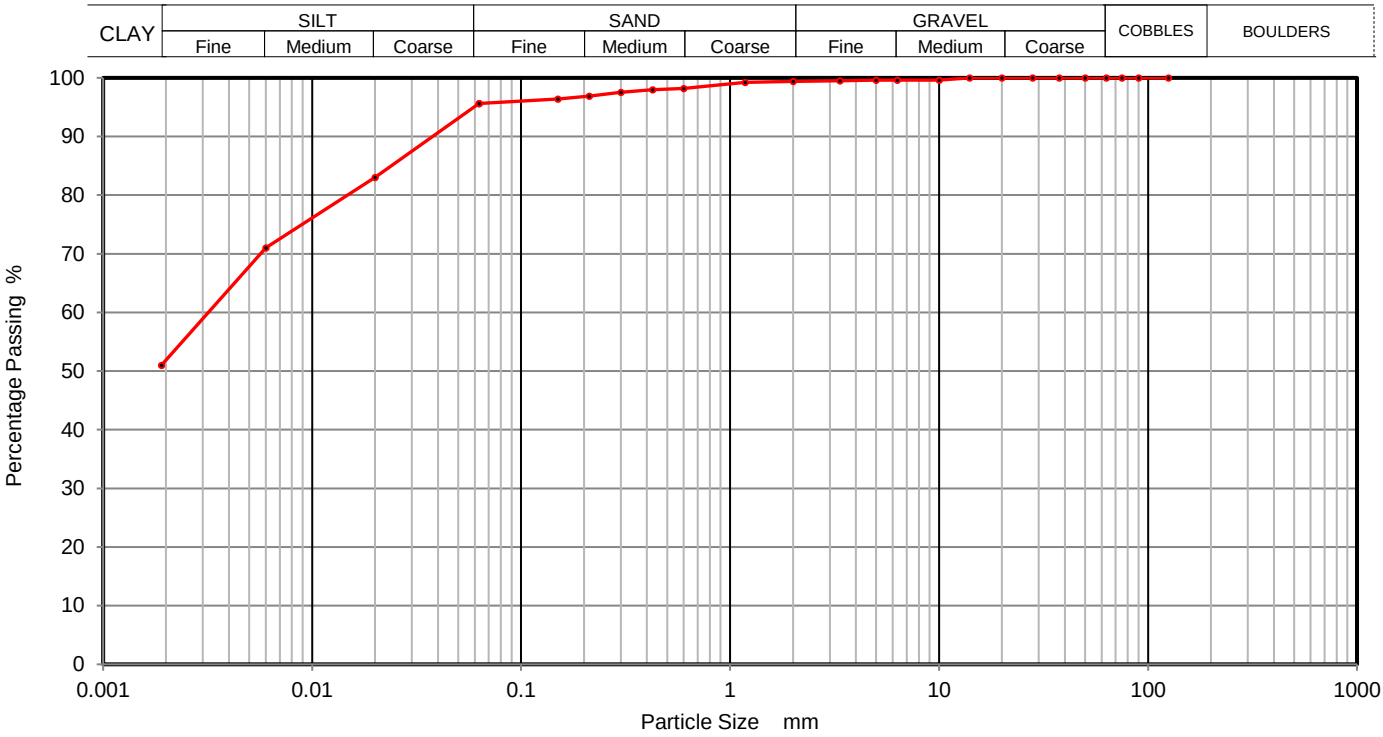
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH27
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly fine to sandy silty CLAY.	Depth Top	9.50
		Depth Base	10.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	83
90	100	0.0060	71
75	100	0.0019	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	96		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	3
Silt	45
Clay	51

Grading Analysis	
Uniformity Coefficient	

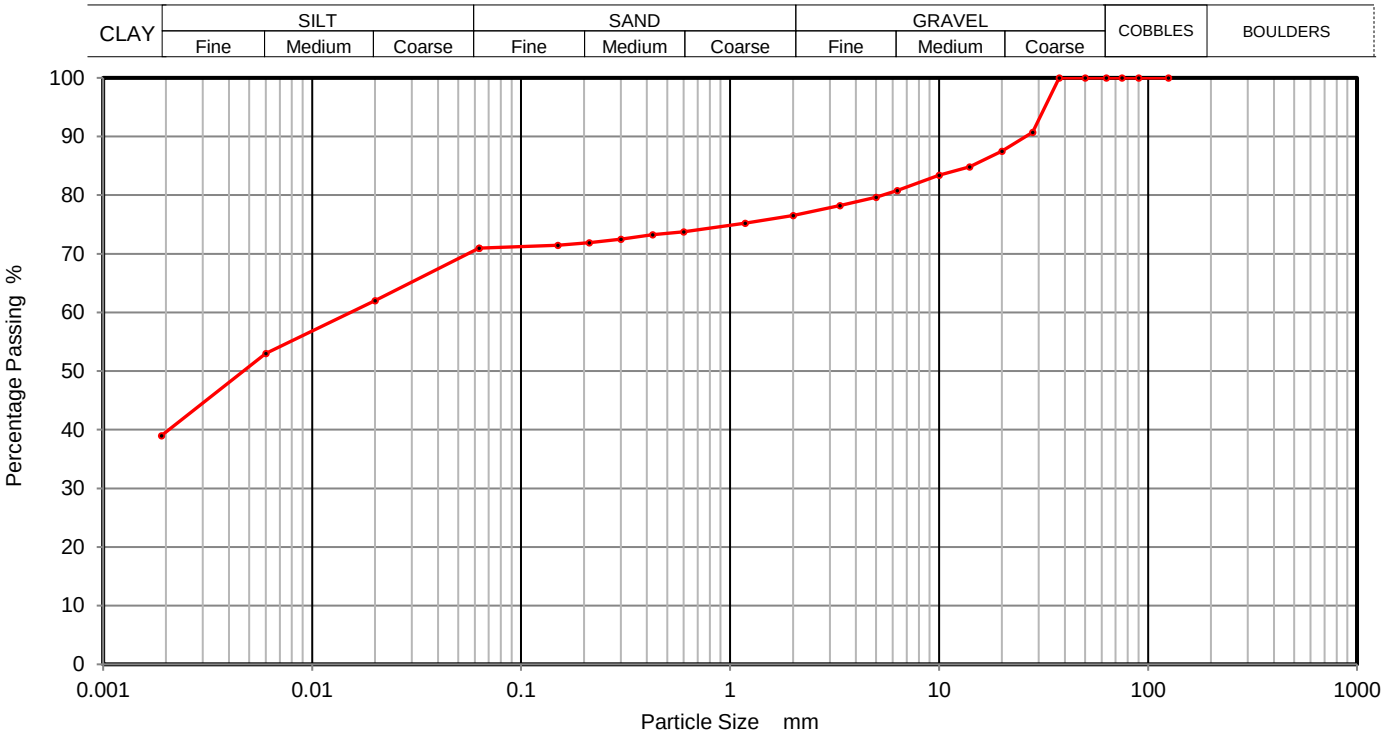
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH27
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly sandy fine to coarse gravelly silty CLAY.	Depth Top	12.00
		Depth Base	12.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	62
90	100	0.0060	53
75	100	0.0019	39
63	100		
50	100		
37.5	100		
28	91		
20	88		
14	85		
10	83		
6.3	81		
5	80		
3.35	78		
2	77		
1.18	75		
0.6	74		
0.425	73		
0.3	73		
0.212	72		
0.15	71		
0.063	71		

Sample Proportions	% dry mass
Cobbles	0
Gravel	23
Sand	6
Silt	32
Clay	39

Grading Analysis	
Uniformity Coefficient	

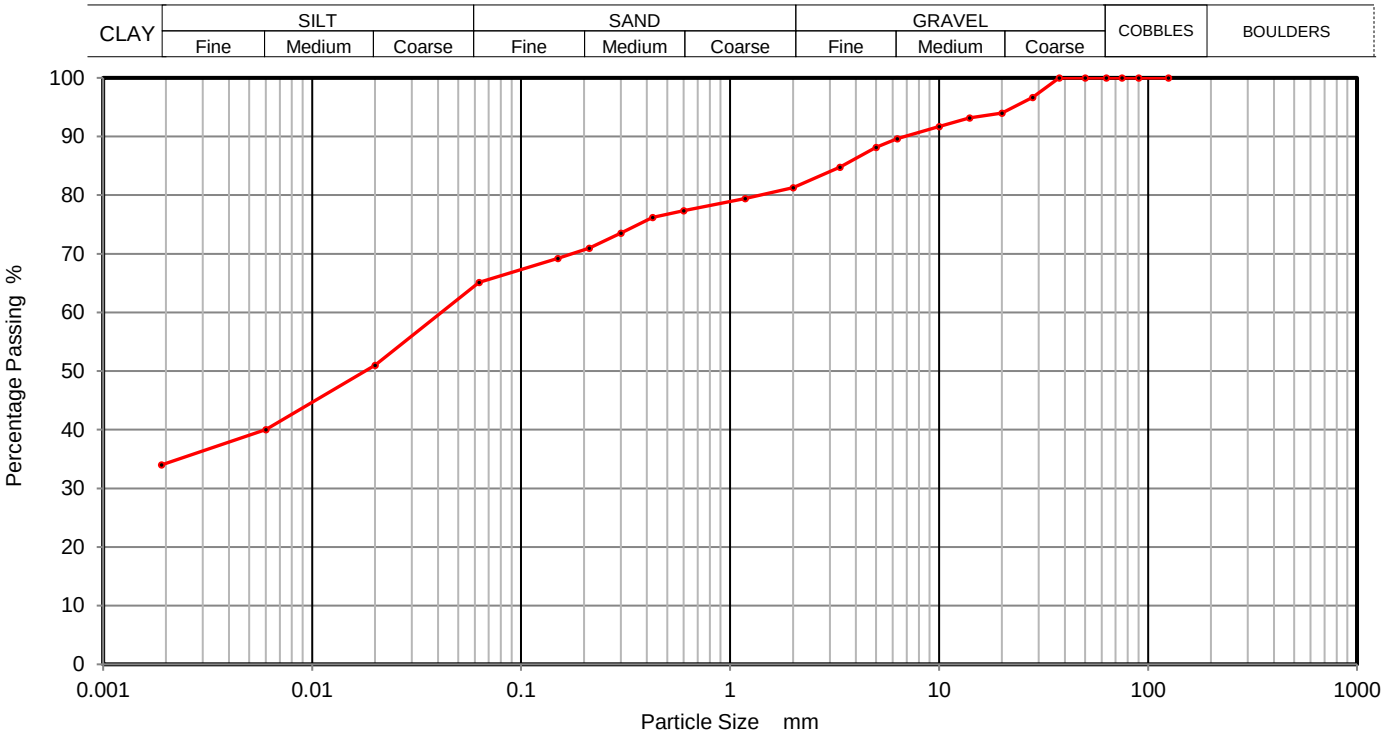
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH28
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse sandy fine to coarse gravelly silty CLAY.	Depth Top	2.50
		Depth Base	3.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	51
90	100	0.0060	40
75	100	0.0019	34
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	93		
10	92		
6.3	90		
5	88		
3.35	85		
2	81		
1.18	79		
0.6	77		
0.425	76		
0.3	74		
0.212	71		
0.15	69		
0.063	65		

Sample Proportions	% dry mass
Cobbles	0
Gravel	19
Sand	16
Silt	31
Clay	34

Grading Analysis	
Uniformity Coefficient	

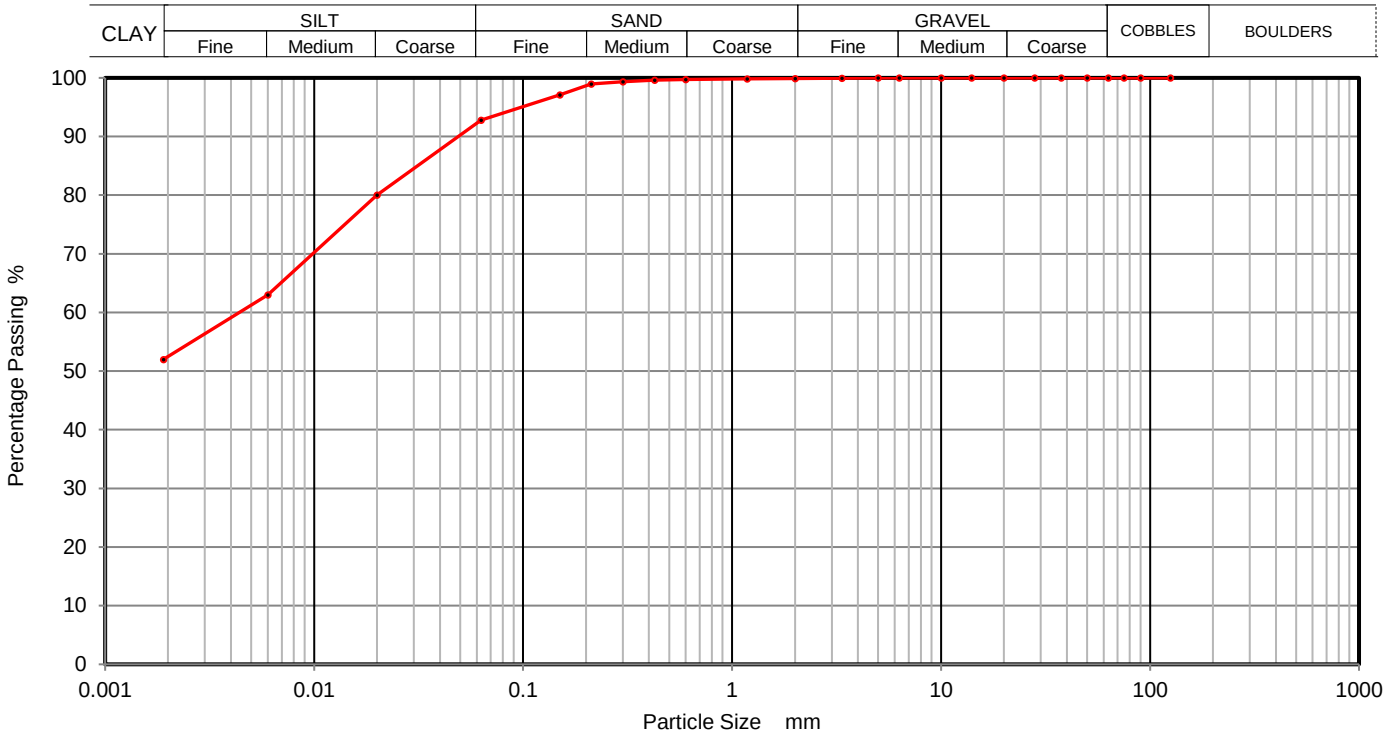
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH28
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine slightly sandy silty CLAY.	Depth Top	3.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	63
75	100	0.0019	52
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	97		
0.063	93		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	7
Silt	41
Clay	52

Grading Analysis	
Uniformity Coefficient	

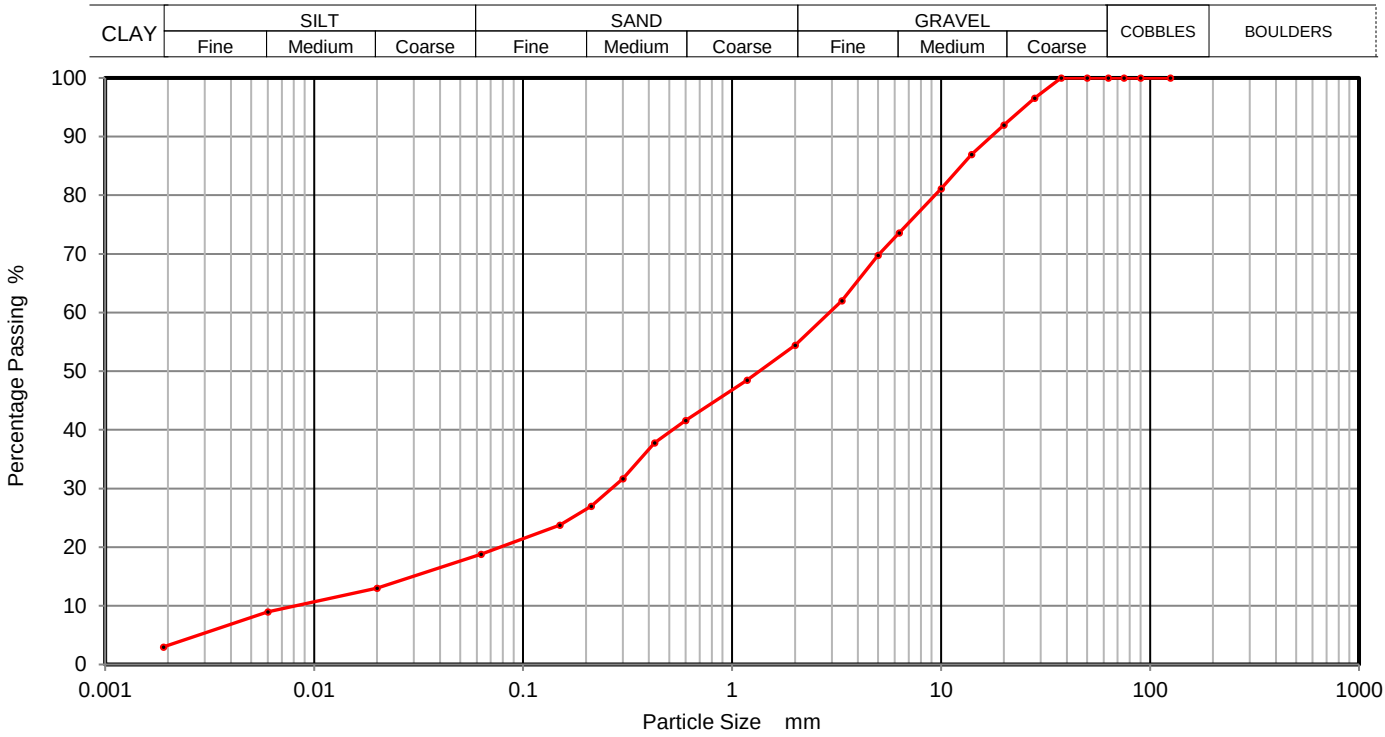
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH29
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	1.60
		Depth Base	1.90
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	13
90	100	0.0060	9
75	100	0.0019	3
63	100		
50	100		
37.5	100		
28	97		
20	92		
14	87		
10	81		
6.3	74		
5	70		
3.35	62		
2	54		
1.18	48		
0.6	42		
0.425	38		
0.3	32		
0.212	27		
0.15	24		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	35
Silt	16
Clay	3

Grading Analysis	
Uniformity Coefficient	

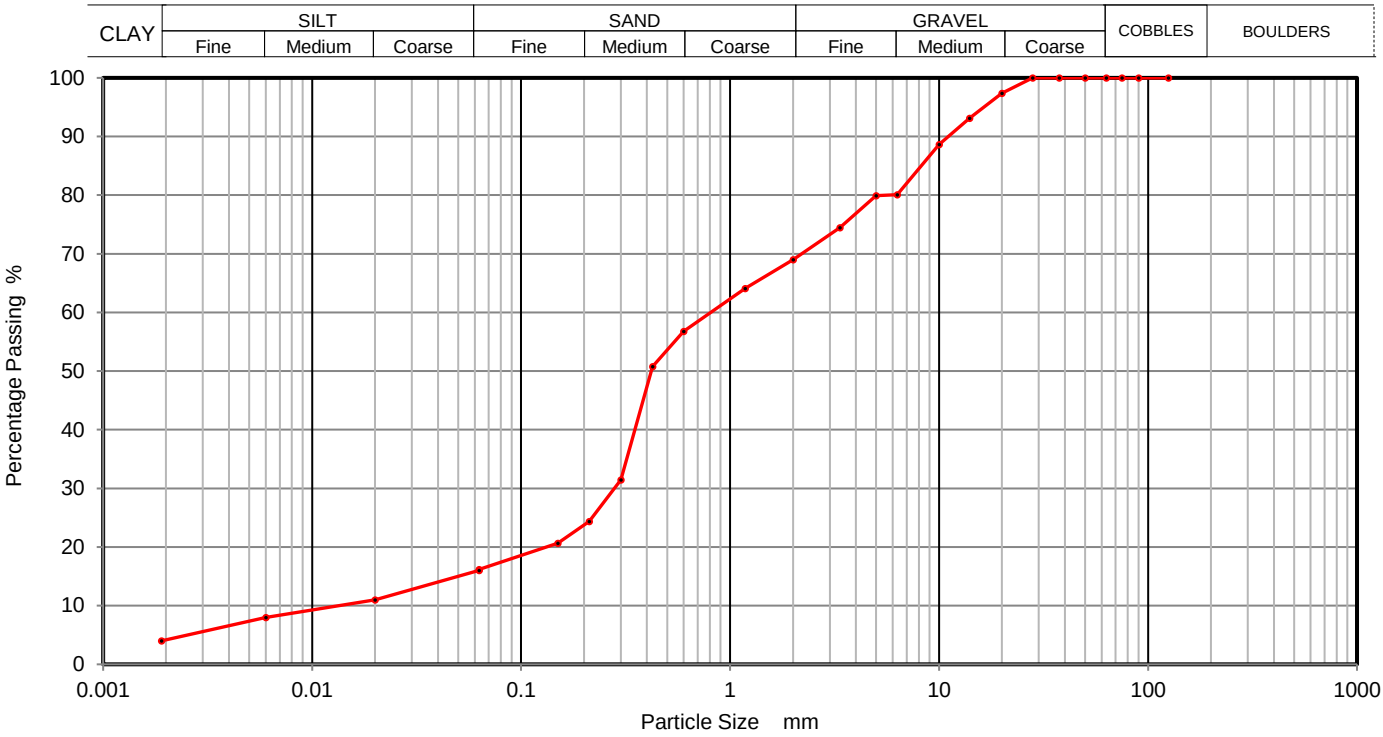
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	14/03/2019	Emma Sharp	[redacted]
RO/MH	Approved	15/03/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH30
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	2.60
		Depth Base	3.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	8
75	100	0.0019	4
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	93		
10	89		
6.3	80		
5	80		
3.35	74		
2	69		
1.18	64		
0.6	57		
0.425	51		
0.3	31		
0.212	24		
0.15	21		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	31
Sand	53
Silt	12
Clay	4

Grading Analysis	
Uniformity Coefficient	

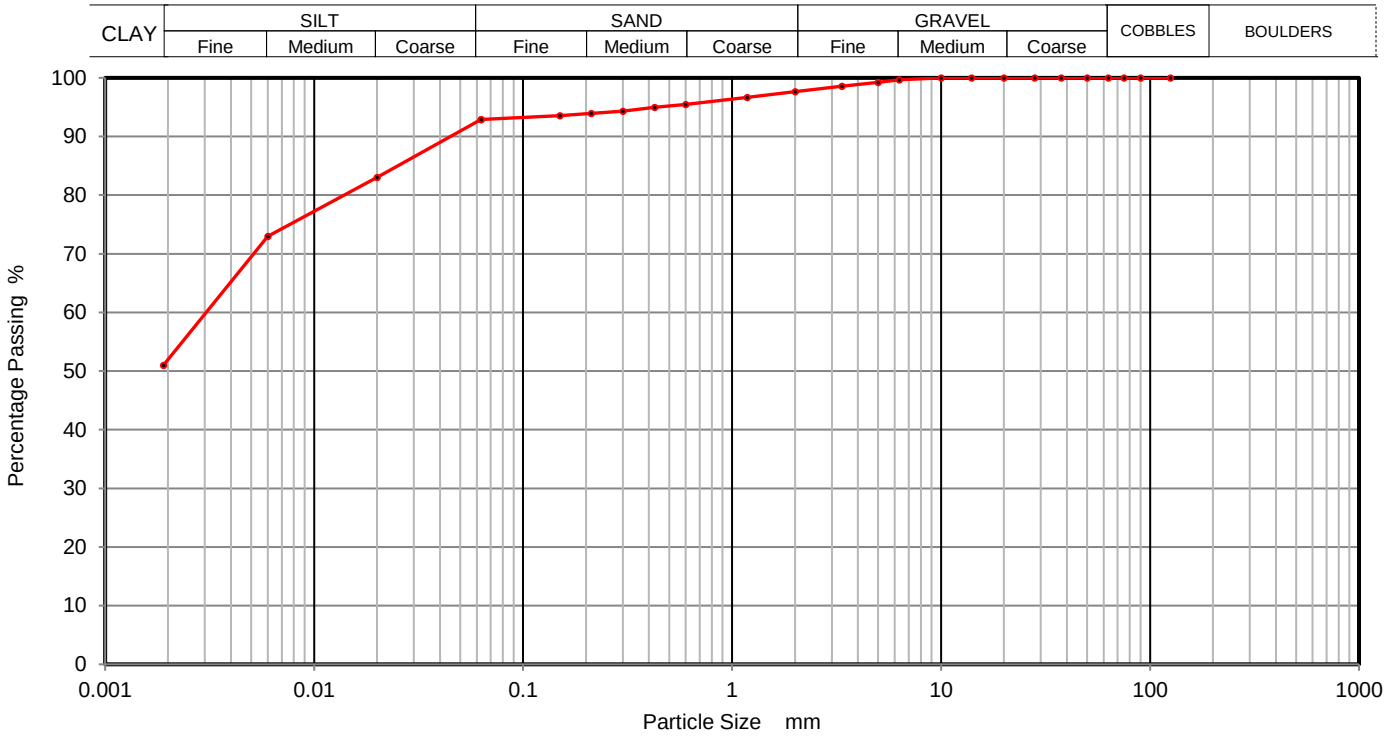
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH30
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey fine to medium slightly gravelly slightly sandy silty CLAY.	Depth Top	4.80
		Depth Base	5.10
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	83
90	100	0.0060	73
75	100	0.0019	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	95		
0.425	95		
0.3	94		
0.212	94		
0.15	94		
0.063	93		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	5
Silt	42
Clay	51

Grading Analysis	
Uniformity Coefficient	

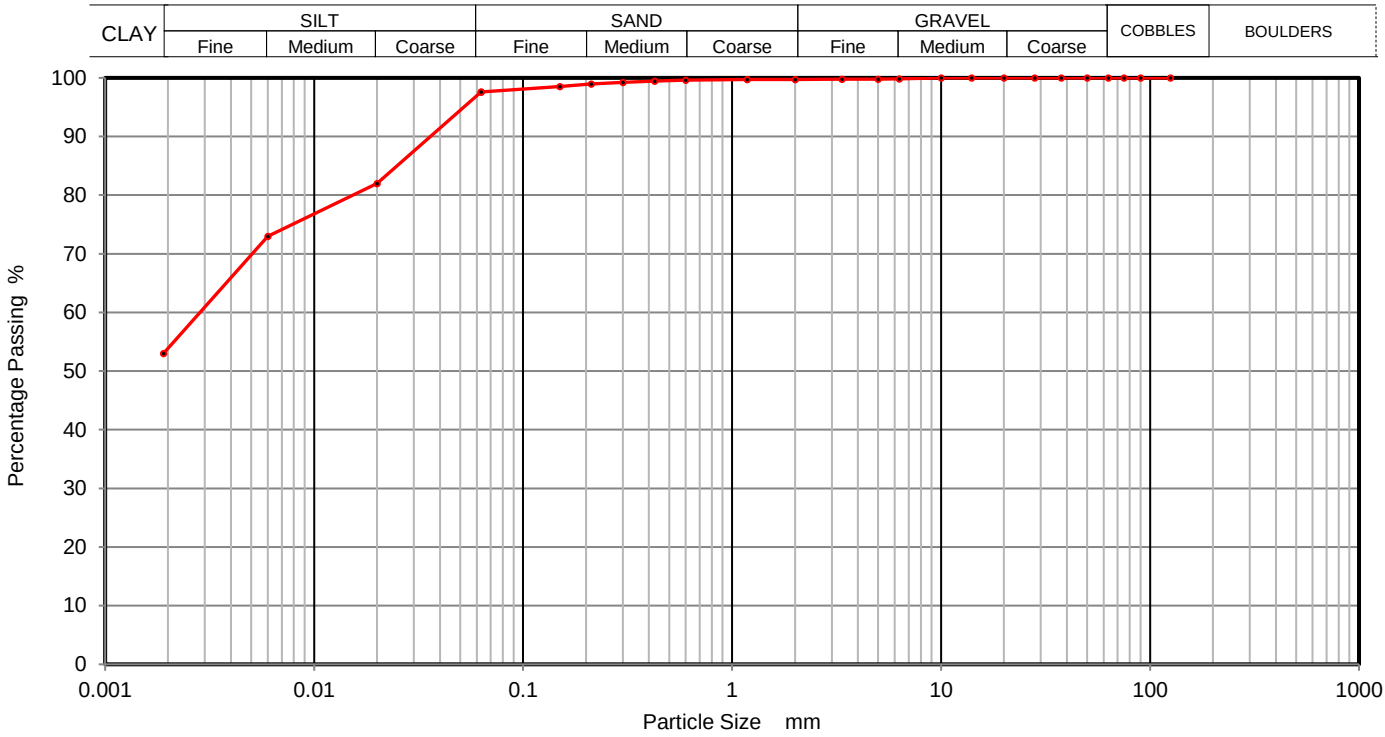
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH30
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey fine to medium slightly sandy silty CLAY.	Depth Top	8.50
		Depth Base	9.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	82
90	100	0.0060	73
75	100	0.0019	53
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	98		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	2
Silt	45
Clay	53

Grading Analysis	
Uniformity Coefficient	

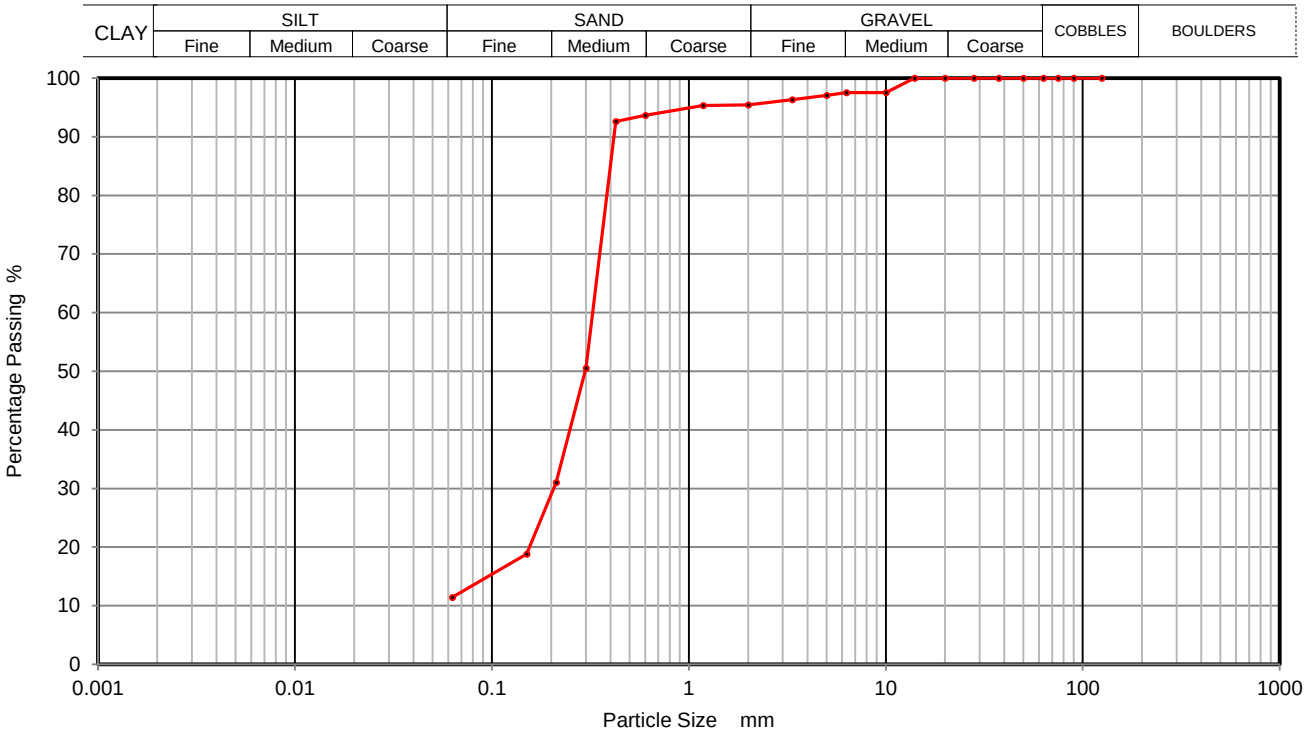
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42000**
		Borehole/Pit No.	**BH31**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown fine to medium slightly gravelly silty clayey fine to coarse SAND.	Depth Top	**3.50**
		Depth Base	**4.00**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98		
6.3	98		
5	97		
3.35	96		
2	95		
1.18	95		
0.6	94		
0.425	93		
0.3	51		
0.212	31		
0.15	19		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	84
Silt and Clay	11

Grading Analysis	
Uniformity Coefficient	

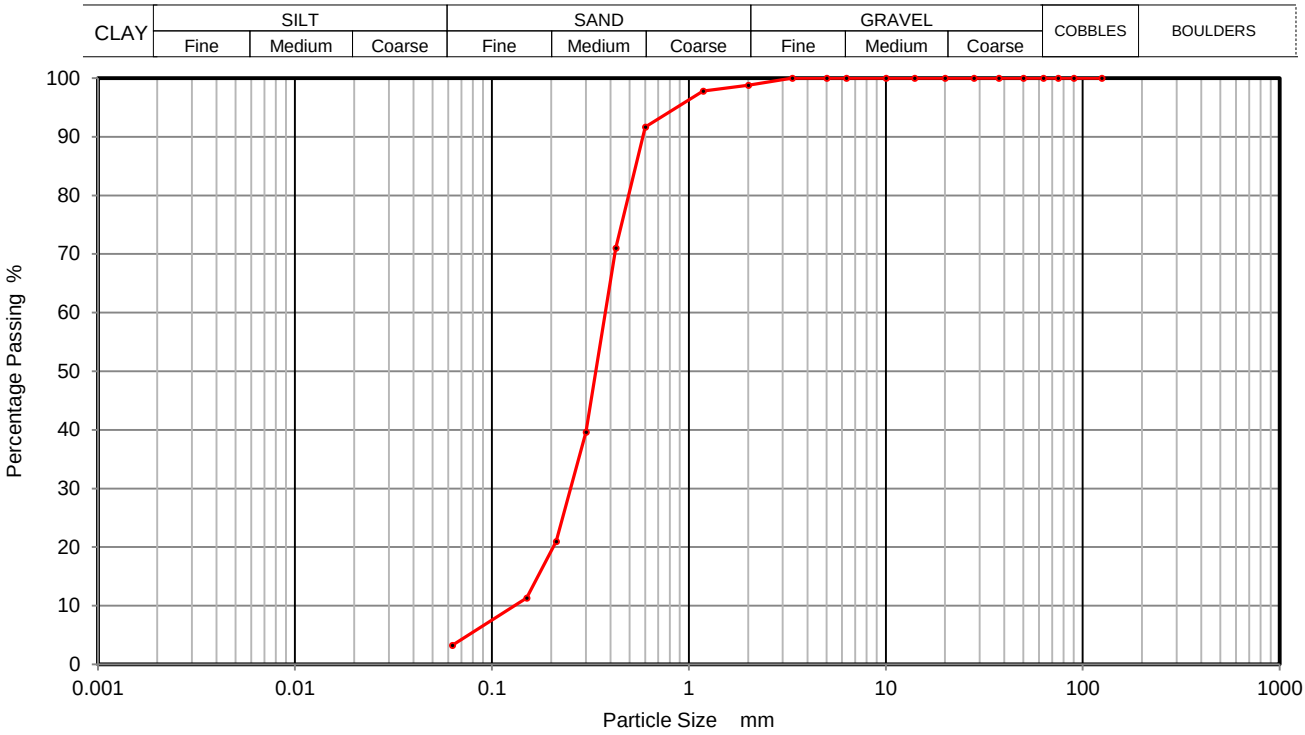
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42000**
		Borehole/Pit No.	**BH31**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown fine to medium slightly gravelly silty clayey fine to coarse SAND.	Depth Top	**6.00**
		Depth Base	**6.50**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	98		
0.6	92		
0.425	71		
0.3	40		
0.212	21		
0.15	11		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	96
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

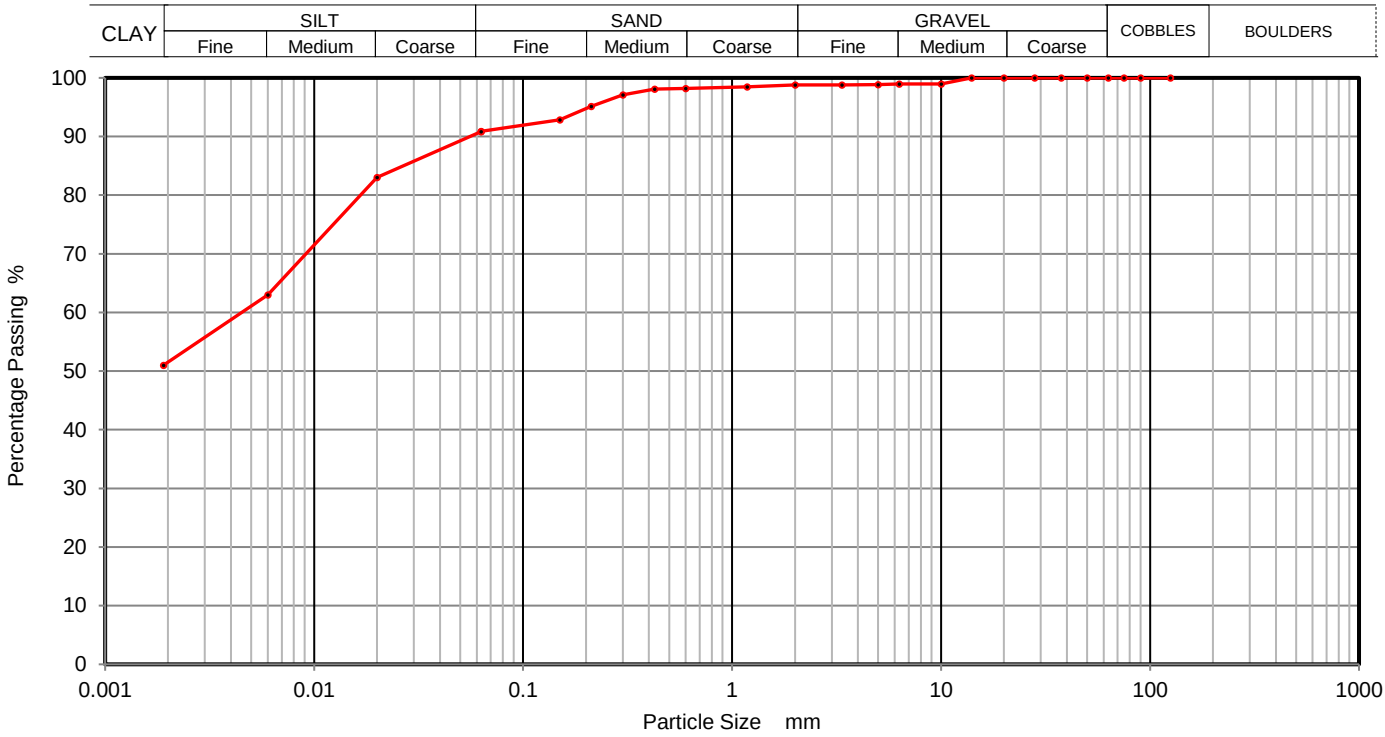
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH31
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	7.50
		Depth Base	8.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	83
90	100	0.0060	63
75	100	0.0019	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	98		
0.425	98		
0.3	97		
0.212	95		
0.15	93		
0.063	91		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	8
Silt	40
Clay	51

Grading Analysis	
Uniformity Coefficient	

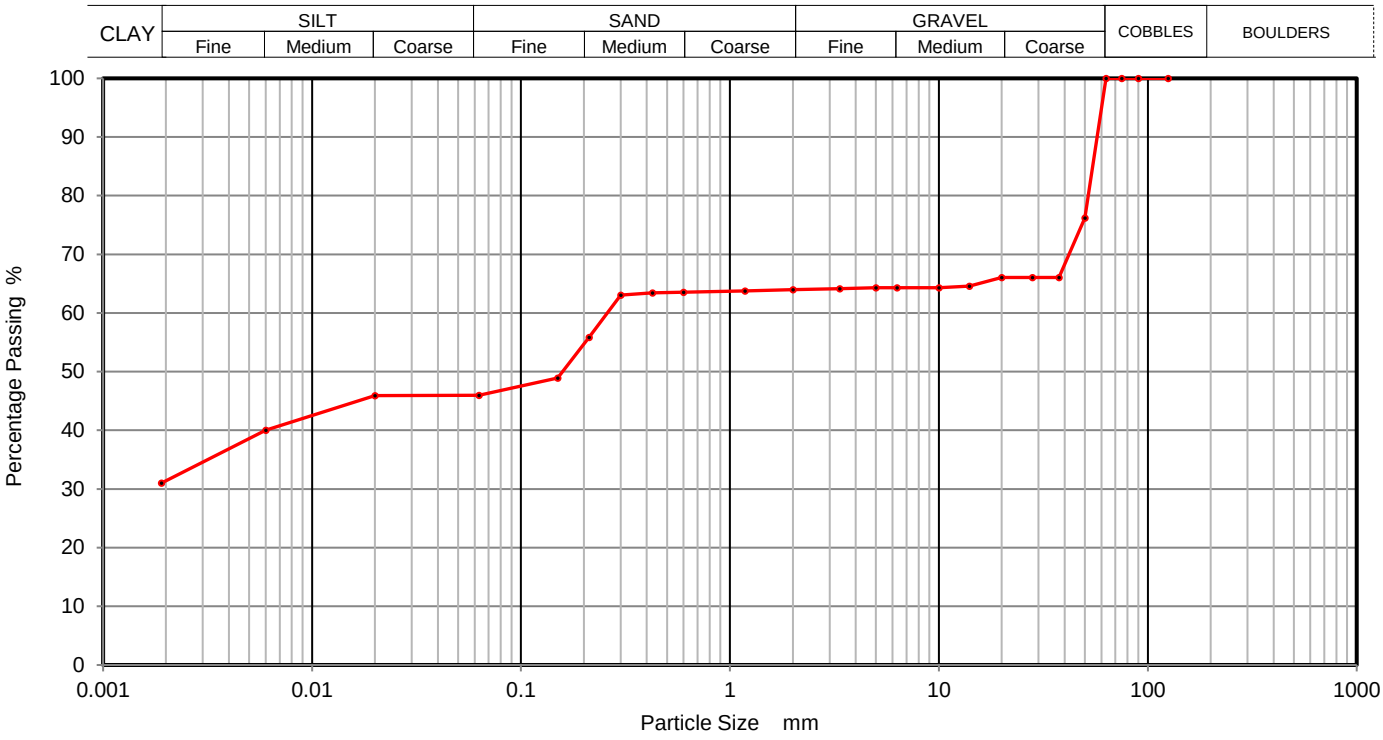
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	BH31
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL	Depth Top	9.00
		Depth Base	9.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	40
90	100	0.0060	31
75	100	0.0019	23
63	100		
50	76		
37.5	66		
28	66		
20	66		
14	65		
10	64		
6.3	64		
5	64		
3.35	64		
2	64		
1.18	64		
0.6	64		
0.425	63		
0.3	63		
0.212	56		
0.15	49		
0.063	46		

Sample Proportions	% dry mass
Cobbles	0
Gravel	36
Sand	18
Silt	23
Clay	23

Grading Analysis	
Uniformity Coefficient	

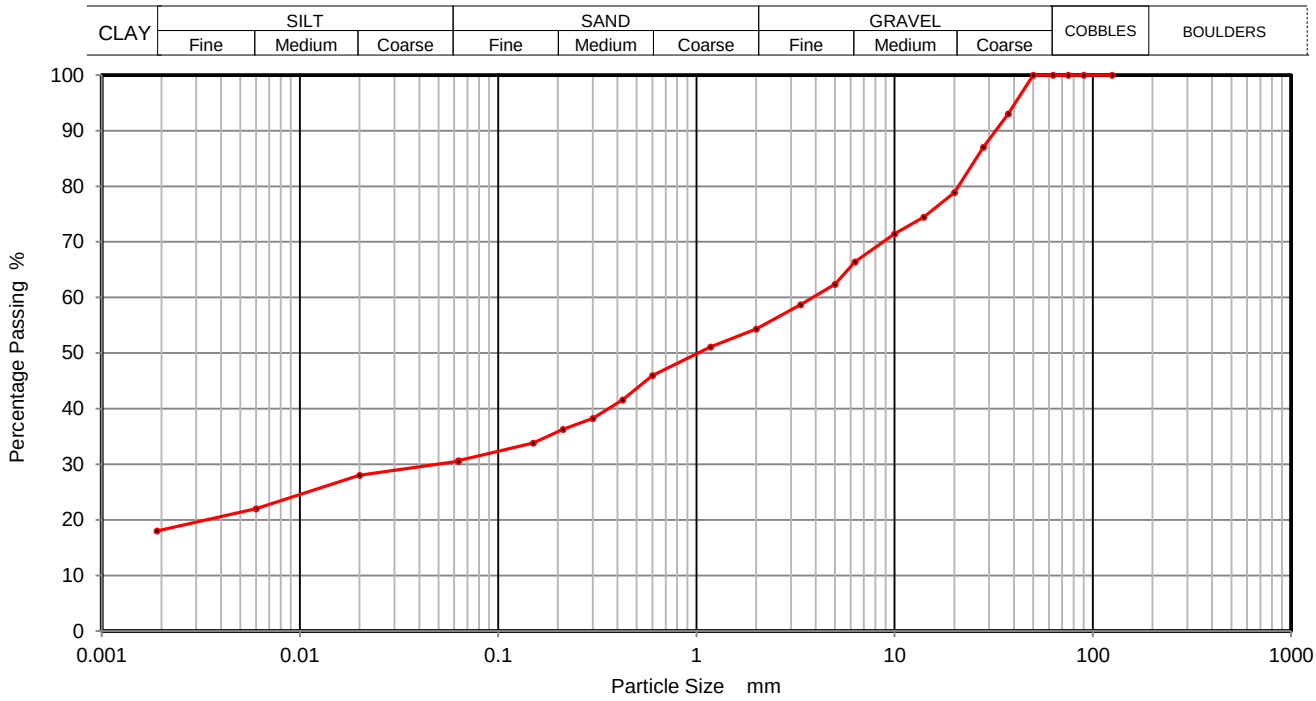
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	10/01/2019	Emma Sharp	[redacted]
RO/MH	Approved	11/01/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH32
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	1.00
		Depth Base	1.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	28
90	100	0.0060	22
75	100	0.0019	18
63	100		
50	100		
37.5	93		
28	87		
20	79		
14	74		
10	71		
6.3	66		
5	62		
3.35	59		
2	54		
1.18	51		
0.6	46		
0.425	42		
0.3	38		
0.212	36		
0.15	34		
0.063	31		

Sample Proportions	% dry mass
Cobbles	0
Gravel	46
Sand	23
Silt	13
Clay	18

Grading Analysis	
Uniformity Coefficient	

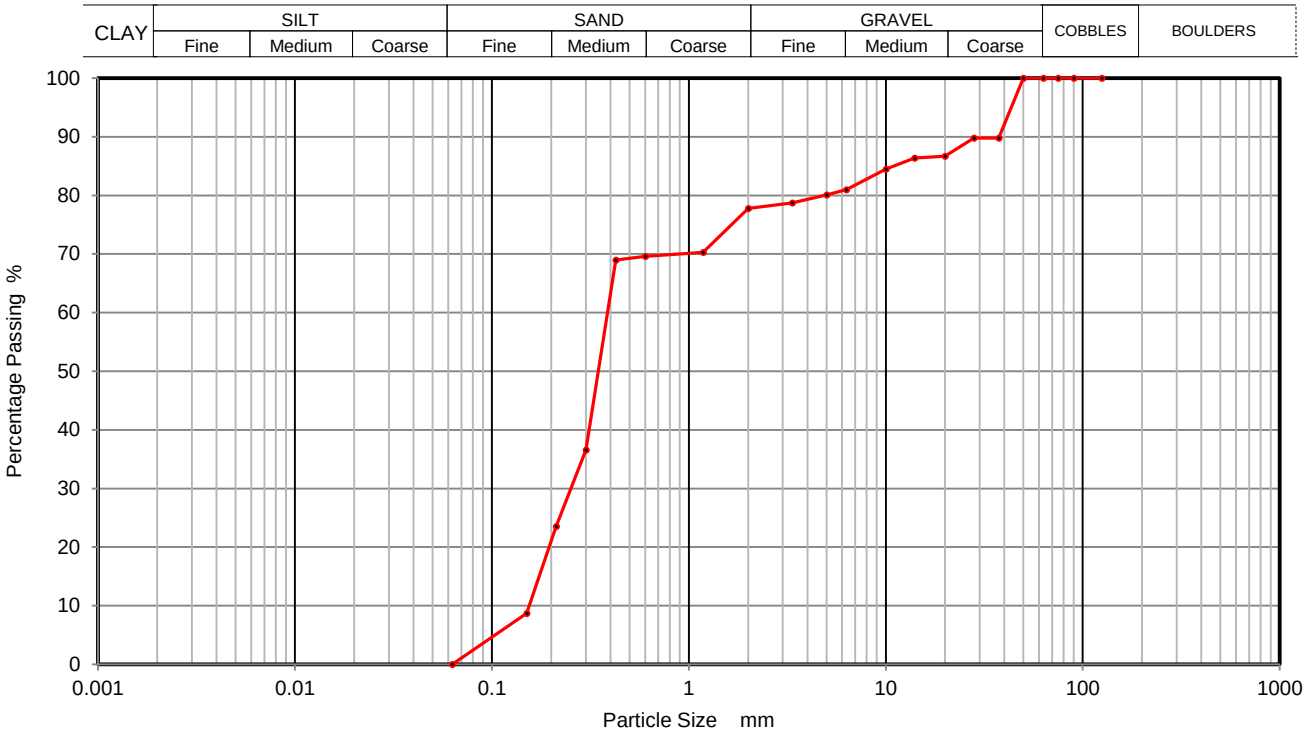
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**BH32**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown fine to coarse gravelly fine to coarse SAND.	Depth Top	**4.50**
		Depth Base	**5.00**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	90		
28	90		
20	87		
14	86		
10	84		
6.3	81		
5	80		
3.35	79		
2	78		
1.18	70		
0.6	70		
0.425	69		
0.3	37		
0.212	24		
0.15	9		
0.063	0		

Sample Proportions	% dry mass
Cobbles	0
Gravel	22
Sand	78
Silt and Clay	0

Grading Analysis	
Uniformity Coefficient	

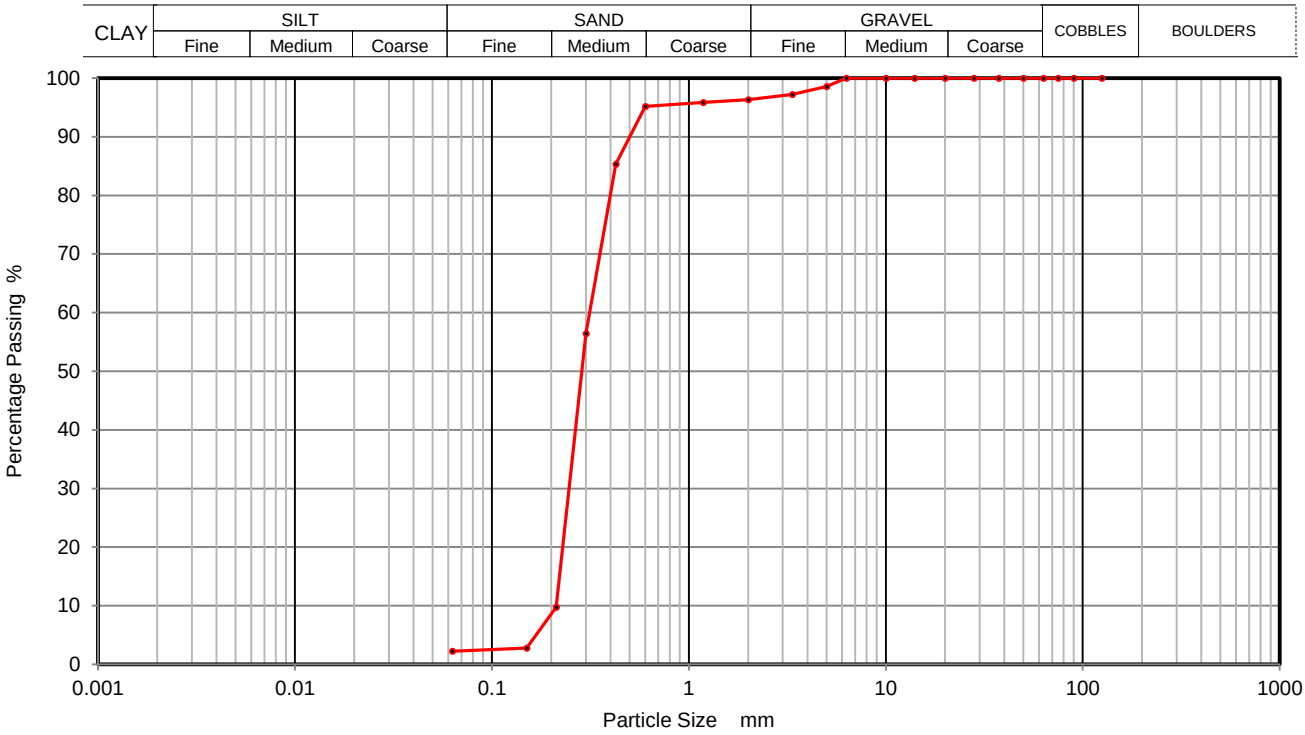
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**BH32**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to medium slightly gravelly fine to coarse SAND.	Depth Top	**7.50**
		Depth Base	**8.00**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	97		
2	96		
1.18	96		
0.6	95		
0.425	85		
0.3	56		
0.212	10		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	94
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

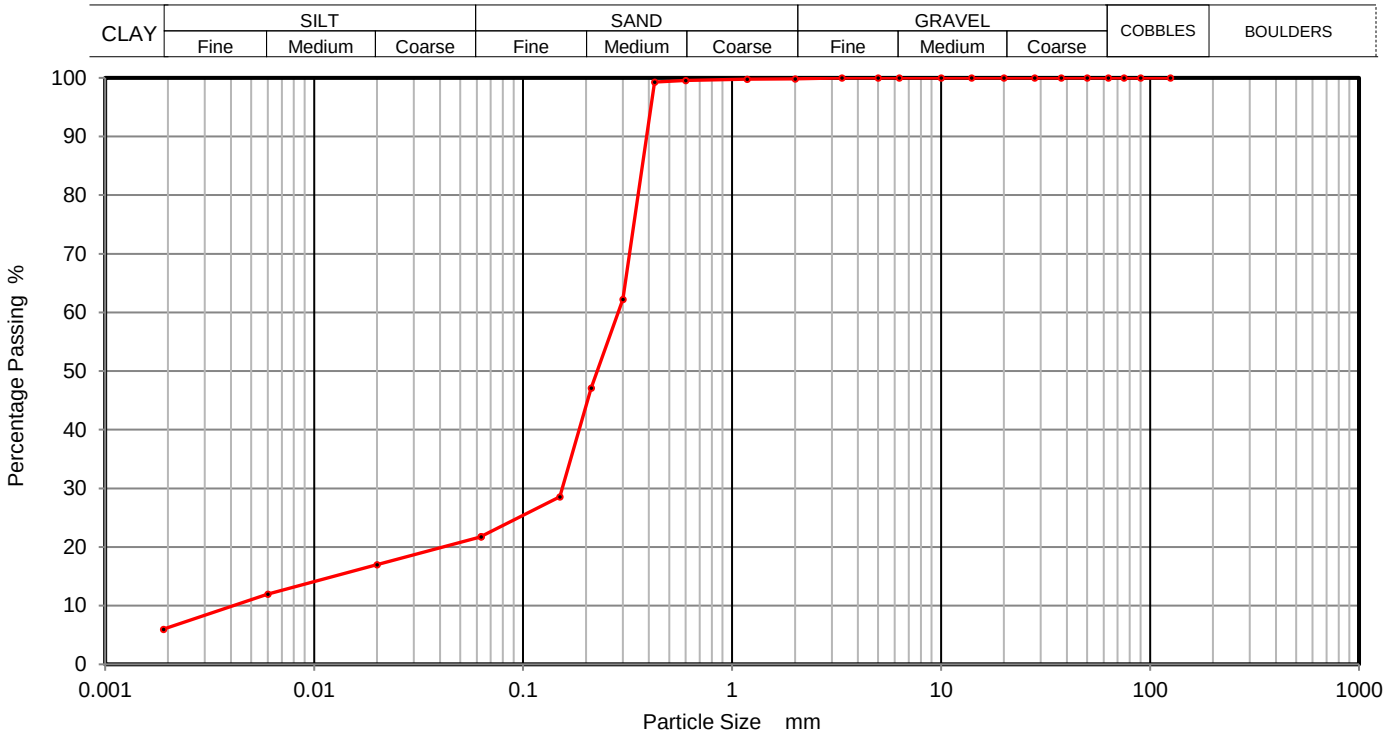
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH33
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse SAND.	Depth Top	6.40
		Depth Base	7.10
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	17
90	100	0.0060	12
75	100	0.0019	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	62		
0.212	47		
0.15	29		
0.063	22		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	78
Silt	16
Clay	6

Grading Analysis	
Uniformity Coefficient	

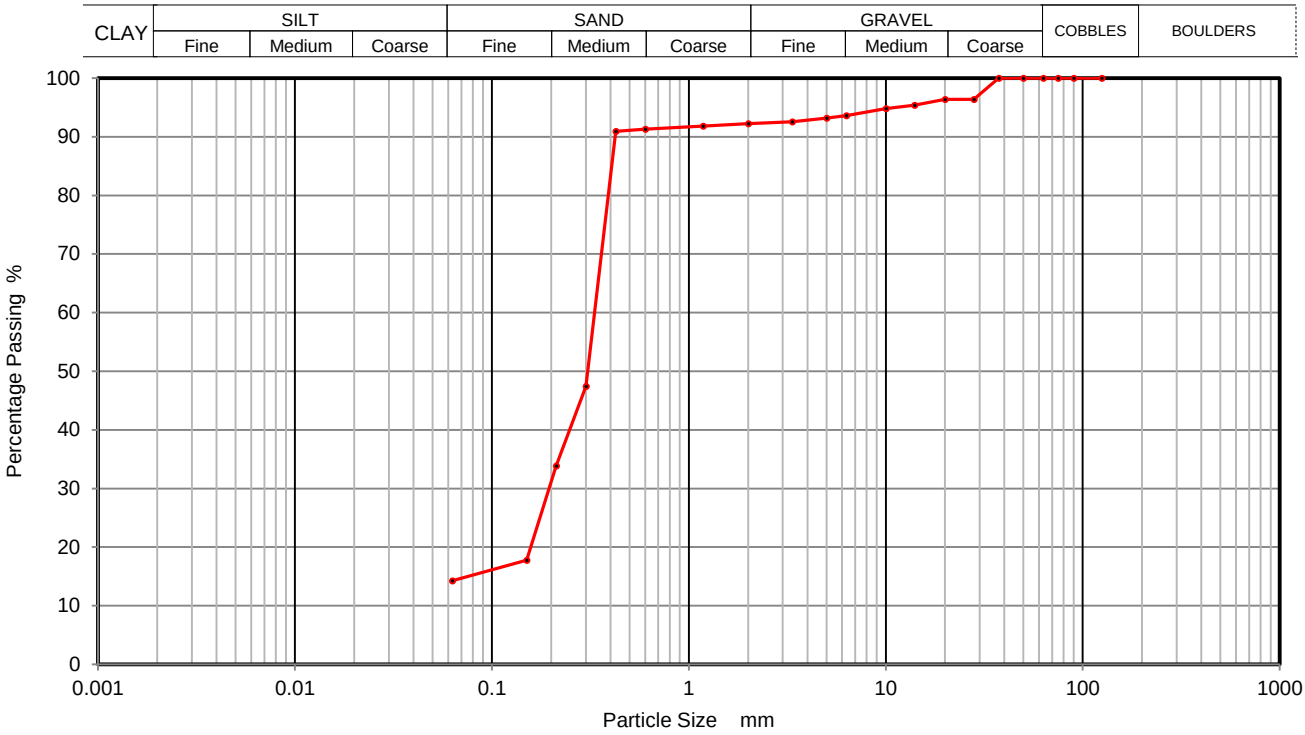
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**BH33**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown fine to medium slightly gravelly silty clayey fine to coarse SAND.	Depth Top	**8.86**
		Depth Base	**9.50**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	96		
20	96		
14	95		
10	95		
6.3	94		
5	93		
3.35	93		
2	92		
1.18	92		
0.6	91		
0.425	91		
0.3	47		
0.212	34		
0.15	18		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	8
Sand	78
Silt and Clay	14

Grading Analysis	
Uniformity Coefficient	

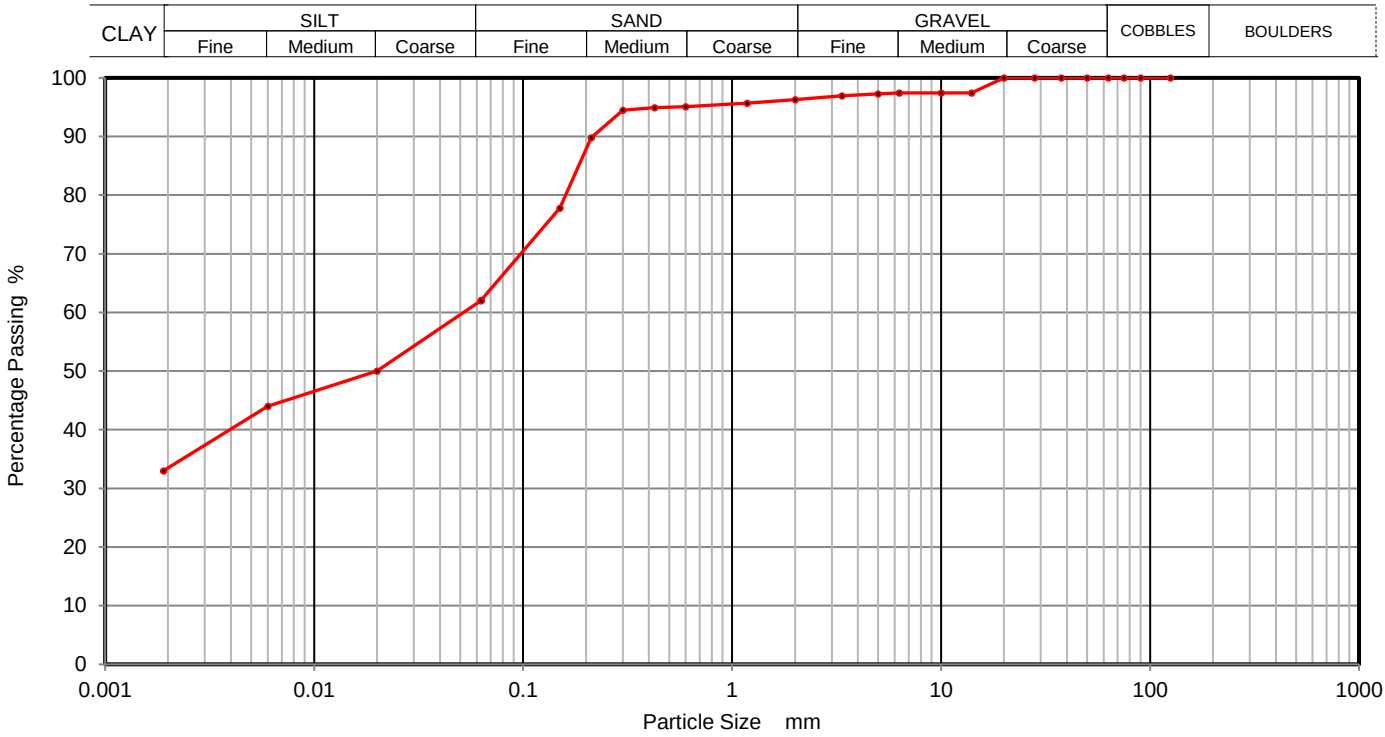
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH33
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly silty clayey fine to coarse SAND.	Depth Top	12.75
		Depth Base	13.25
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	50
90	100	0.0060	44
75	100	0.0019	33
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	97		
6.3	97		
5	97		
3.35	97		
2	96		
1.18	96		
0.6	95		
0.425	95		
0.3	94		
0.212	90		
0.15	78		
0.063	62		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	34
Silt	29
Clay	33

Grading Analysis	
Uniformity Coefficient	

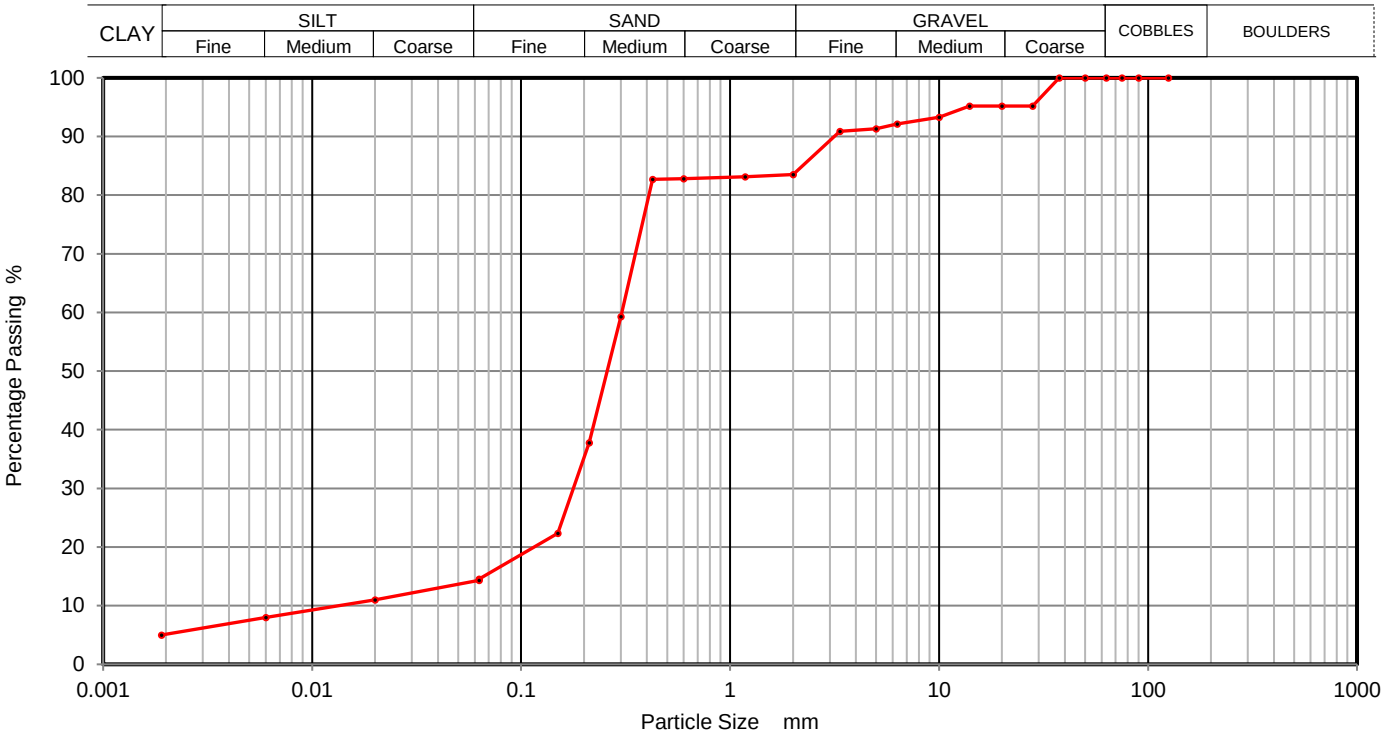
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	BH34
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	6.00
		Depth Base	7.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	8
75	100	0.0019	5
63	100		
50	100		
37.5	100		
28	95		
20	95		
14	95		
10	93		
6.3	92		
5	91		
3.35	91		
2	84		
1.18	83		
0.6	83		
0.425	83		
0.3	59		
0.212	38		
0.15	22		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	16
Sand	69
Silt	10
Clay	5

Grading Analysis	
Uniformity Coefficient	

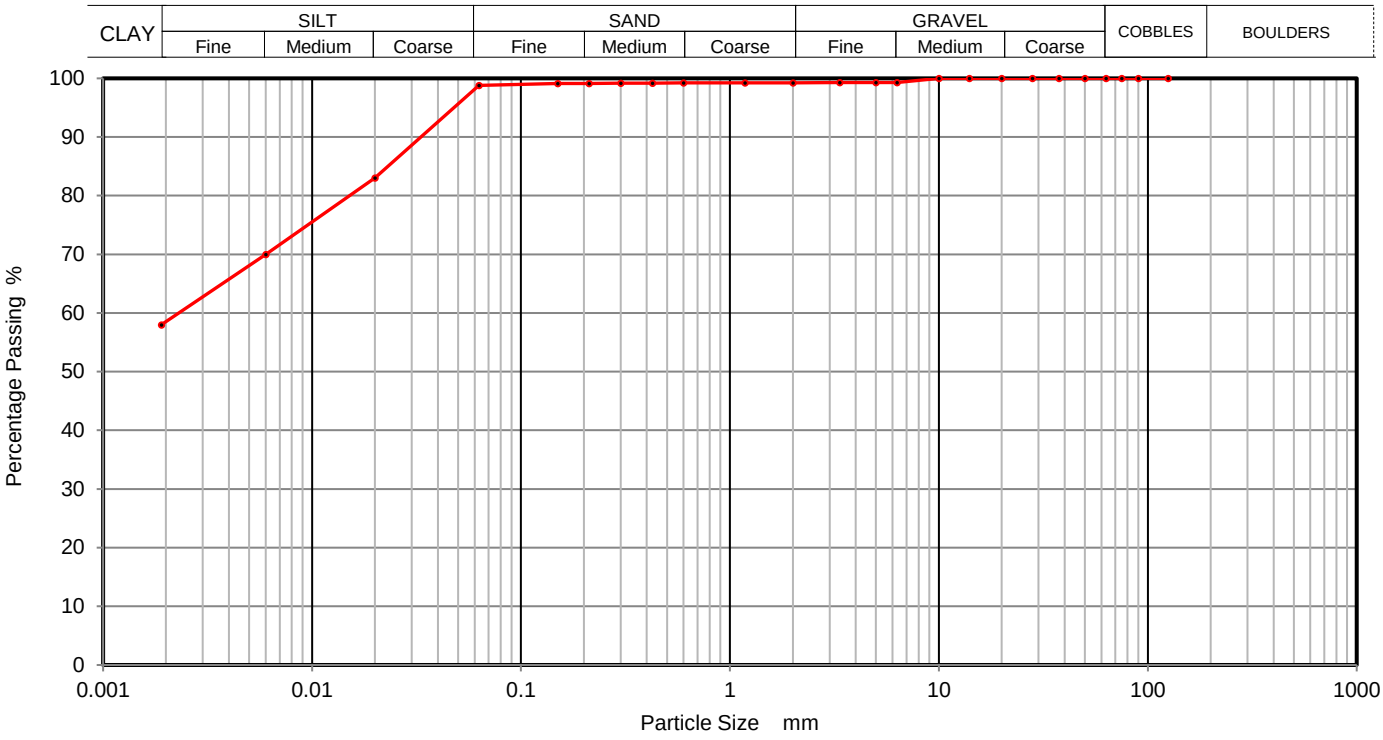
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42204
		Borehole/Pit No.	BH35
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine slightly gravelly silty CLAY.	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	83
90	100	0.0060	70
75	100	0.0020	58
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	0
Silt	41
Clay	58

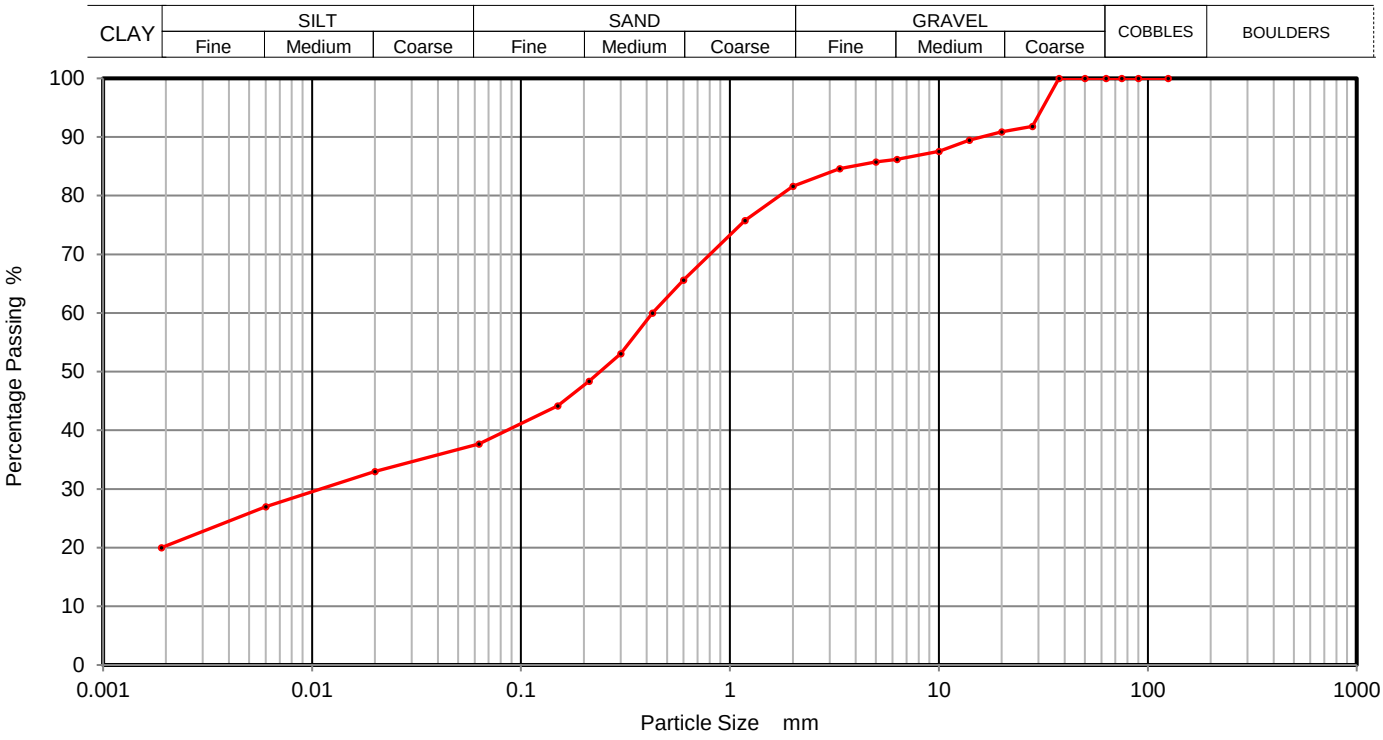
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42204
		Borehole/Pit No.	BH35
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse gravelly silty clayey fine to coarse SAND.	Depth Top	2.00
		Depth Base	2.40
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	33
90	100	0.0060	27
75	100	0.0020	20
63	100		
50	100		
37.5	100		
28	92		
20	91		
14	89		
10	88		
6.3	86		
5	86		
3.35	85		
2	82		
1.18	76		
0.6	66		
0.425	60		
0.3	53		
0.212	48		
0.15	44		
0.063	38		

Sample Proportions	% dry mass
Cobbles	0
Gravel	18
Sand	44
Silt	18
Clay	20

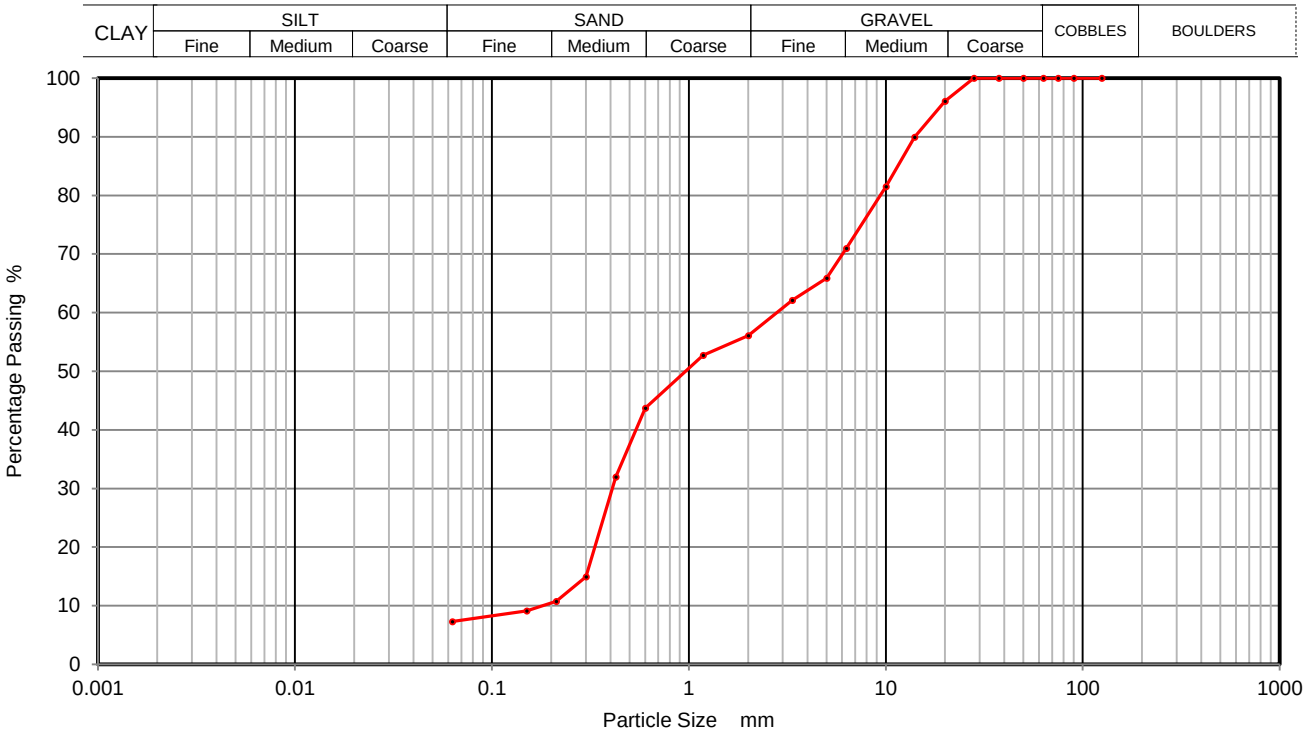
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41731
		Borehole/Pit No.	BH36
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	0.60
		Depth Base	0.70
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	90		
10	82		
6.3	71		
5	66		
3.35	62		
2	56		
1.18	53		
0.6	44		
0.425	32		
0.3	15		
0.212	11		
0.15	9		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	44
Sand	49
Silt and Clay	7

Grading Analysis	
Uniformity Coefficient	

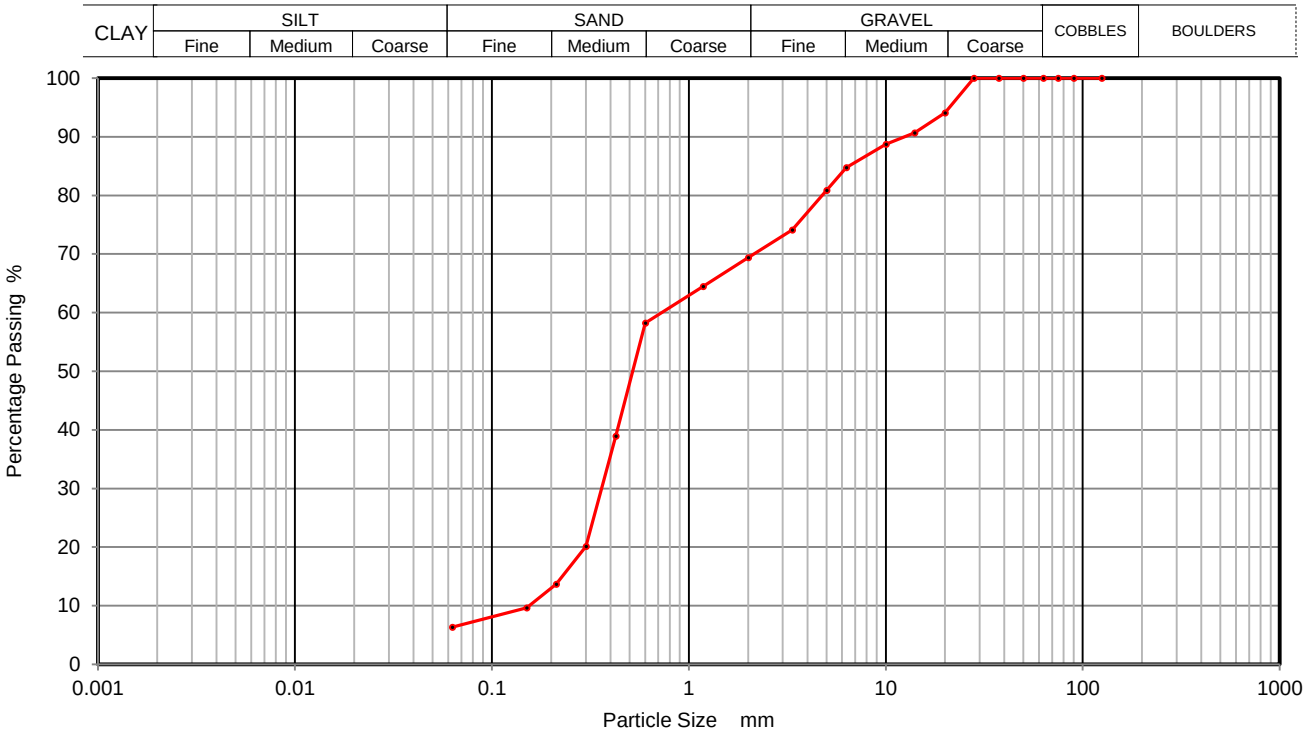
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41731
		Borehole/Pit No.	BH36
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to coarse gravelly fine to coarse SAND.	Depth Top	1.20
		Depth Base	1.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	91		
10	89		
6.3	85		
5	81		
3.35	74		
2	69		
1.18	64		
0.6	58		
0.425	39		
0.3	20		
0.212	14		
0.15	10		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	31
Sand	63
Silt and Clay	6

Grading Analysis	
Uniformity Coefficient	

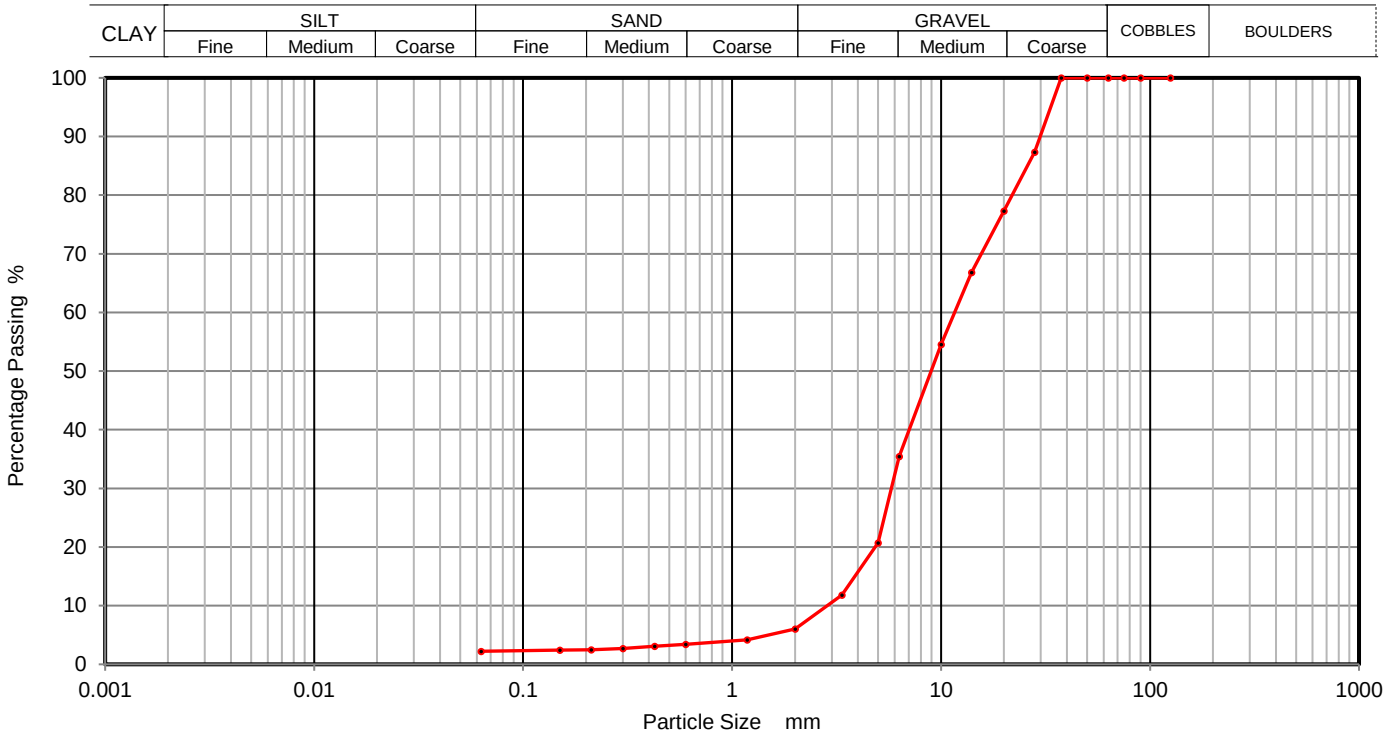
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41210**
		Borehole/Pit No.	**BH38**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to medium slightly sandy fine to coarse GRAVEL.	Depth Top	**2.00**
		Depth Base	**2.55**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	87		
20	77		
14	67		
10	55		
6.3	35		
5	21		
3.35	12		
2	6		
1.18	4		
0.6	3		
0.425	3		
0.3	3		
0.212	3		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	94
Sand	4
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

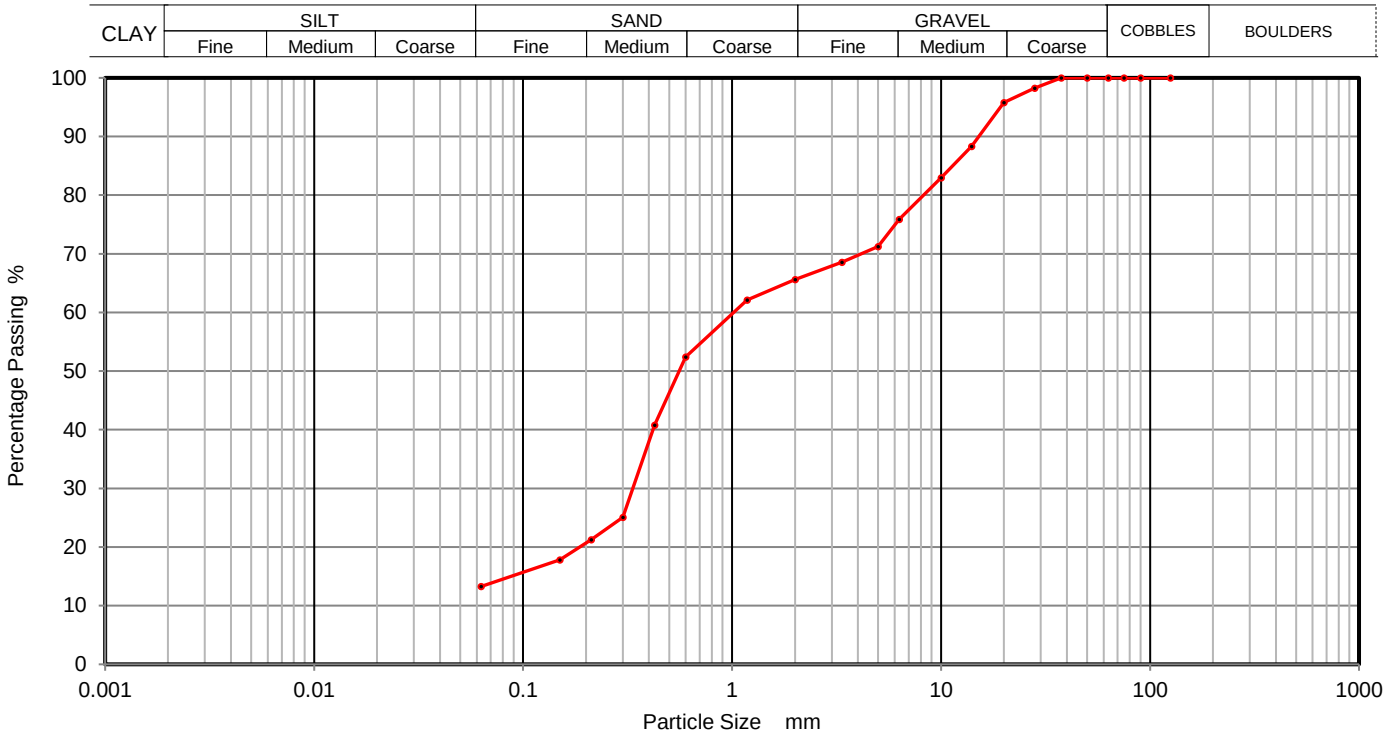
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH38
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	4.55
		Depth Base	5.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	98		
20	96		
14	88		
10	83		
6.3	76		
5	71		
3.35	69		
2	66		
1.18	62		
0.6	52		
0.425	41		
0.3	25		
0.212	21		
0.15	18		
0.063	13		

Sample Proportions	% dry mass
Cobbles	0
Gravel	34
Sand	53
Silt and Clay	13

Grading Analysis	
Uniformity Coefficient	

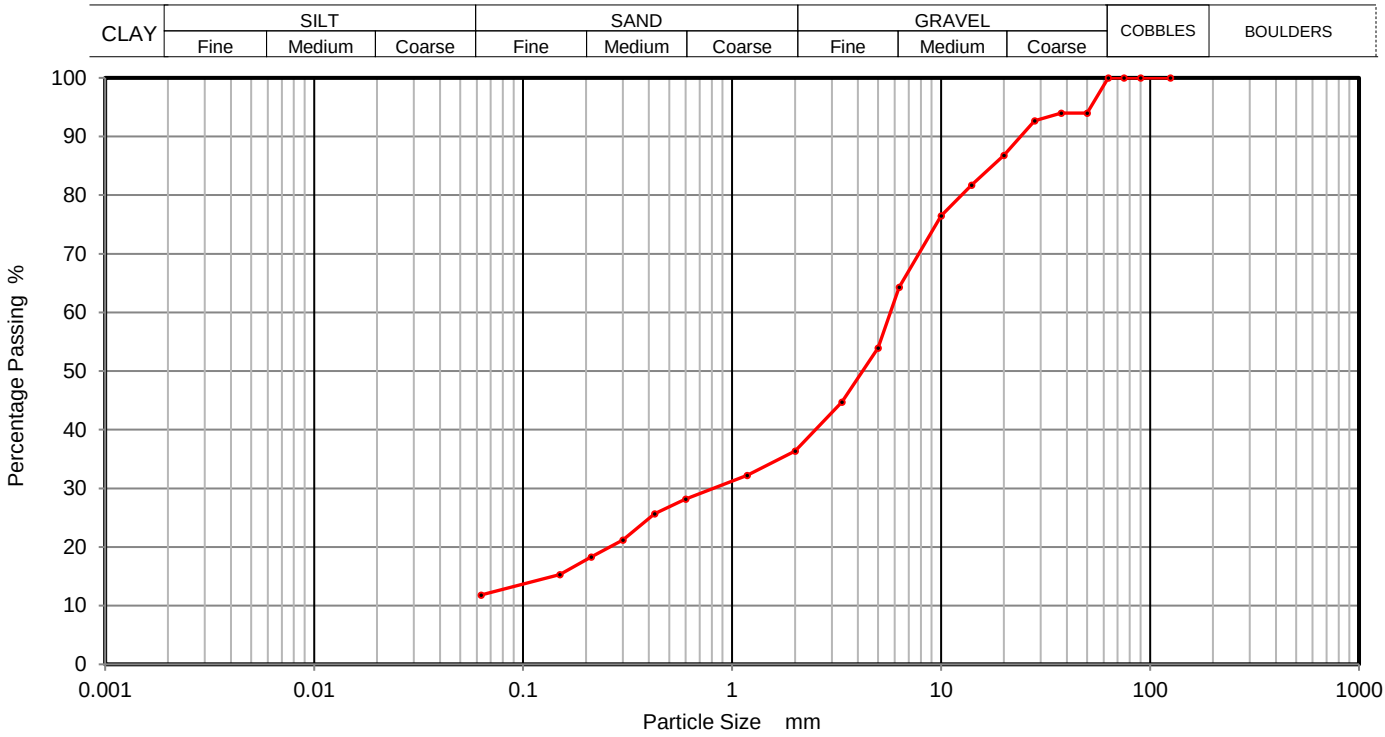
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH39
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	0.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	94		
37.5	94		
28	93		
20	87		
14	82		
10	76		
6.3	64		
5	54		
3.35	45		
2	36		
1.18	32		
0.6	28		
0.425	26		
0.3	21		
0.212	18		
0.15	15		
0.063	12		

Sample Proportions	% dry mass
Cobbles	0
Gravel	64
Sand	24
Silt and Clay	12

Grading Analysis	
Uniformity Coefficient	

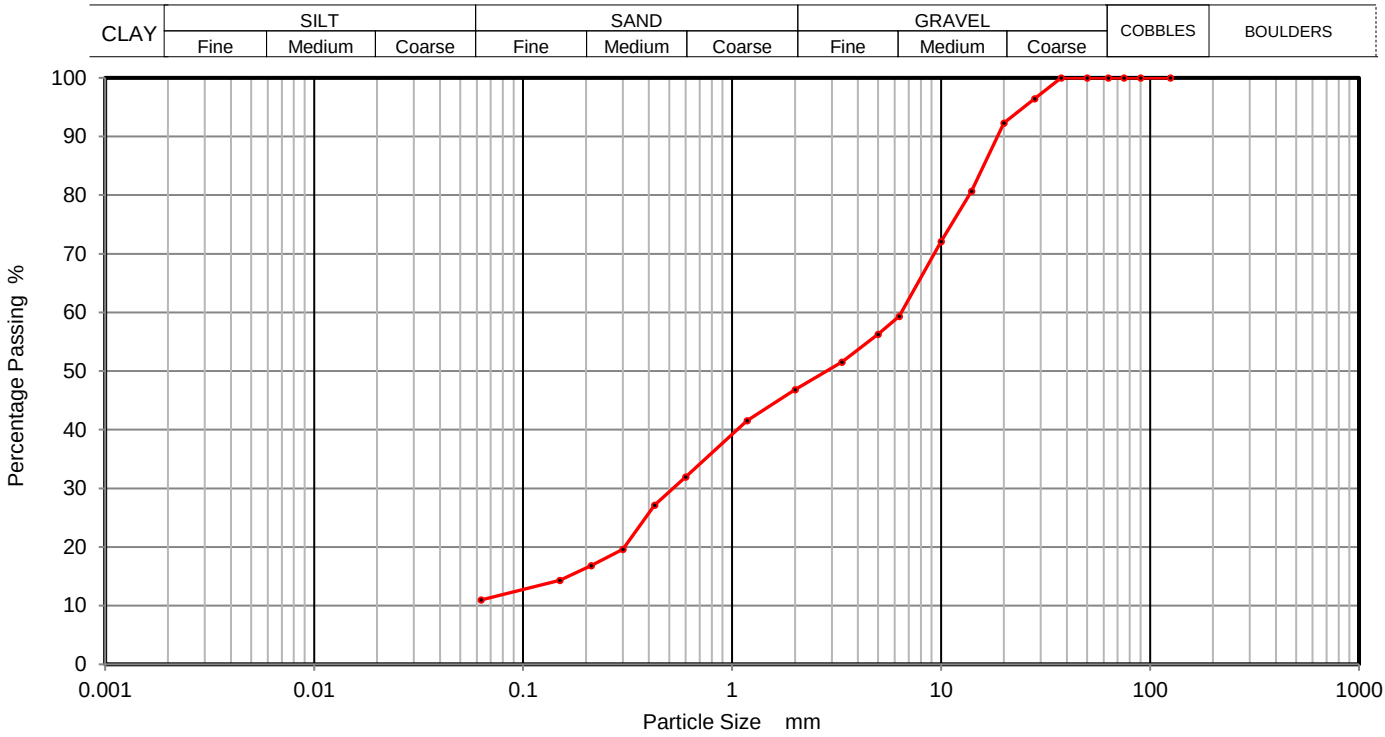
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	41210
		Borehole/Pit No.	BH39
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	1.20
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	96		
20	92		
14	81		
10	72		
6.3	59		
5	56		
3.35	52		
2	47		
1.18	42		
0.6	32		
0.425	27		
0.3	20		
0.212	17		
0.15	14		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	53
Sand	36
Silt and Clay	11

Grading Analysis	
Uniformity Coefficient	

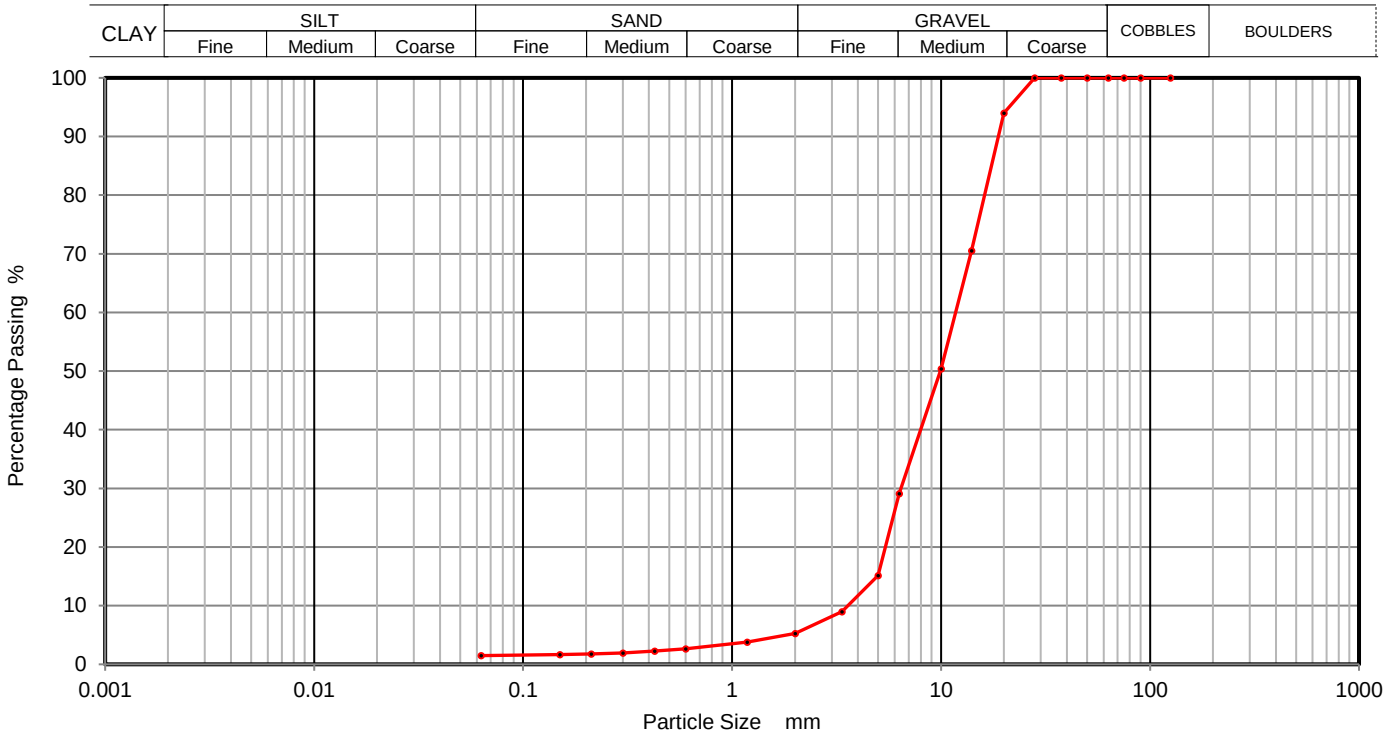
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41210**
		Borehole/Pit No.	**BH39**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to medium slightly sandy fine to coarse GRAVEL.	Depth Top	**3.00**
		Depth Base	
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	71		
10	50		
6.3	29		
5	15		
3.35	9		
2	5		
1.18	4		
0.6	3		
0.425	2		
0.3	2		
0.212	2		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	95
Sand	4
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

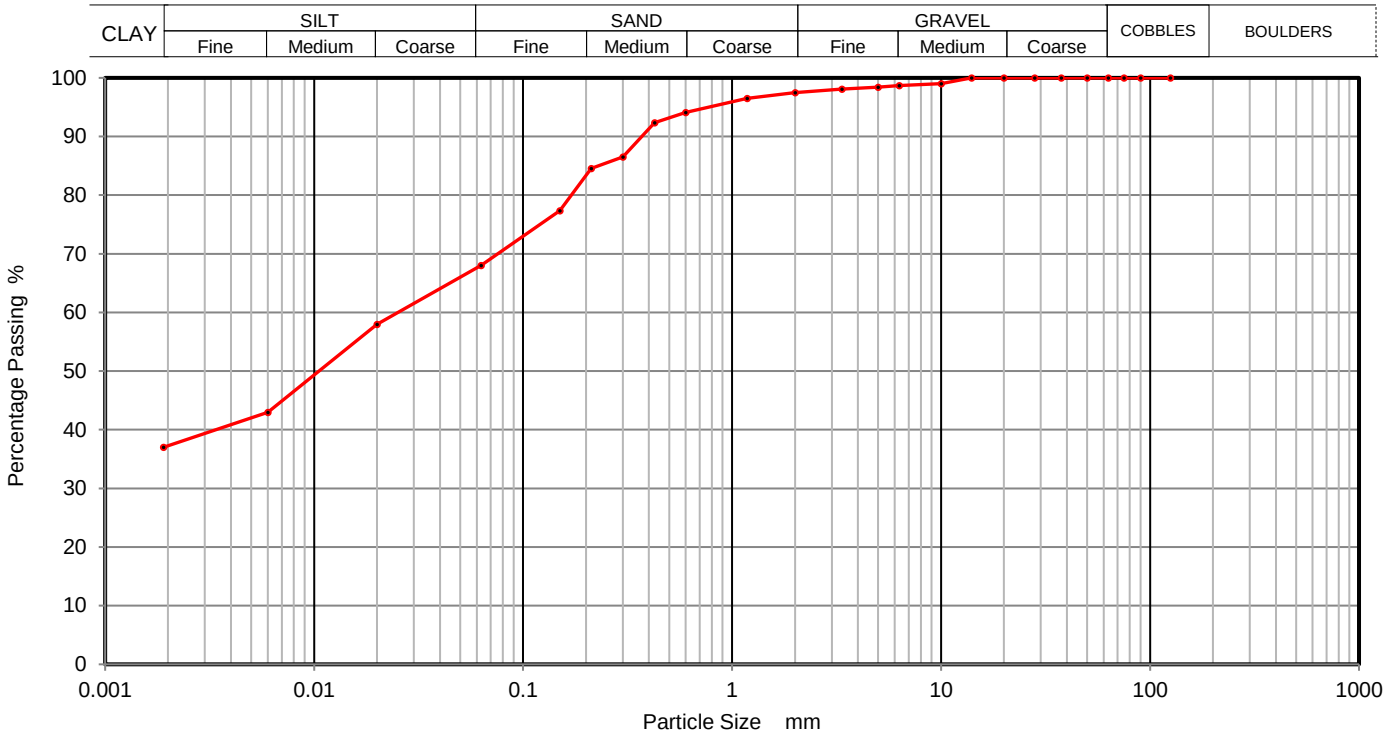
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41210
		Borehole/Pit No.	BH39
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	5.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	58
90	100	0.0060	43
75	100	0.0019	37
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	98		
3.35	98		
2	97		
1.18	97		
0.6	94		
0.425	92		
0.3	87		
0.212	85		
0.15	77		
0.063	68		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	29
Silt	31
Clay	37

Grading Analysis	
Uniformity Coefficient	

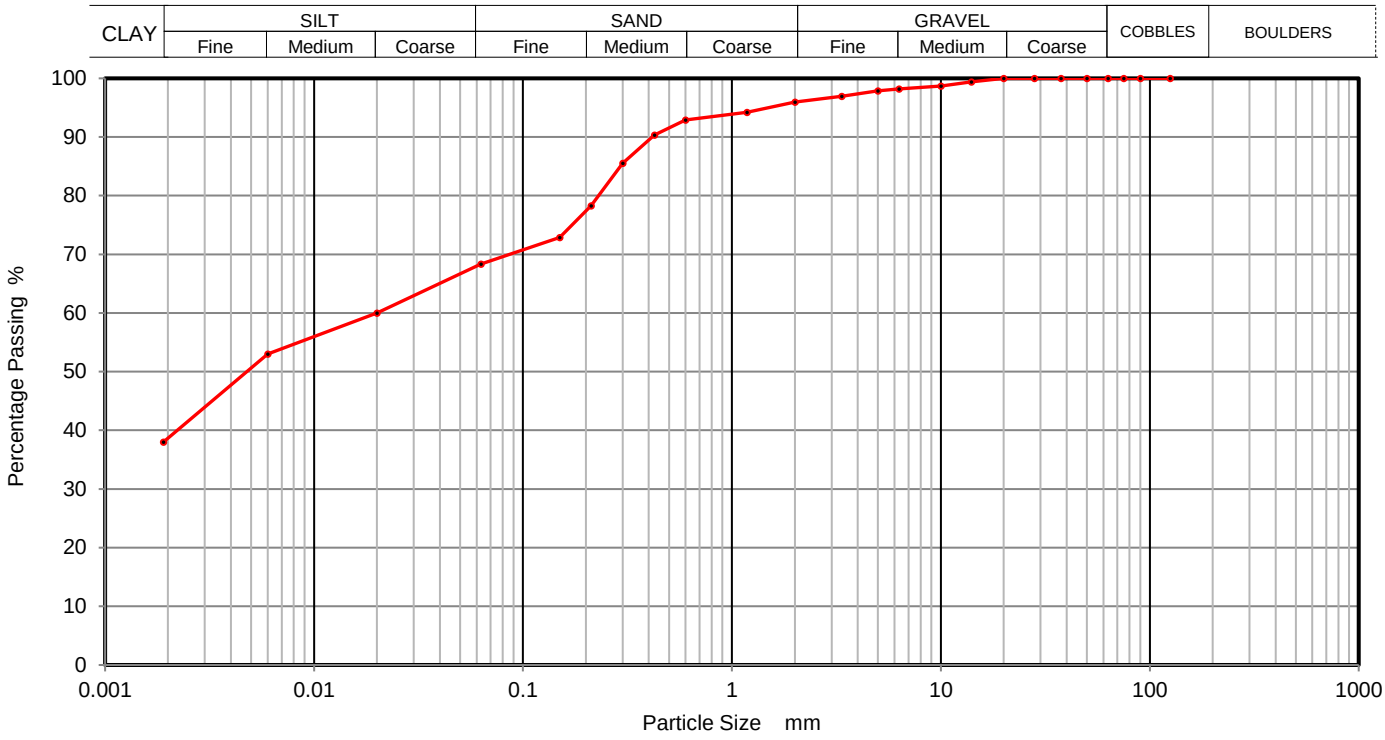
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12/12/2018	Emma Sharp	[redacted]
RO/MH	Approved	13/12/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42204
		Borehole/Pit No.	BH40
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	60
90	100	0.0060	53
75	100	0.0020	38
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	98		
5	98		
3.35	97		
2	96		
1.18	94		
0.6	93		
0.425	90		
0.3	86		
0.212	78		
0.15	73		
0.063	68		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	28
Silt	30
Clay	38

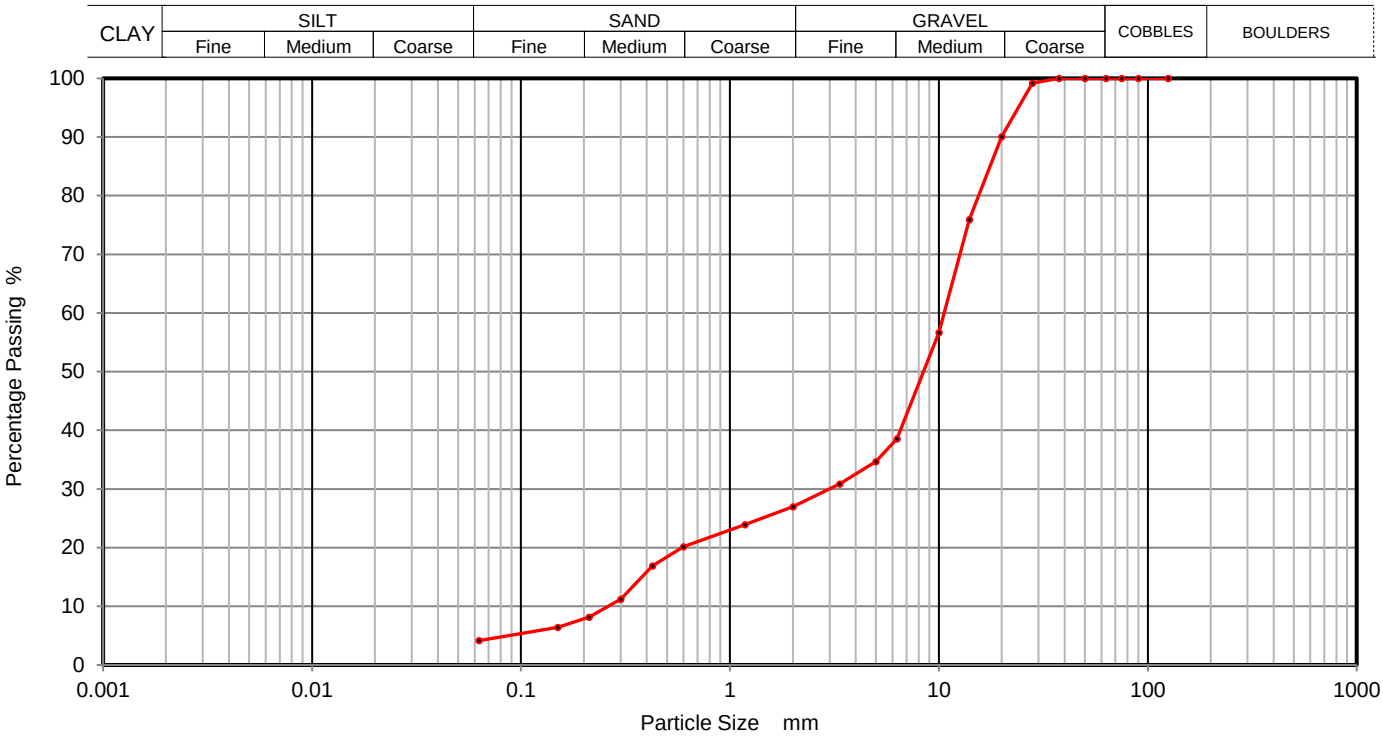
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42204**
		Borehole/Pit No.	**BH40**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**3.00**
		Depth Base	**3.50**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	90		
14	76		
10	57		
6.3	39		
5	35		
3.35	31		
2	27		
1.18	24		
0.6	20		
0.425	17		
0.3	11		
0.212	8		
0.15	6		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	73
Sand	23
Silt and Clay	4

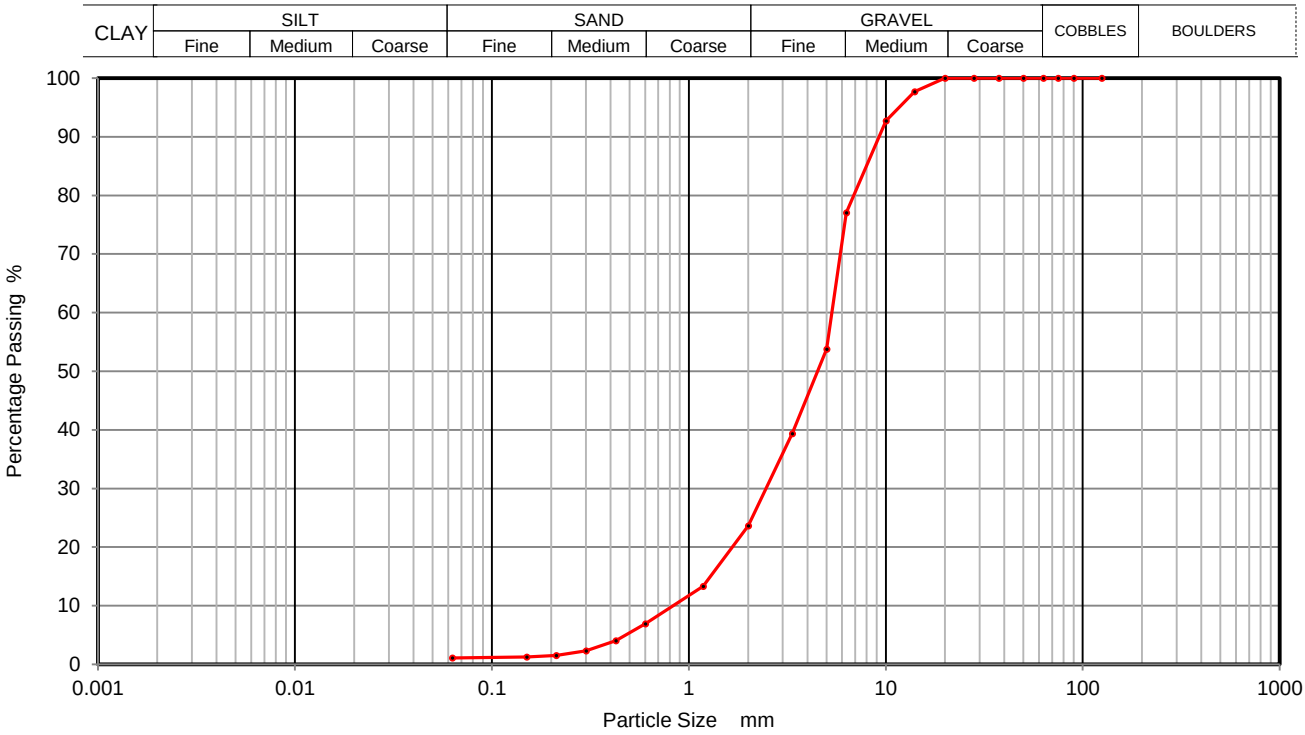
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**BH41**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**2.20**
		Depth Base	**2.70**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	93		
6.3	77		
5	54		
3.35	39		
2	24		
1.18	13		
0.6	7		
0.425	4		
0.3	2		
0.212	2		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	76
Sand	23
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

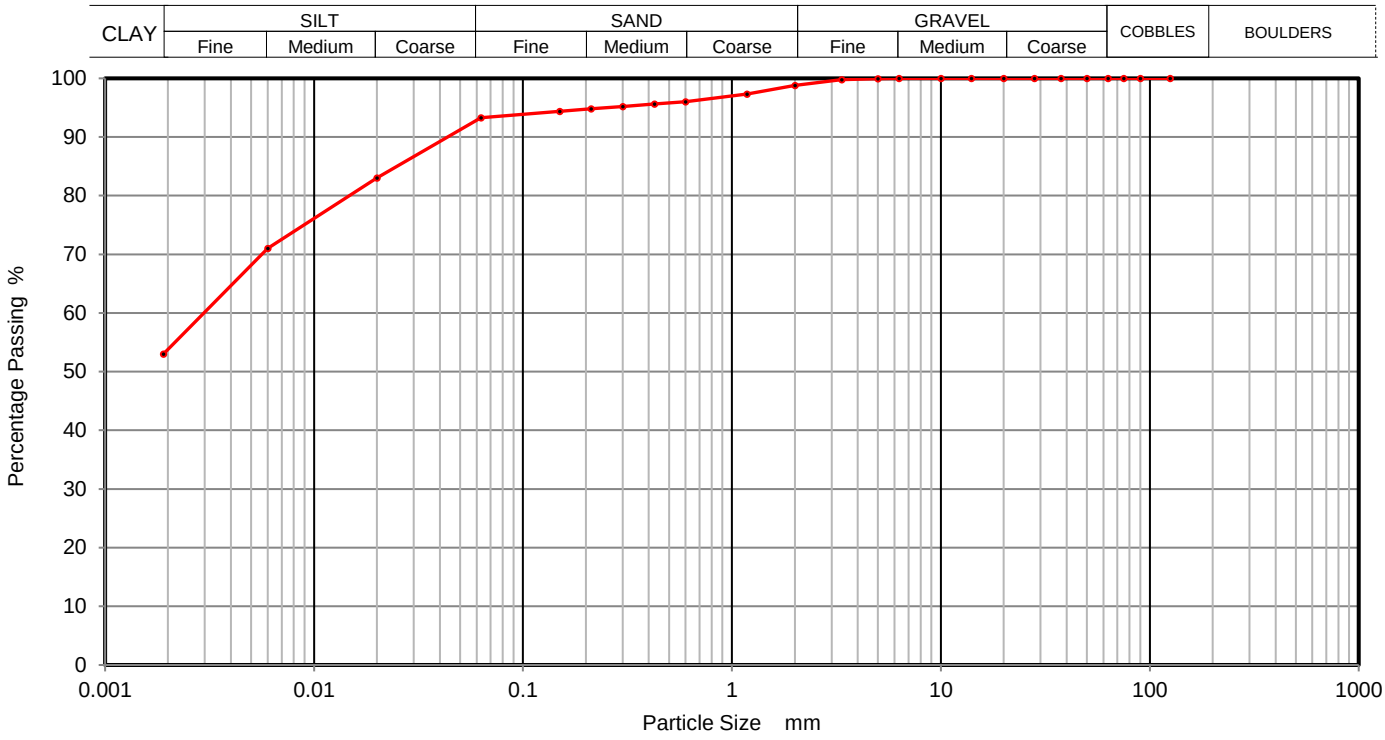
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42204
		Borehole/Pit No.	TP9A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey fine slightly gravelly fine to medium slightly sandy silty CLAY.	Depth Top	3.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	83
90	100	0.0060	71
75	100	0.0020	53
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	97		
0.6	96		
0.425	96		
0.3	95		
0.212	95		
0.15	94		
0.063	93		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	6
Silt	40
Clay	53

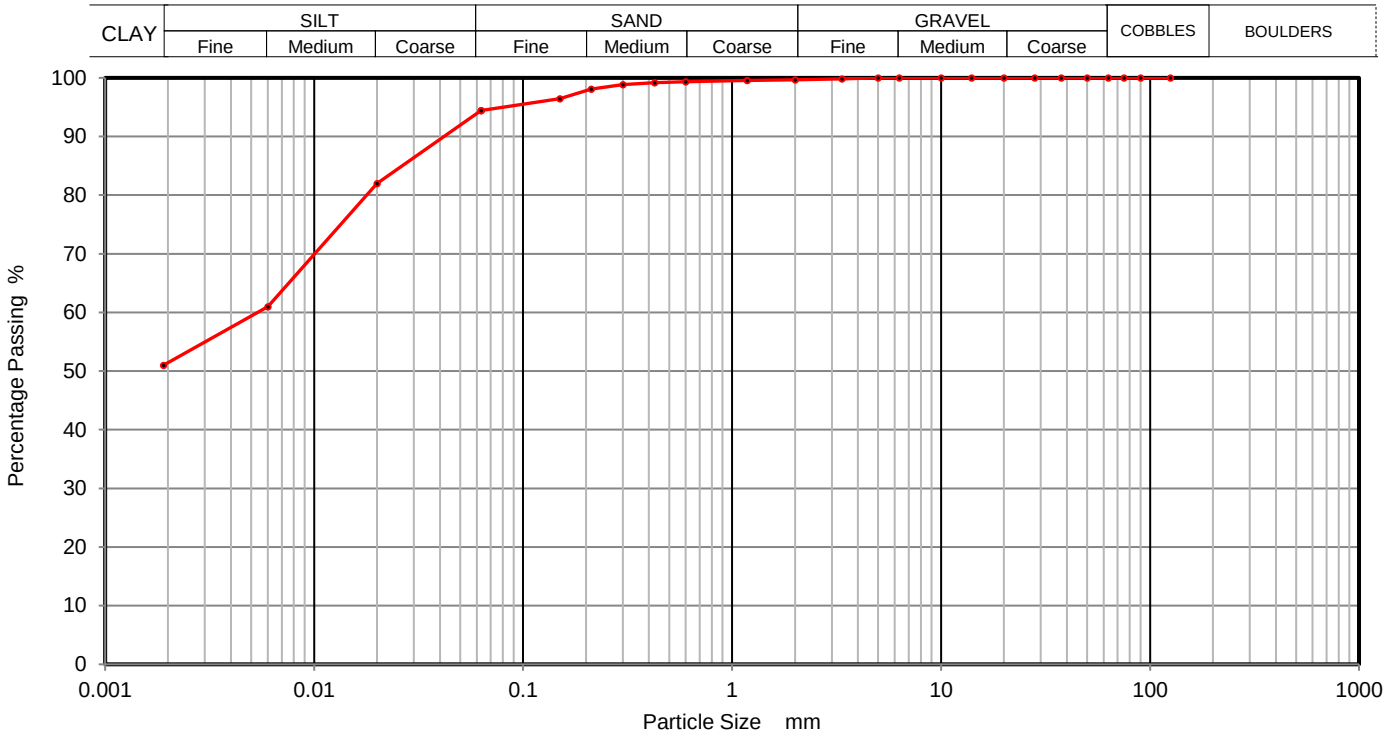
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
RO/MH	Approved	01/02/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP11
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly sandy silty CLAY.	Depth Top	1.00
		Depth Base	1.10
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	82
90	100	0.0060	61
75	100	0.0019	51
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	98		
0.15	96		
0.063	94		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	6
Silt	43
Clay	51

Grading Analysis	
Uniformity Coefficient	

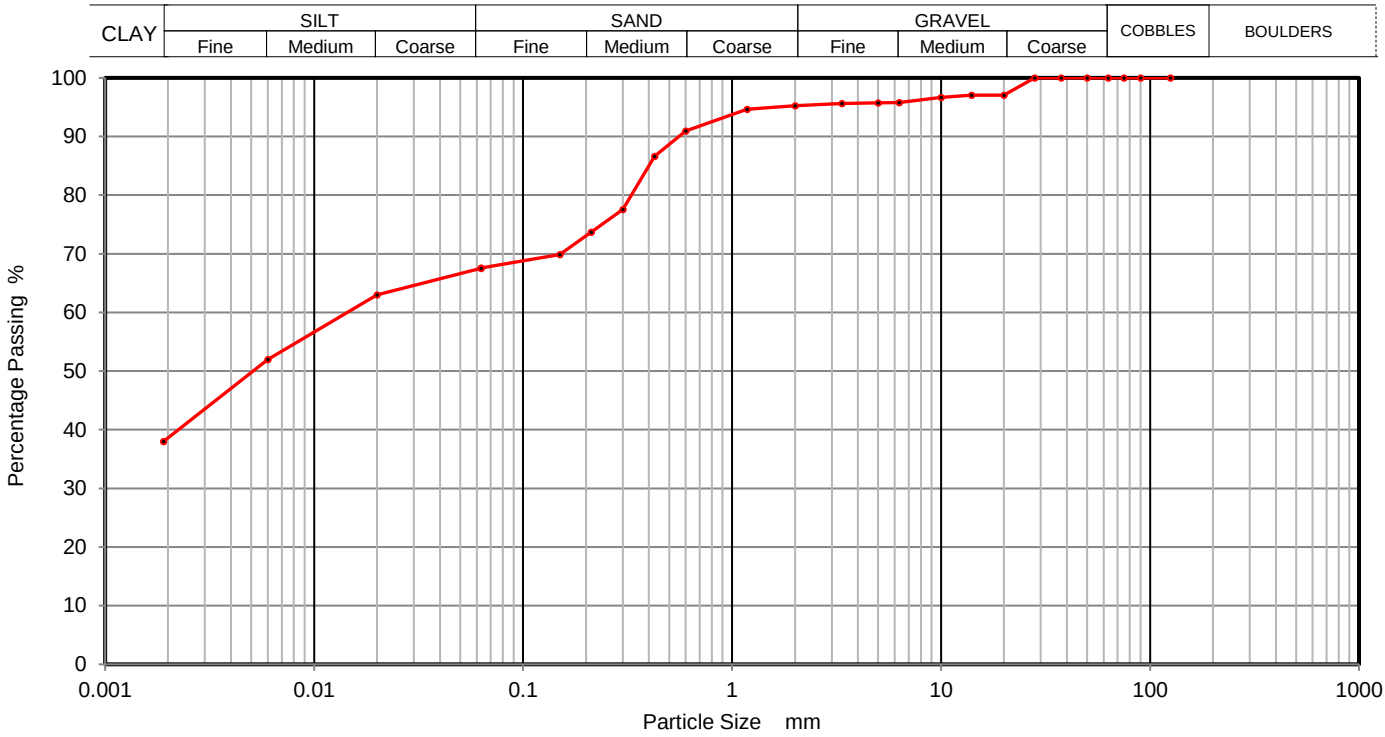
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP12
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	1.00
		Depth Base	1.20
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	63
90	100	0.0060	52
75	100	0.0019	38
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	97		
10	97		
6.3	96		
5	96		
3.35	96		
2	95		
1.18	95		
0.6	91		
0.425	87		
0.3	78		
0.212	74		
0.15	70		
0.063	68		

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	27
Silt	30
Clay	38

Grading Analysis	
Uniformity Coefficient	

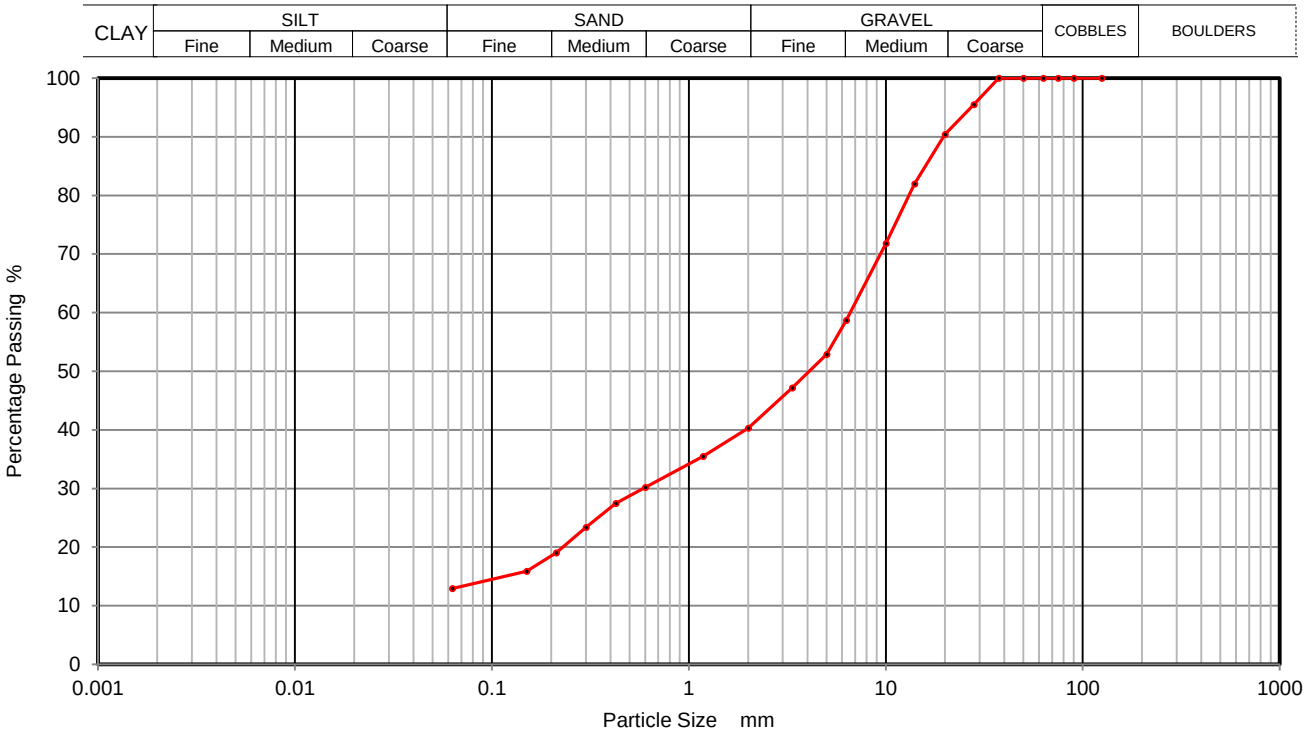
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42000**
		Borehole/Pit No.	**TP12**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse gravelly fine to coarse SAND.	Depth Top	**1.90**
		Depth Base	**2.00**
		Sample Type	**D**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	96		
20	90		
14	82		
10	72		
6.3	59		
5	53		
3.35	47		
2	40		
1.18	36		
0.6	30		
0.425	27		
0.3	23		
0.212	19		
0.15	16		
0.063	13		

Sample Proportions	% dry mass
Cobbles	0
Gravel	60
Sand	27
Silt and Clay	13

Grading Analysis	
Uniformity Coefficient	

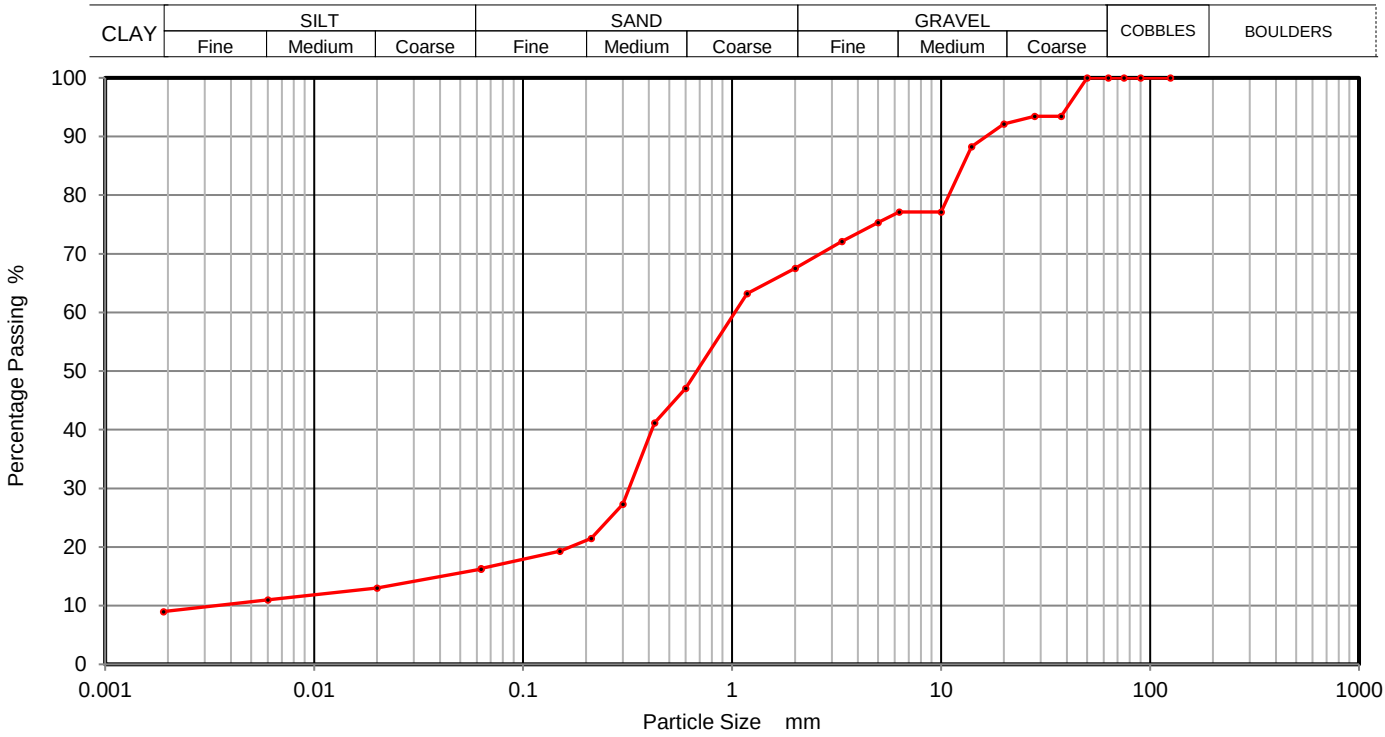
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP13
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty fine to coarse gravelly fine to coarse SAND.	Depth Top	1.30
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	13
90	100	0.0060	11
75	100	0.0019	9
63	100		
50	100		
37.5	93		
28	93		
20	92		
14	88		
10	77		
6.3	77		
5	75		
3.35	72		
2	68		
1.18	63		
0.6	47		
0.425	41		
0.3	27		
0.212	21		
0.15	19		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	52
Silt	7
Clay	9

Grading Analysis	
Uniformity Coefficient	

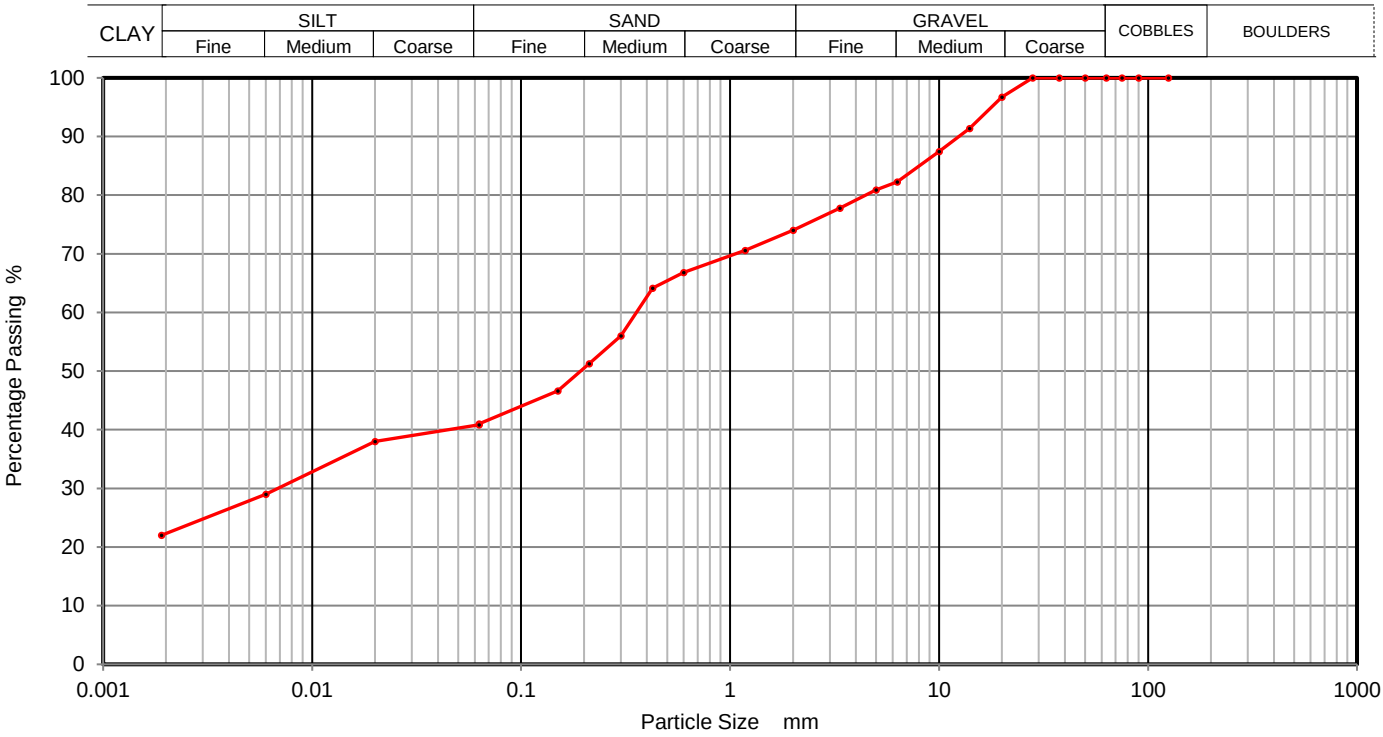
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP14A
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	38
90	100	0.0060	29
75	100	0.0019	22
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	91		
10	87		
6.3	82		
5	81		
3.35	78		
2	74		
1.18	71		
0.6	67		
0.425	64		
0.3	56		
0.212	51		
0.15	47		
0.063	41		

Sample Proportions	% dry mass
Cobbles	0
Gravel	26
Sand	33
Silt	19
Clay	22

Grading Analysis	
Uniformity Coefficient	

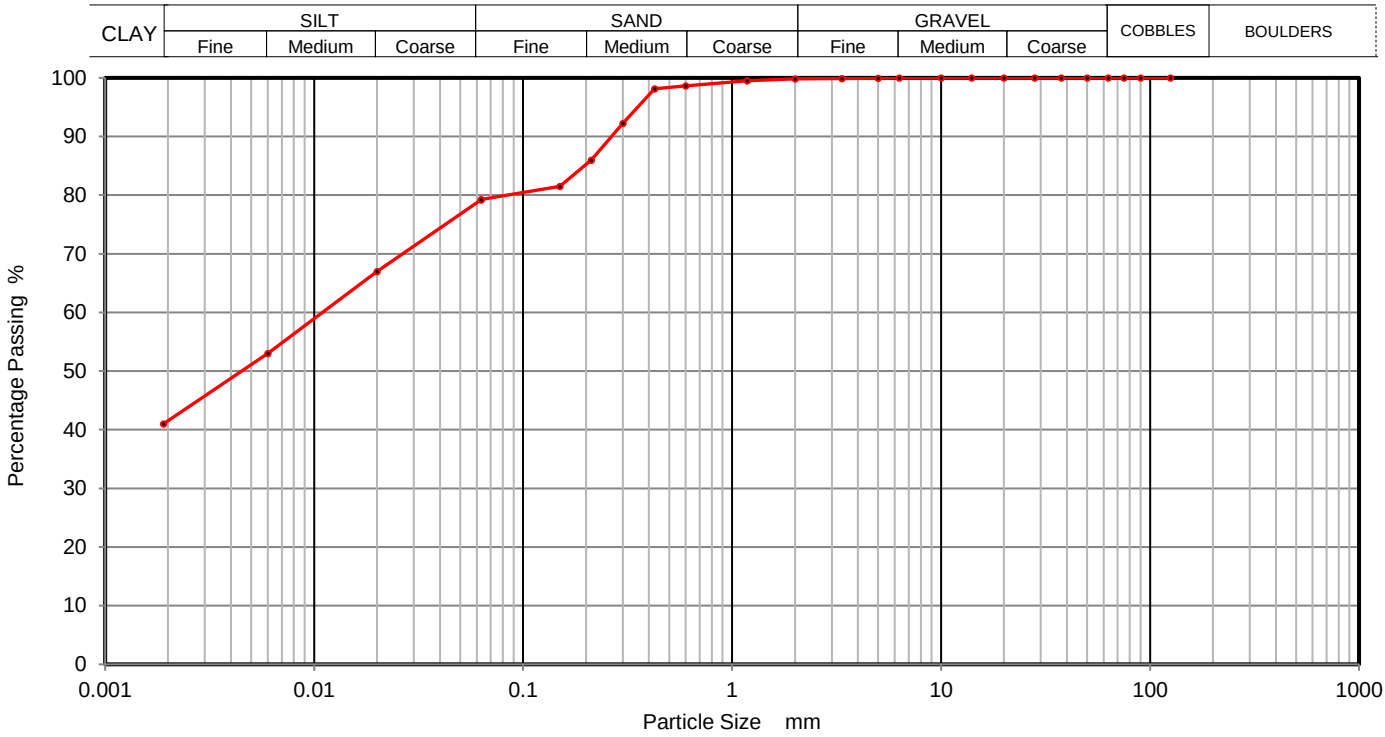
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP14A
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse sandy silty CLAY	Depth Top	3.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	67
90	100	0.0060	53
75	100	0.0019	41
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	92		
0.212	86		
0.15	82		
0.063	79		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	21
Silt	38
Clay	41

Grading Analysis	
Uniformity Coefficient	

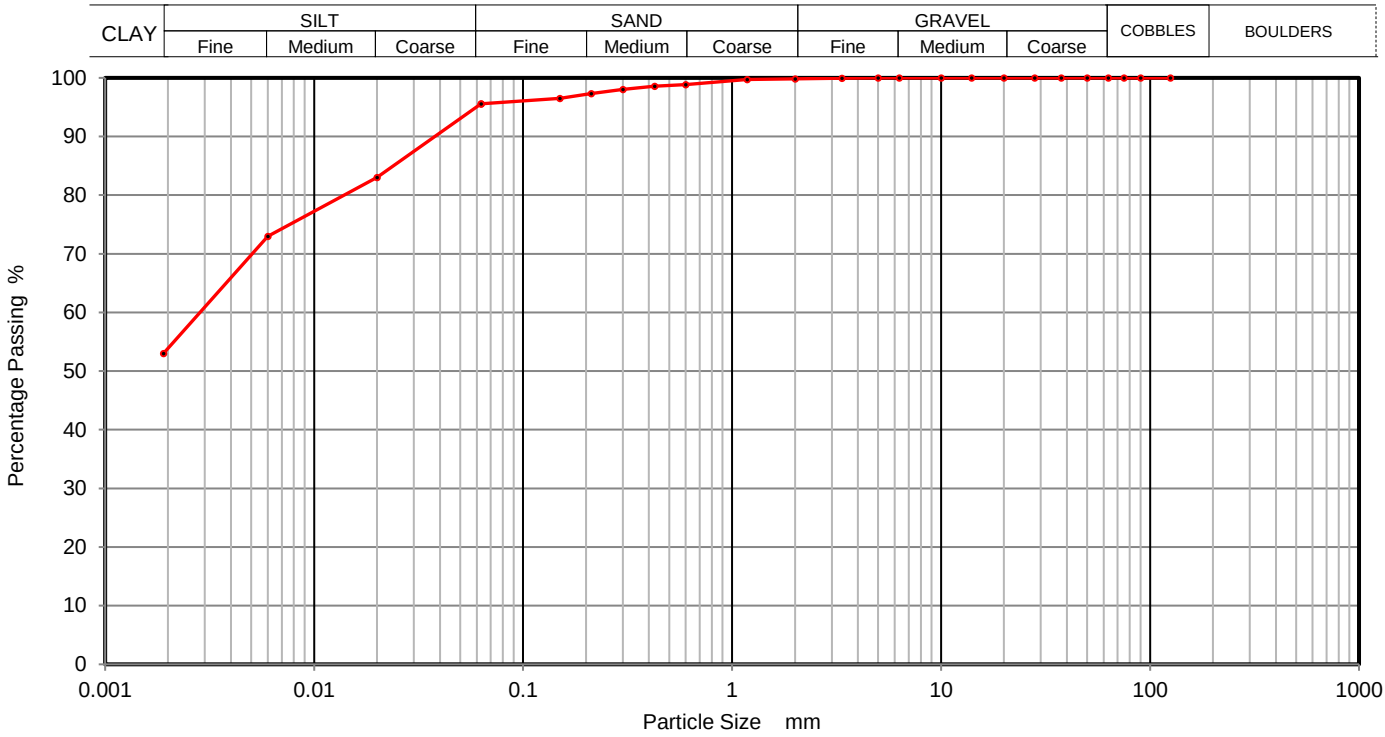
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP15
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly sandy silty CLAY	Depth Top	1.80
		Depth Base	2.30
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	83
90	100	0.0060	73
75	100	0.0019	53
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	97		
0.15	97		
0.063	96		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	4
Silt	43
Clay	53

Grading Analysis	
Uniformity Coefficient	

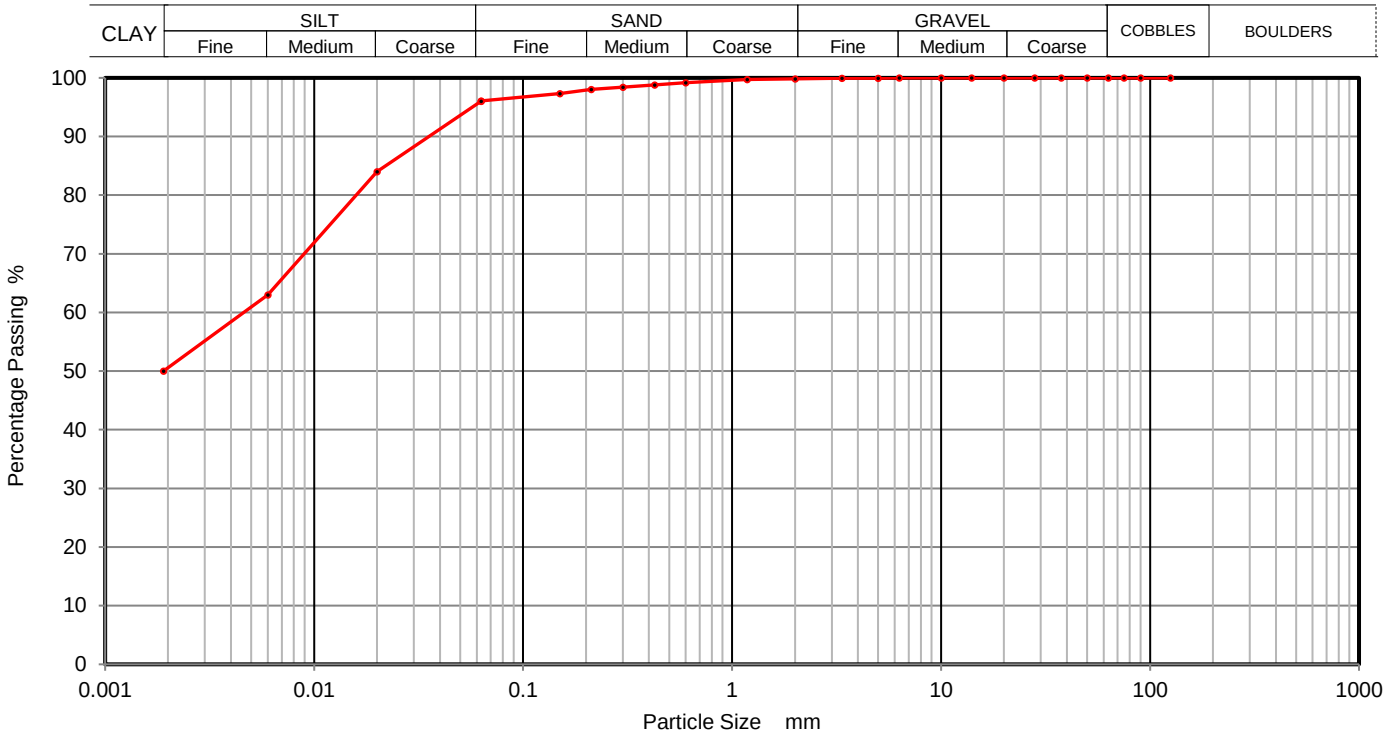
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	42000
		Borehole/Pit No.	TP15
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly sandy silty CLAY	Depth Top	3.80
		Depth Base	4.20
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	84
90	100	0.0060	63
75	100	0.0019	50
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	98		
0.15	97		
0.063	96		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	4
Silt	46
Clay	50

Grading Analysis	
Uniformity Coefficient	

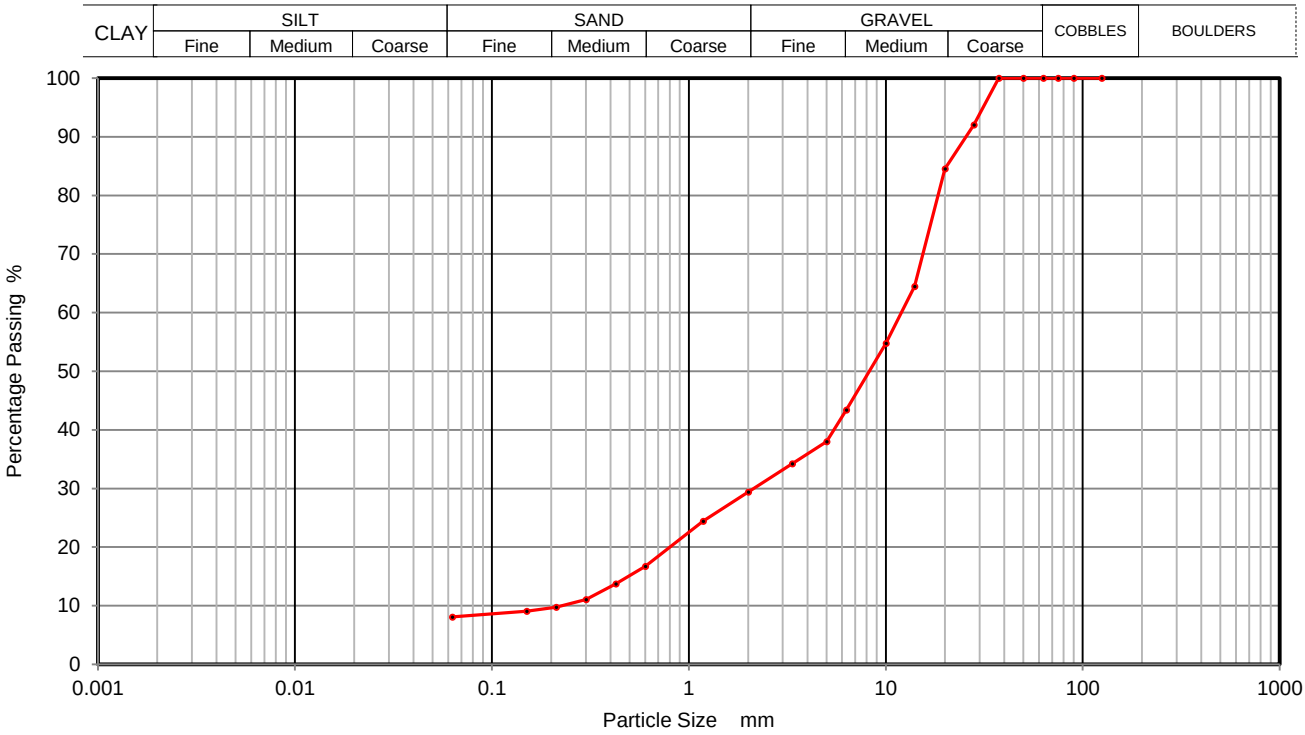
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**TP16**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**0.80**
		Depth Base	**1.20**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	92		
20	85		
14	64		
10	55		
6.3	43		
5	38		
3.35	34		
2	29		
1.18	24		
0.6	17		
0.425	14		
0.3	11		
0.212	10		
0.15	9		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	71
Sand	21
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

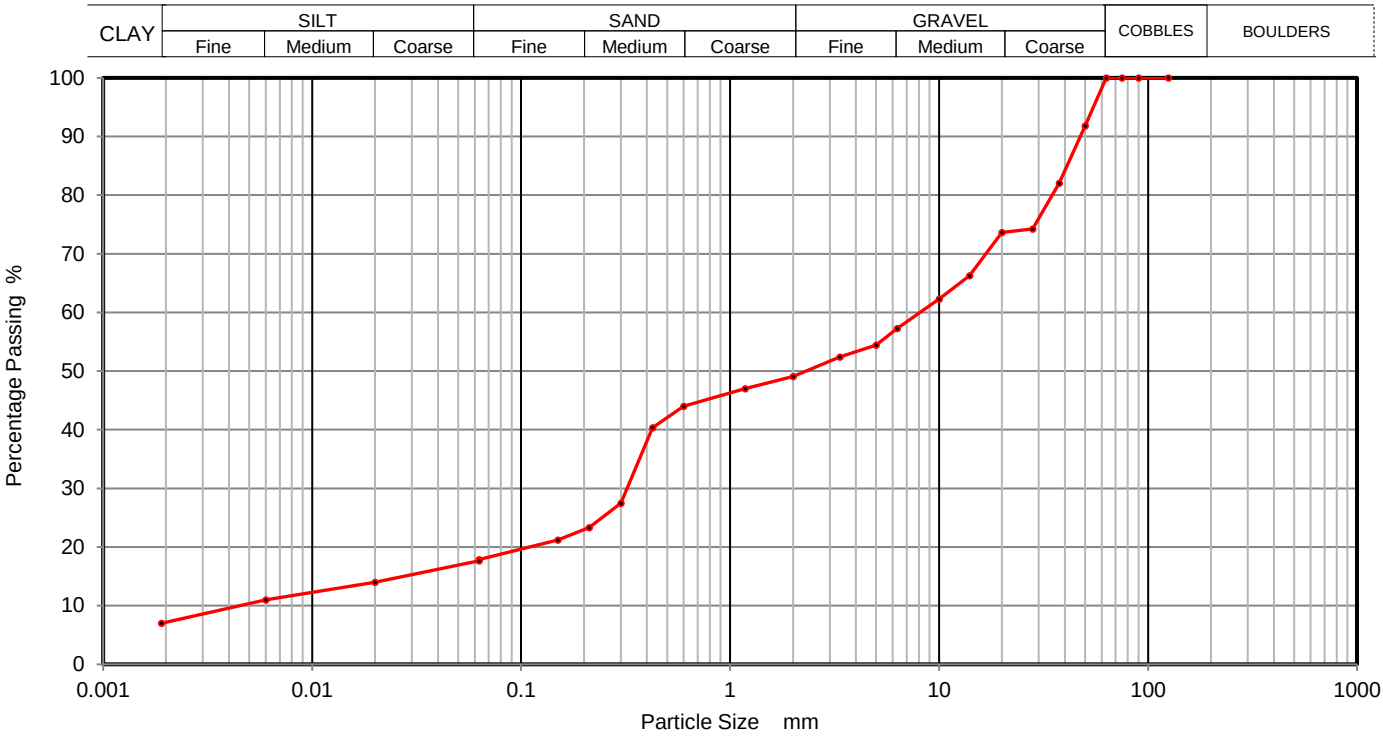
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP17
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	0.20
		Depth Base	0.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	11
75	100	0.0019	7
63	100		
50	92		
37.5	82		
28	74		
20	74		
14	66		
10	62		
6.3	57		
5	54		
3.35	52		
2	49		
1.18	47		
0.6	44		
0.425	40		
0.3	27		
0.212	23		
0.15	21		
0.063	18		

Sample Proportions	% dry mass
Cobbles	0
Gravel	51
Sand	31
Silt	11
Clay	7

Grading Analysis	
Uniformity Coefficient	

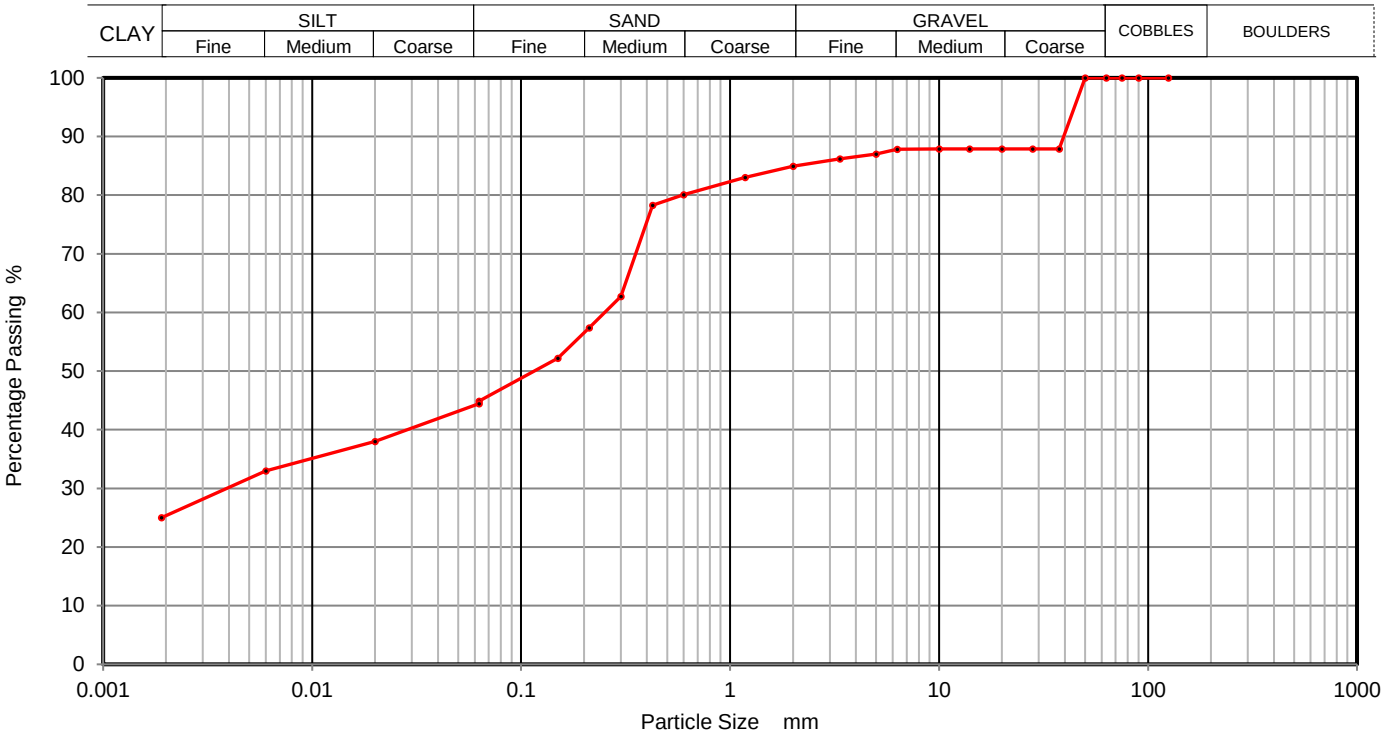
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP17
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse gravelly fine to coarse sandy silty CLAY.	Depth Top	1.20
		Depth Base	1.40
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	38
90	100	0.0060	33
75	100	0.0019	25
63	100		
50	100		
37.5	88		
28	88		
20	88		
14	88		
10	88		
6.3	88		
5	87		
3.35	86		
2	85		
1.18	83		
0.6	80		
0.425	78		
0.3	63		
0.212	57		
0.15	52		
0.063	45		

Sample Proportions	% dry mass
Cobbles	0
Gravel	15
Sand	40
Silt	20
Clay	25

Grading Analysis	
Uniformity Coefficient	

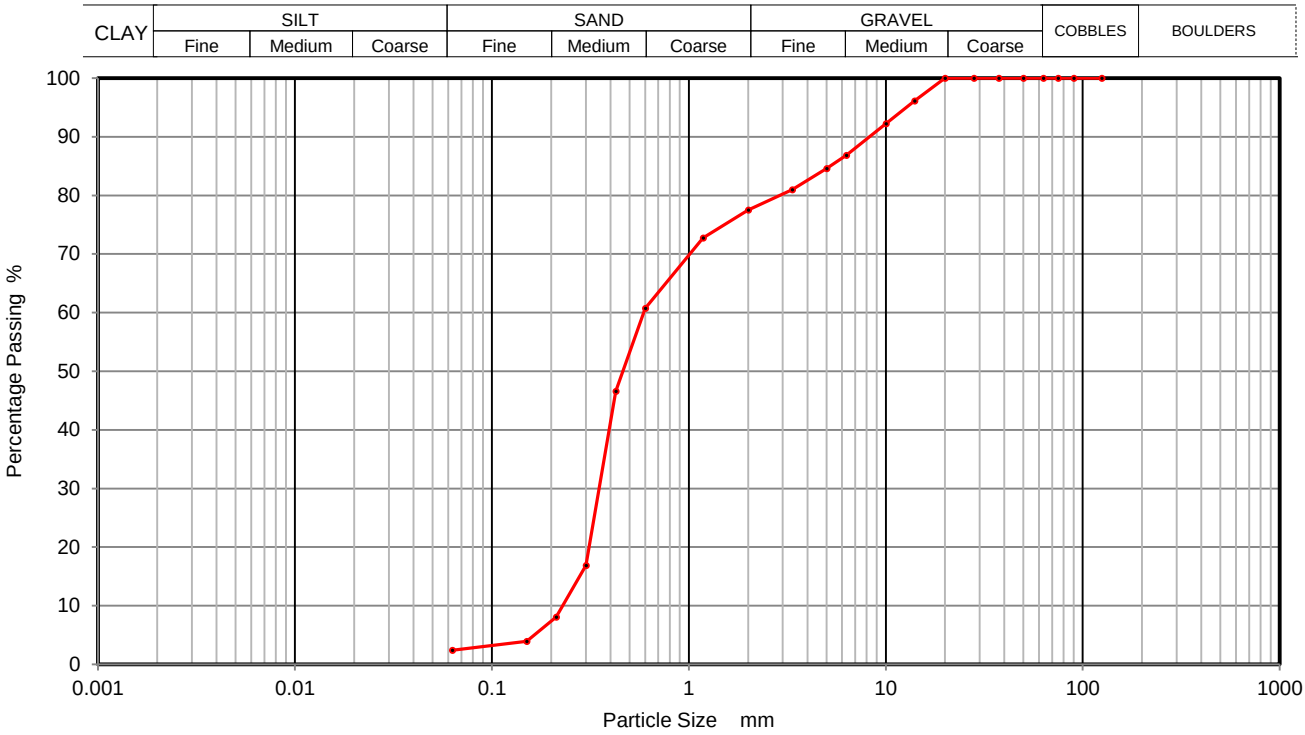
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**TP18**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**0.60**
		Depth Base	**1.00**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	92		
6.3	87		
5	85		
3.35	81		
2	78		
1.18	73		
0.6	61		
0.425	47		
0.3	17		
0.212	8		
0.15	4		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	22
Sand	76
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

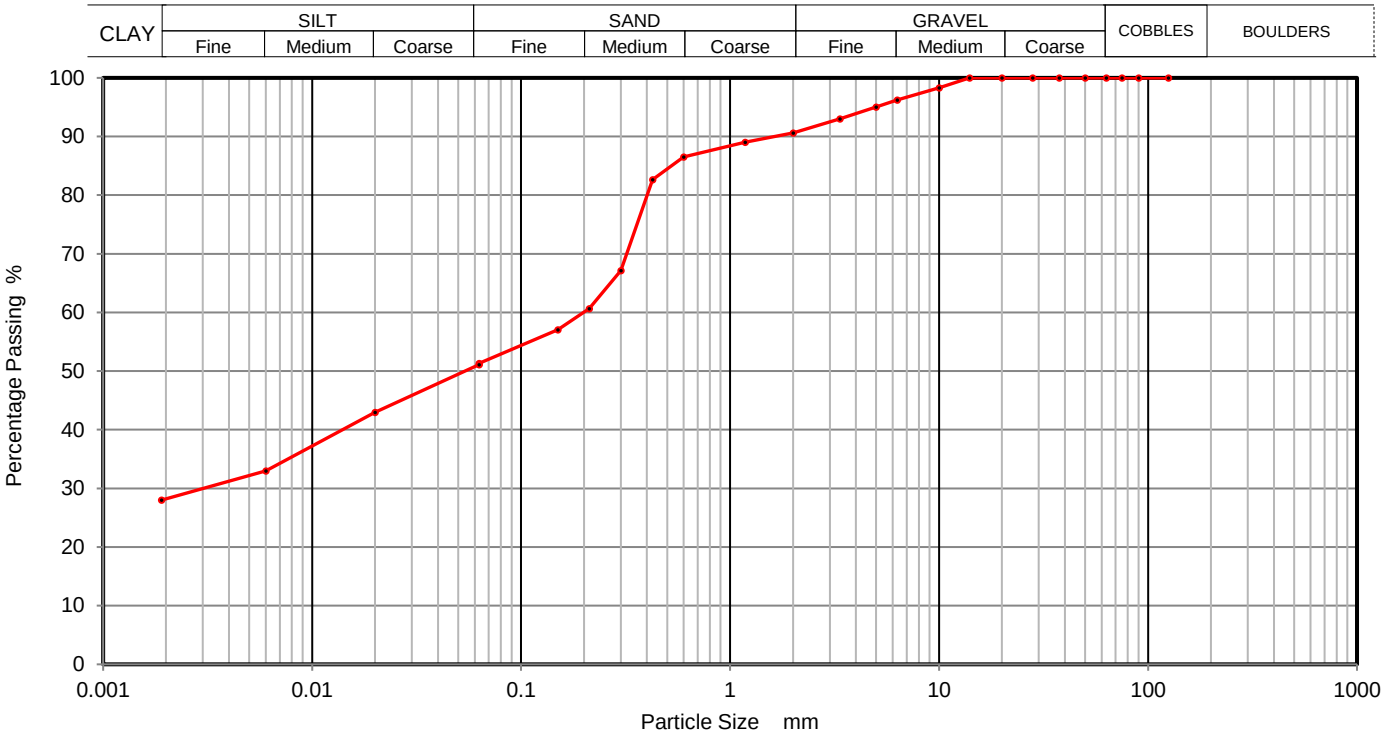
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP19
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to medium slightly gravelly silty clayey fine to coarse SAND.	Depth Top	1.00
		Depth Base	1.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	43
90	100	0.0060	33
75	100	0.0019	28
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98		
6.3	96		
5	95		
3.35	93		
2	91		
1.18	89		
0.6	87		
0.425	83		
0.3	67		
0.212	61		
0.15	57		
0.063	51		

Sample Proportions	% dry mass
Cobbles	0
Gravel	9
Sand	40
Silt	23
Clay	28

Grading Analysis	
Uniformity Coefficient	

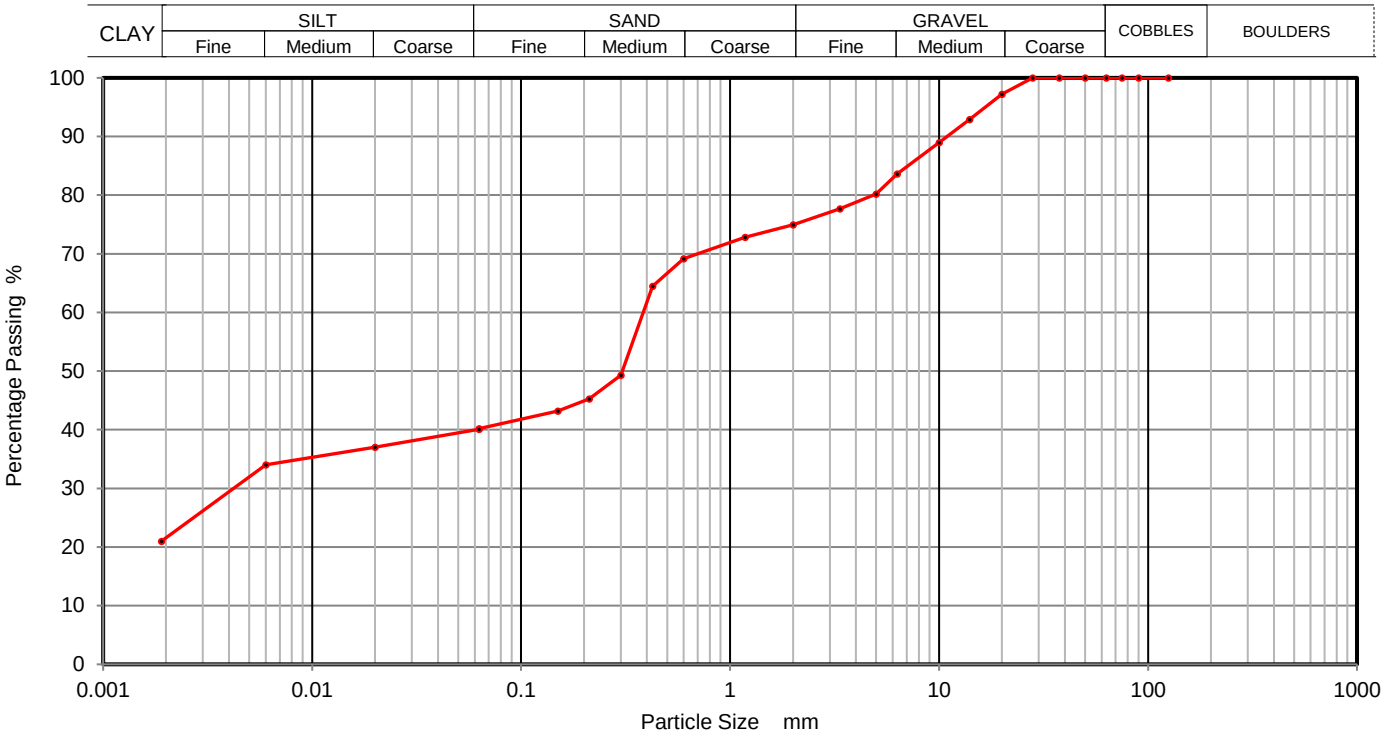
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP19
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	2.00
		Depth Base	2.50
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	37
90	100	0.0060	34
75	100	0.0019	21
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	93		
10	89		
6.3	84		
5	80		
3.35	78		
2	75		
1.18	73		
0.6	69		
0.425	64		
0.3	49		
0.212	45		
0.15	43		
0.063	40		

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	35
Silt	19
Clay	21

Grading Analysis	
Uniformity Coefficient	

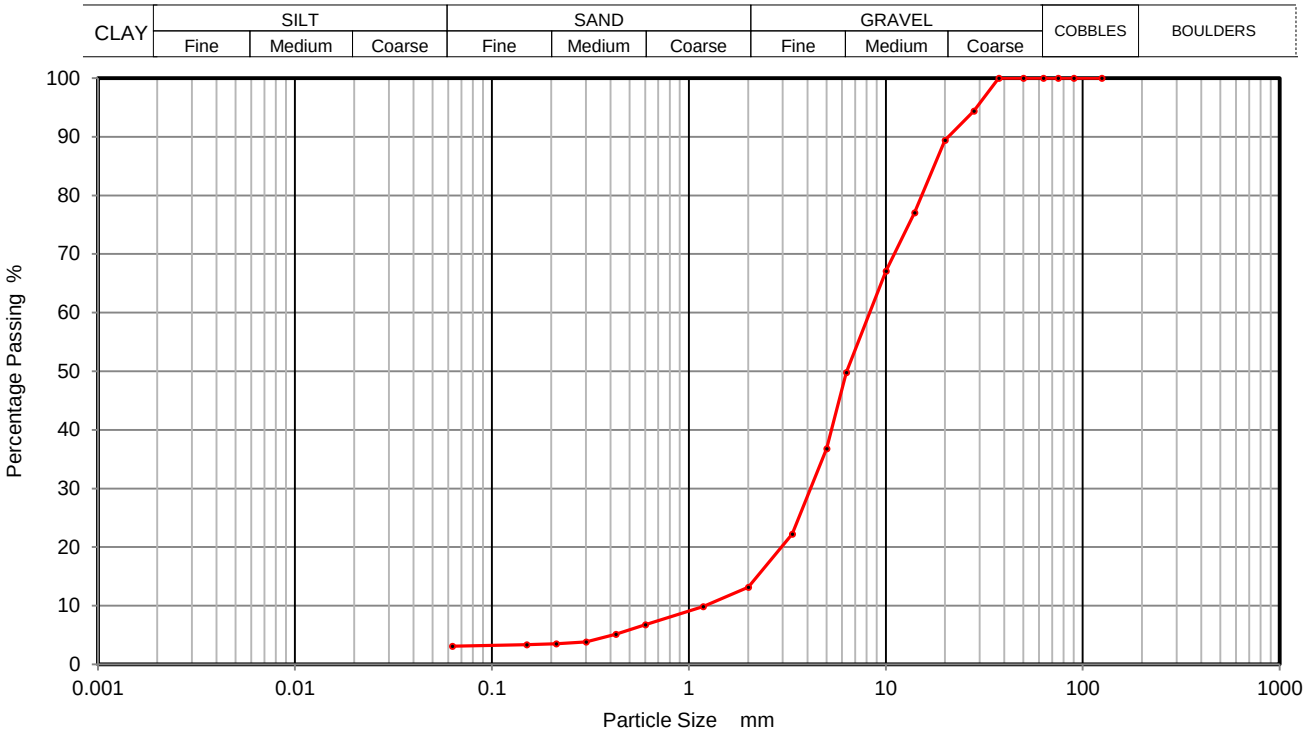
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**TP20**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND.	Depth Top	**1.00**
		Depth Base	
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	94		
20	89		
14	77		
10	67		
6.3	50		
5	37		
3.35	22		
2	13		
1.18	10		
0.6	7		
0.425	5		
0.3	4		
0.212	4		
0.15	3		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	87
Sand	10
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

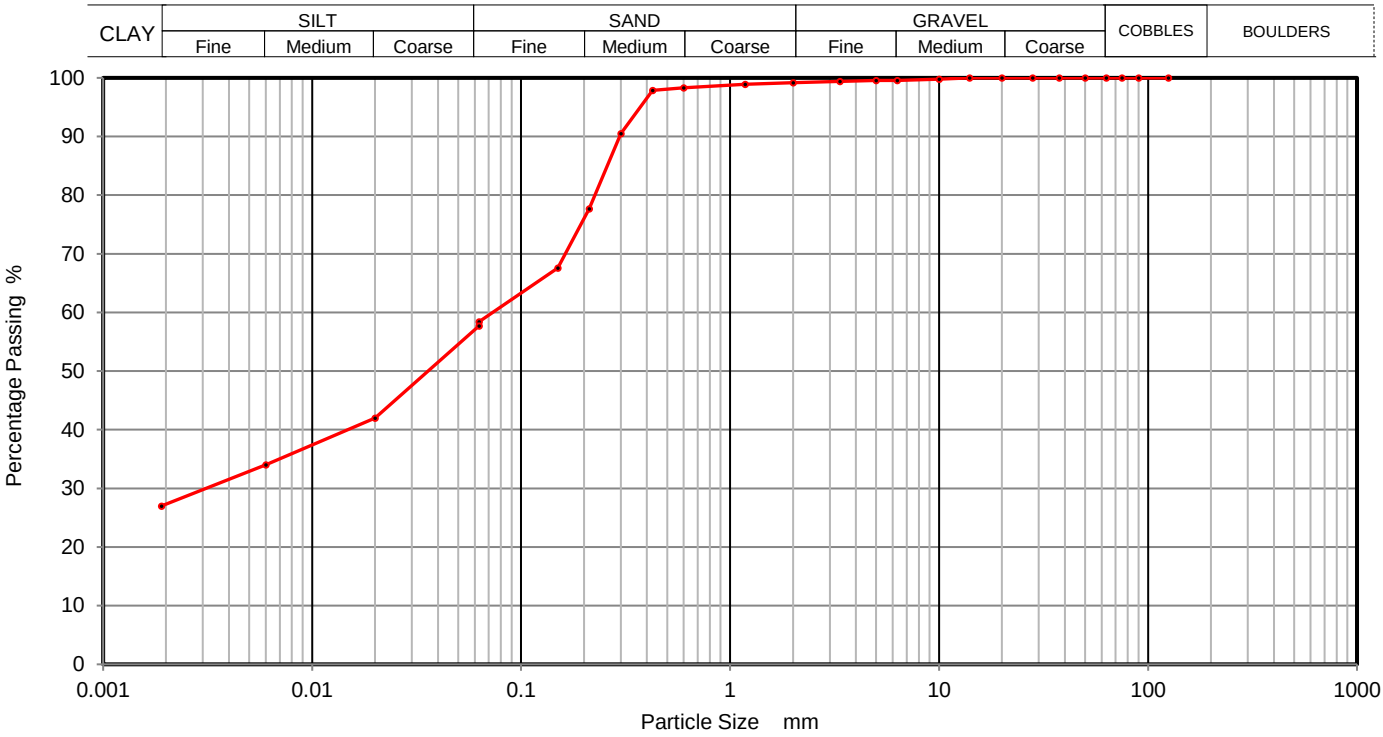
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP20
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine slightly gravelly clayey silty fine to coarse SAND.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	42
90	100	0.0060	34
75	100	0.0019	27
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	99		
0.6	98		
0.425	98		
0.3	91		
0.212	78		
0.15	68		
0.063	58		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	41
Silt	31
Clay	27

Grading Analysis	
Uniformity Coefficient	

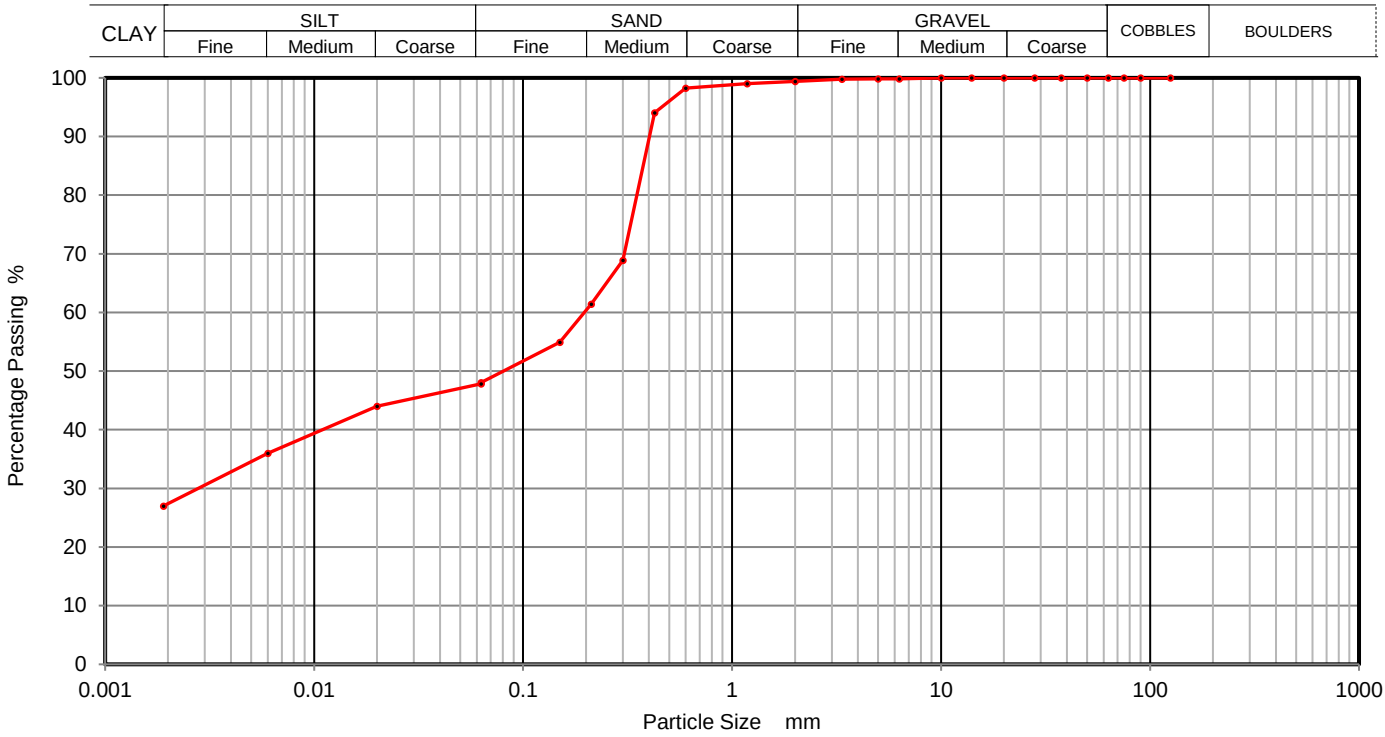
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP22
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine slightly gravelly silty clayey fine to coarse SAND.	Depth Top	1.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	44
90	100	0.0060	36
75	100	0.0019	27
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	94		
0.3	69		
0.212	61		
0.15	55		
0.063	48		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	51
Silt	21
Clay	27

Grading Analysis	
Uniformity Coefficient	

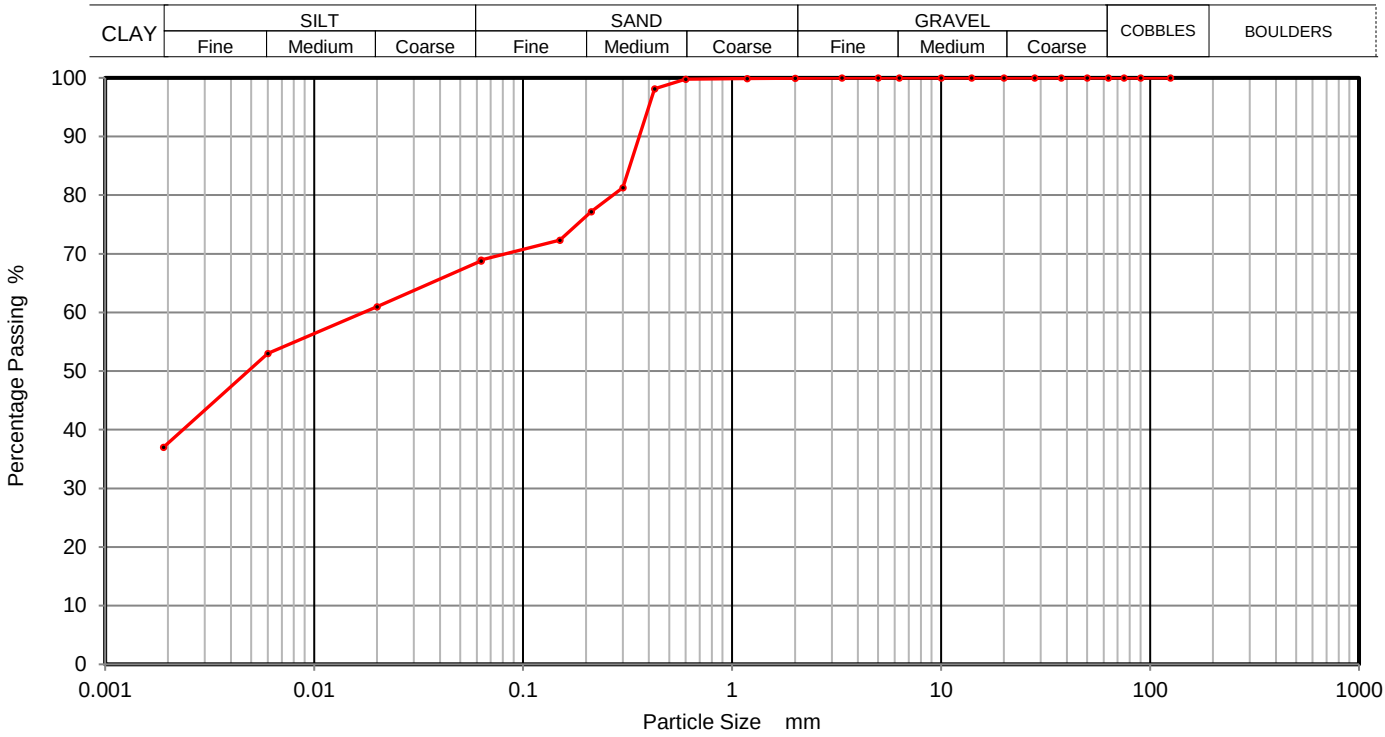
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP22
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse sandy silty CLAY.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	61
90	100	0.0060	53
75	100	0.0019	37
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	98		
0.3	81		
0.212	77		
0.15	72		
0.063	69		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	31
Silt	32
Clay	37

Grading Analysis	
Uniformity Coefficient	

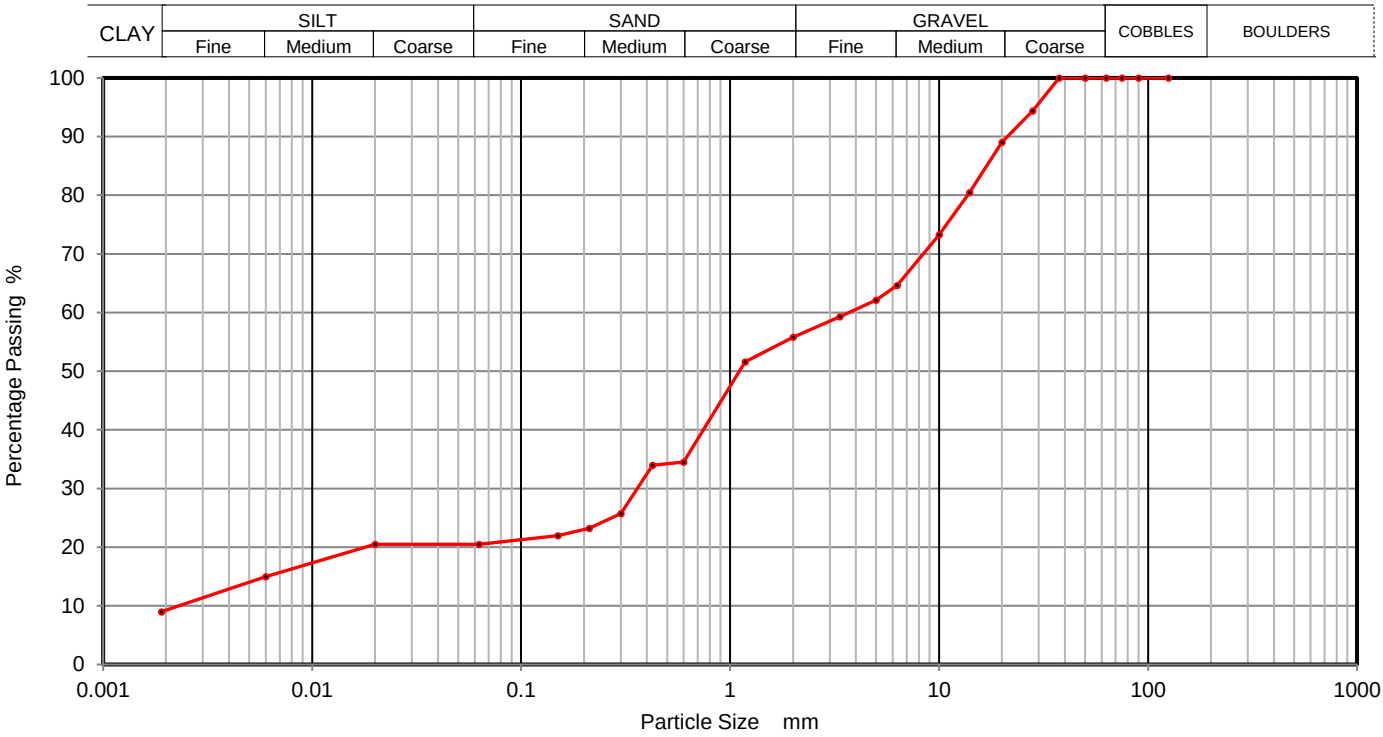
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	**41731**
		Borehole/Pit No.	**TP23**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**1.00**
		Depth Base	
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	15
90	100	0.0060	9
75	100	0.0019	4
63	100		
50	100		
37.5	100		
28	94		
20	89		
14	80		
10	73		
6.3	65		
5	62		
3.35	59		
2	56		
1.18	52		
0.6	35		
0.425	34		
0.3	26		
0.212	23		
0.15	22		
0.063	21		

Sample Proportions	% dry mass
Cobbles	0
Gravel	44
Sand	35
Silt	17
Clay	4

Grading Analysis	
Uniformity Coefficient	

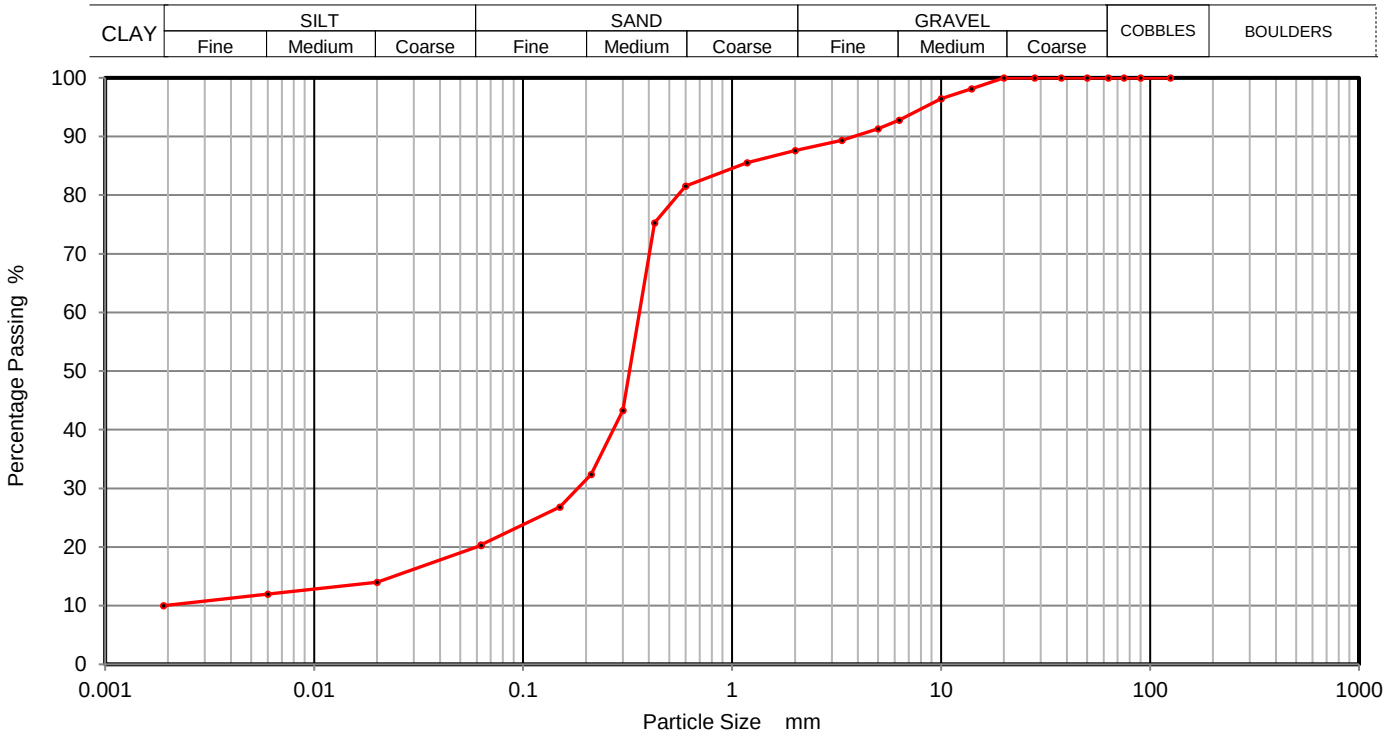
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	14/03/2019	Emma Sharp	[redacted]
RO/MH	Approved	15/03/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	41731
		Borehole/Pit No.	TP29
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine to coarse gravelly silty clayey fine to coarse SAND.	Depth Top	2.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	12
75	100	0.0019	10
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	96		
6.3	93		
5	91		
3.35	89		
2	88		
1.18	86		
0.6	82		
0.425	75		
0.3	43		
0.212	32		
0.15	27		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	12
Sand	68
Silt	10
Clay	10

Grading Analysis	
Uniformity Coefficient	

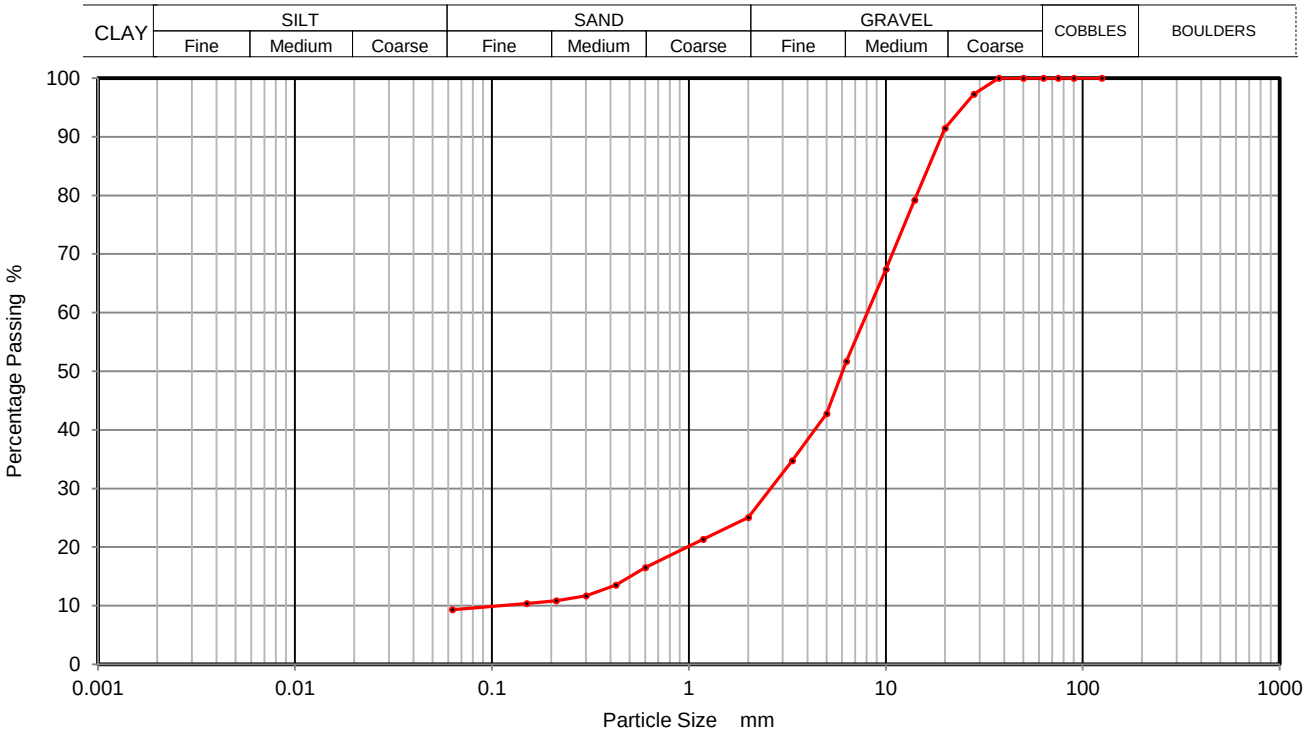
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	12-05-19	Emma Sharp	[redacted]
RO/MH	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**41731**
		Borehole/Pit No.	**TP30**
Site Name	**A47 Wansford**	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**1.00**
		Depth Base	
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	97		
20	91		
14	79		
10	67		
6.3	52		
5	43		
3.35	35		
2	25		
1.18	21		
0.6	17		
0.425	14		
0.3	12		
0.212	11		
0.15	10		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	75
Sand	16
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
RO/MH	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	Certificate of Chemical Analysis (BRE BR 279)	Contract Number	41210
		Client Reference	17076
Client	Soils	Date Received	
Site Name	A47 Wansford	Date Started	16/10/2018
		Date Completed	05/11/2018
		No. of Samples	15

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Chloride Content	Ph Value	Total Sulphur	Magnesium	Nitrate
BH01A		D	3.80	-		0.33	0.04	NCP	7.39	0.14	<1	<10
BH01A		D	8.45	-		0.39	0.04	NCP	8.18	0.16	<1	10-25
BH02		D	6.00	-	6.10	0.29	0.04	NCP	6.98	0.12	<1	10-25
BH02		D	8.40	-	8.50	0.23	0.05	NCP	7.28	0.11	<1	25-50
BH03A		D	7.90	-	8.00	0.23	0.03	NCP	8.15	0.11	<1	<10
BH03A		D	12.60	-	12.70	0.29	0.03	NCP	7.82	0.13	<1	<10
BH07		SPT	7.50	-		0.33	0.04	NCP	6.39	0.14	<1	<10
BH07		D	11.50	-		0.31	0.04	NCP	6.88	0.13	<1	<10
BH08		D	9.40	-		0.35	0.05	NCP	7.56	0.15	<1	10-25
BH09		D	1.80	-		0.37	0.03	NCP	6.67	0.15	<1	<10
BH11		D	4.50	-	5.00	0.23	0.04	NCP	7.57	0.11	<1	10-25
BH11		SPT	10.50	-		0.29	0.05	NCP	8.02	0.13	<1	10-25
BH13		D	8.90	-	9.00	0.27	0.03	NCP	7.82	0.12	<1	<10
BH13		D	12.90	-	13.00	0.29	0.03	NCP	7.99	0.13	<1	<10
BH13		D	17.60	-	17.70	0.35	0.04	NCP	7.49	0.15	<1	10-25
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								

Key

Reported As
% SO_4
g/l SO_4
mg Cl/l
@ 25°
% S
g/l SO_4
NO_3 mg/l

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	[redacted]
Darren Bourne	Date	05/11/2018		

GSTL	Certificate of Chemical Analysis	Contract Number	41210
		Client Reference	17076
Client	Soils	Date Received	
Site Name	A47 Wansford	Date Started	16/10/2018
		Date Completed	05/11/2018
		No. of Samples	6

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Water Soluble Chloride	PH Value	Organic Matter Content	Acid Soluble Chloride	Loss On Ignition
BH01A		SPT	1.90	-						2.1		
BH13		D	6.60	-	6.70					1		
BH19		B	6.99	-	7.09					6.9		
BH19		B	9.40	-	9.50					2		
BH19		B	10.80	-	10.90					1.6		
BH29		D	12.10	-								3.4
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								

Key	Reported As	Clause
Acid Soluble Sulphate	% SO_3	Clause 5.2 & 5.5
Aqueous Extract Sulphate	g/l SO_3	Clause 5.3 & 5.5
2/1 Chloride	%	Clause 7.2
PH Value	@ 25°	Clause 9.5
Organic	%	Clause 3
Redox Mv	Mv	Clause 4
LOI	%	Clause 4

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	[redacted]
Darren Bourne	Date	05/11/2018		

GSTL	Certificate of Chemical Analysis (BRE BR 279)	Contract Number	41210
		Client Reference	17076
Client	Soils	Date Received	
Site Name	A47 Wansford	Date Started	16/10/2018
		Date Completed	05/11/2018
		No. of Samples	18

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Chloride Content	Ph Value	Total Sulphur	Magnesium	Nitrate
BH14		D	7.30	-	7.50	0.31	<0.01	NCP	6.63	0.13	<1	<10
BH14		D	12.40	-	12.50	0.27	0.05	NCP	7.12	0.12	<1	<10
BH14		D	14.50	-	14.60	0.29	0.04	NCP	7.49	0.13	<1	<10
BH14		D	16.60	-	16.70	0.27	0.04	NCP	7.63	0.12	<1	10-25
BH14		D	19.00	-	19.10	0.33	0.03	NCP	7.58	0.14	<1	25-50
BH14		D	23.30	-	23.75	0.39	0.05	NCP	8.29	0.16	<1	25-50
BH16		D	12.20	-	12.30	0.27	0.03	NCP	7.59	0.12	<1	10-25
BH16		D	14.00	-		0.25	0.04	NCP	7.63	0.11	<1	10-25
BH19		B	6.99	-	7.09	0.33	0.03	NCP	6.39	0.14	<1	<10
BH19		B	9.40	-	9.50	0.25	0.04	NCP	6.74	0.11	<1	<10
BH25		D	6.00	-	6.60	0.25	0.04	NCP	8.11	0.11	<1	10-25
BH25		D	9.00	-	9.50	0.31	0.03	NCP	8.03	0.13	<1	<10
BH28		D	2.90	-								
BH28		D	5.00	-		0.29	0.04	NCP	7.93	0.13	<1	10-25
BH29		B	3.20	-	3.70	0.29	0.03	NCP	7.04	0.13	<1	<10
BH29		B	6.50	-	7.00	0.33	0.04	NCP	7.29	0.14	<	<10
BH38		D	0.50	-		0.29	0.03	NCP	6.88	0.13	<1	<10
BH38		SPT	3.00	-		0.35	0.04	NCP	7.02	0.15	<1	<10
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								

Key	Reported As
Acid Soluble Sulphate	% SO_4
Aqueous Extract Sulphate	g/l SO_4
Chloride Content (Semi)	mg Cl/l
PH Value	@ 25°
Total Sulphur	% S
Magnesium	g/l SO_4
Nitrate	NO_3 mg/l

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	[redacted]
Darren Bourne	Date	05/11/2018		

GSTL	Certificate of Chemical Analysis (BRE BR 279)	Contract Number	41665
		Client Reference	17076
Client	Soils	Date Received	
Site Name	A47 Wansford	Date Started	16/11/2018
		Date Completed	21/11/2018
		No. of Samples	2

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Chloride Content	Ph Value	Total Sulphur	Magnesium	Nitrate
BH32		D	14.50	-		0.29	0.04	NCP	7.69	0.13	<1	<10
BH32		D	21.50	-		0.31	0.03	NCP	7.91	0.14	<1	10-25
				-								
				-								
				-							

GSTL	Certificate of Chemical Analysis BS1377 Part 3 1990	Contract Number	41731
		Client Reference	17076
Client	Soils	Date Received	
Site Name	A47 Wansford	Date Started	26/11/2018
		Date Completed	05/12/2018
		No. of Samples	1

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Water Soluble Chloride	PH Value	Organic Matter Content	Acid Soluble Chloride	Loss On Ignition
BH33		D	8.86	-						1.2		
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								

Key	Reported As	Clause
Acid Soluble Sulphate	% SO_3	Clause 5.2 & 5.5
Aqueous Extract Sulphate	g/l SO_3	Clause 5.3 & 5.5
Water Soluble Chloride	%	Clause 7.2
PH Value	@ 25°	Clause 9.5
Organic	%	Clause 3
Acid Soluble Chloride	%	Clause 7.3
LOI	%	Clause 4

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	[redacted]
Darren Bourne	Date	05/12/2018		

SUMMARY OF SOIL DENSITY TESTS
(BS 1377 : PART 2 : 7/8 : 1990)

Contract Number	**41731**
Site Name	**A47 Wansford**

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content	Bulk Density	Dry Density	Compaction Method	Particle Density	Estimated Air Voids	Remarks
BH15		UT	20.50	-	1.00					2.67		
BH30		U	10.00	-	10.45					2.66		
				-								
				-								
				-					

GSTL

SUMMARY OF SOIL DENSITY TESTS
(BS 1377 : PART 2 : 7/8 : 1990)

Contract Number	**41210**
Site Name	**A47 Wansford**

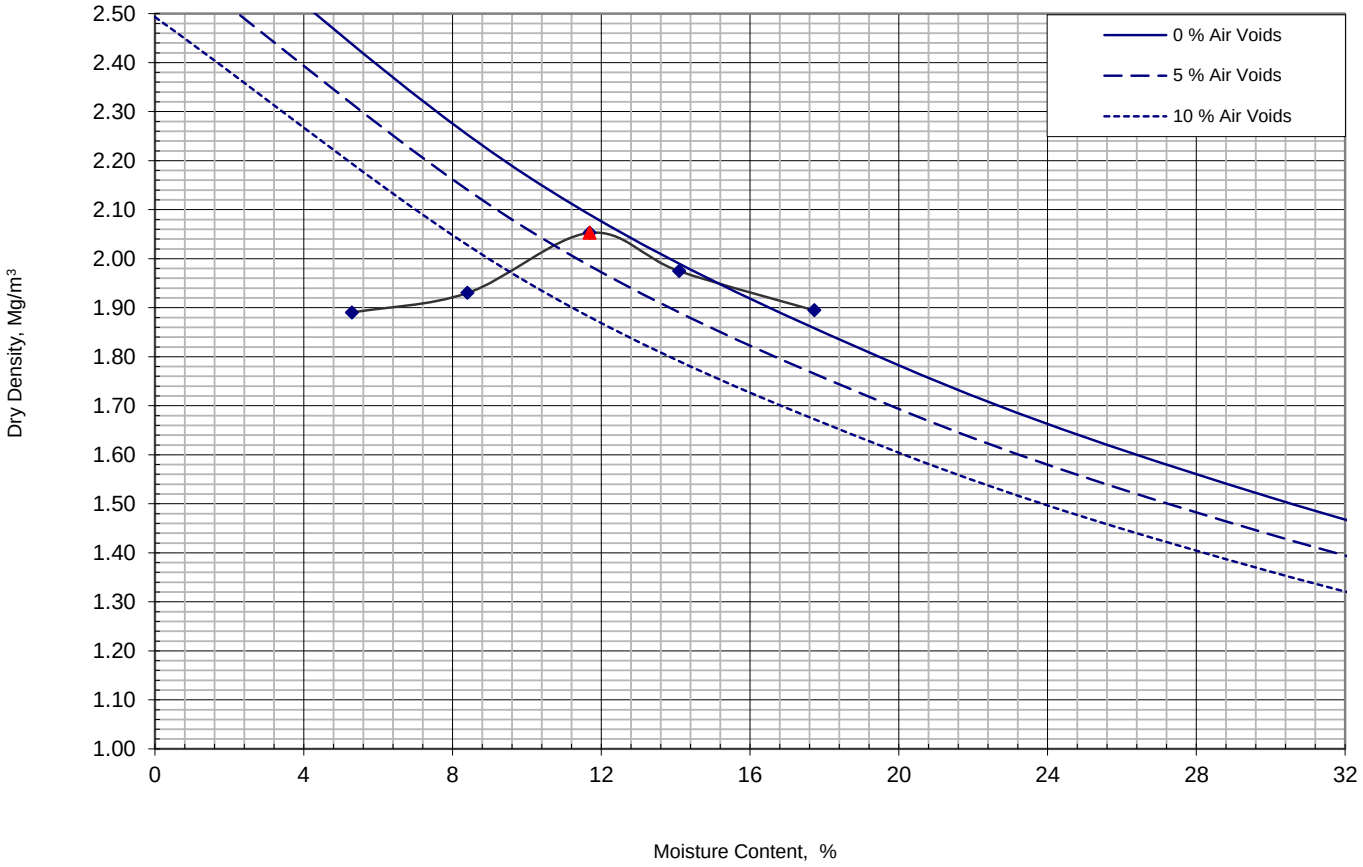
Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content	Bulk Density	Dry Density	Compaction Method	Particle Density	Estimated Air Voids	Remarks
BH11		D	8.70	-	8.80					2.63		
BH13		D	8.50	-	8.60					2.59		
BH13		D	14.80	-	14.80					2.64		
BH14		D	17.40	-	17.50					2.66		
BH14		D	23.10	-	23.20					2.66		
BH16		SPT	14.00	-						2.65		
BH29		D	8.75	-						2.65		
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								
				-								

Key	Reported As
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operators	Checked	04/11/2018	Ben Sharp	[redacted]
CA/JS	Approved	05/11/2018	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	41731
		Borehole / Pit No	TP17
Site Name	A47 Wansford	Sample No	
		Depth Top	0.20
Compaction Method	4.5 Kg Rammer	Depth Base	0.50
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



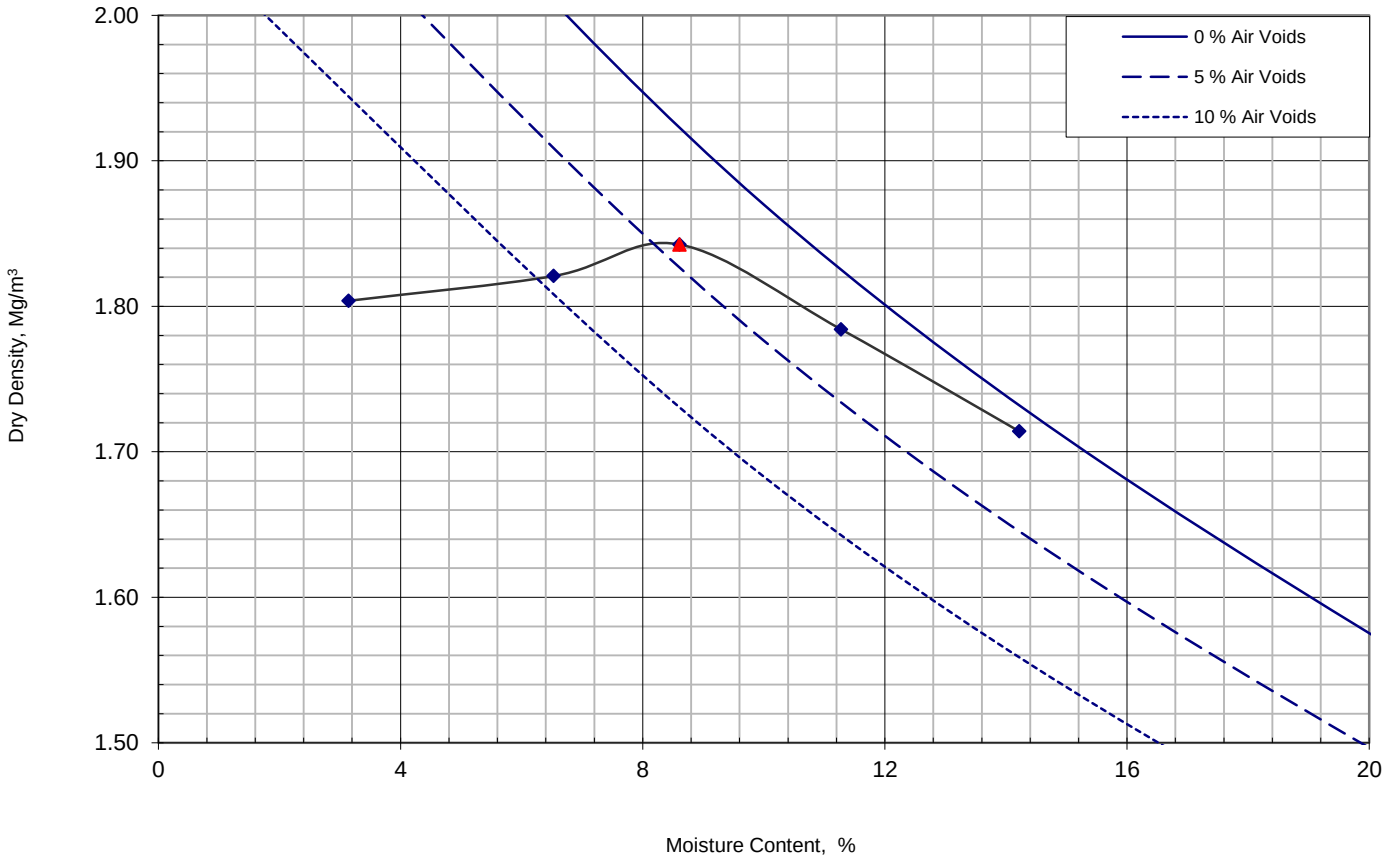
Compaction Point	1	2	3	4	5							
Moisture Content	5.3	8.4	12	14	18							
Bulk Density	1.99	2.09	2.29	2.25	2.23							
Dry Density	1.89	1.93	2.05	1.97	1.89							

Initial Moisture Content	8.4	%
Maximum Dry Density	2.05	Mg/m3
Optimum Moisture Content	12	%
Particle Density	2.77 Assumed	Mg/m3
Material Retained 37.5mm	18	%
Material Retained 20mm	26	%

Operators	Checked	12-05-19	Emma Sharp	[redacted]
CA	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	41731
		Borehole / Pit No	TP18
Site Name	A47 Wansford	Sample No	
		Depth Top	0.60
Compaction Method	4.5 Kg Rammer	Depth Base	1.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



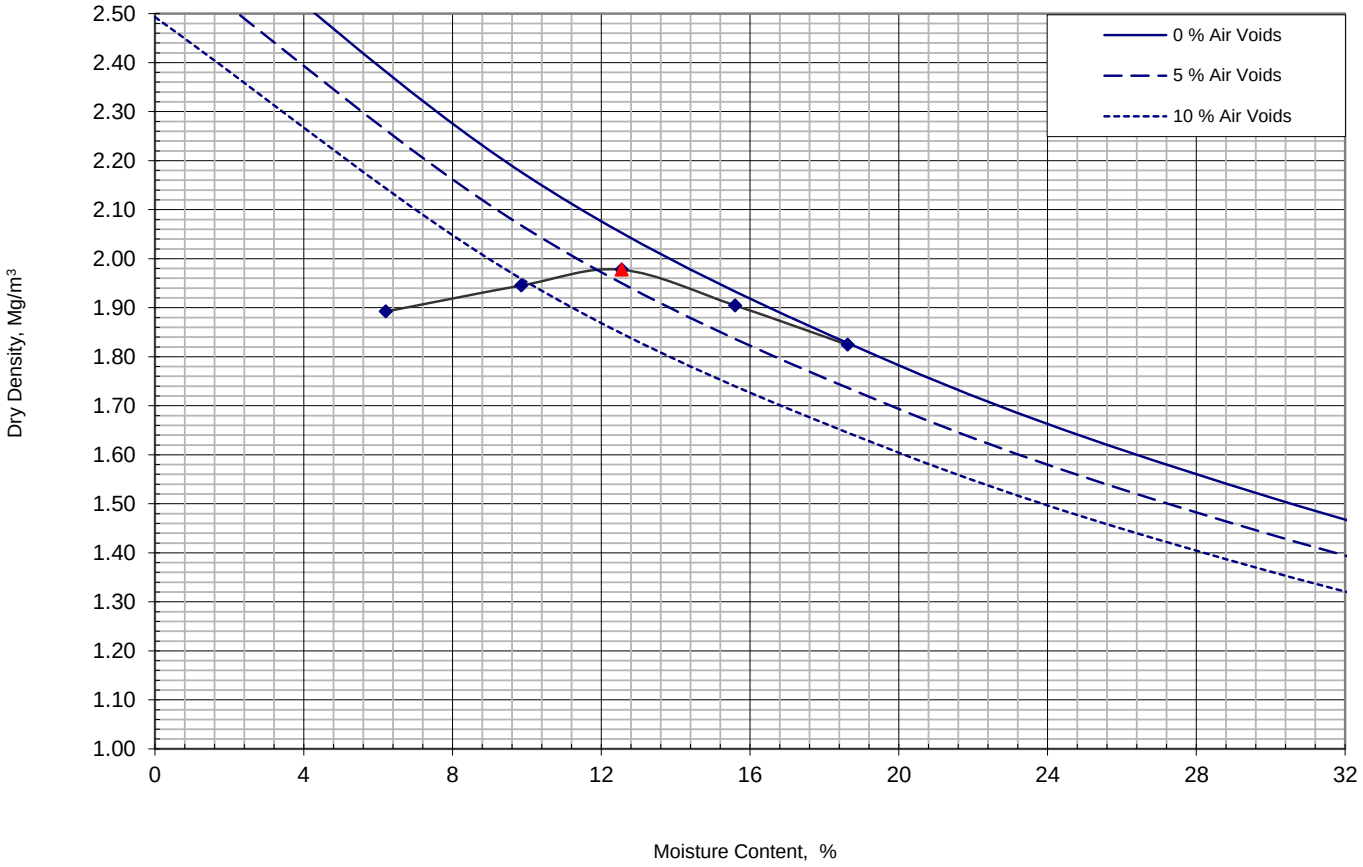
Compaction Point	1	2	3	4	5							
Moisture Content	3.1	6.5	8.6	11	14							
Bulk Density	1.86	1.94	2.00	1.99	1.96							
Dry Density	1.80	1.82	1.84	1.78	1.71							

Initial Moisture Content	3.1	%
Maximum Dry Density	1.84	Mg/m3
Optimum Moisture Content	9	%
Particle Density	2.3 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operators	Checked	16/06/2019	Emma Sharp	[redacted]
CA	Approved	17/06/2019	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	41731
		Borehole / Pit No	TP19
Site Name	A47 Wansford	Sample No	
		Depth Top	1.00
Compaction Method	4.5 Kg Rammer	Depth Base	1.50
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



Compaction Point	1	2	3	4	5							
Moisture Content	6.2	9.9	13	16	19							
Bulk Density	2.01	2.14	2.23	2.20	2.16							
Dry Density	1.89	1.95	1.98	1.90	1.82							

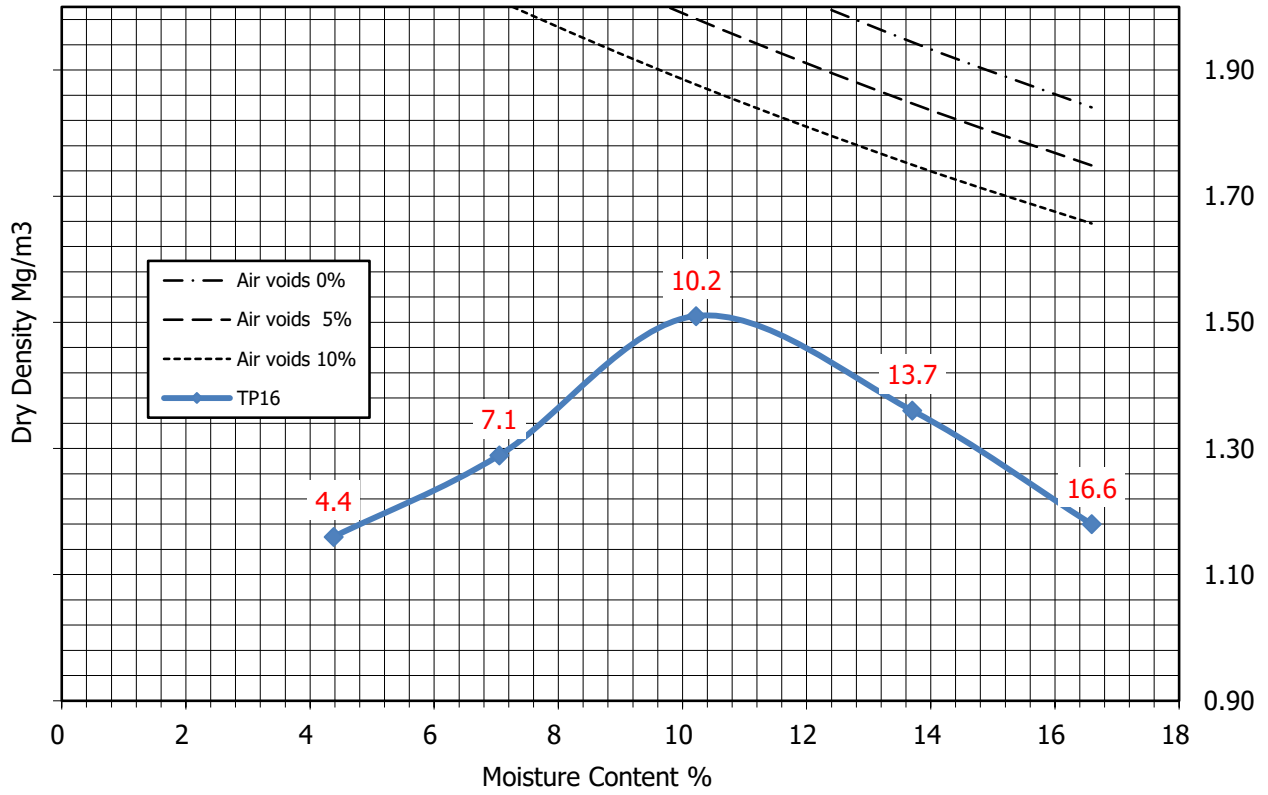
Initial Moisture Content	9.9	%
Maximum Dry Density	1.98	Mg/m3
Optimum Moisture Content	13	%
Particle Density	2.77 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operators	Checked	12-05-19	Emma Sharp	[redacted]
CA	Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

Dry Density/Moisture Content Relationship Vibro Compaction
BS 1377:Part 4:1990 . Cl 3.7

Client ref:	**17076**
Location:	**A47 Wansford**
Contract Number:	**41731**
Hole Number:	**TP16**
Sample Number:	**N/A**
Depth (m):	**0.80-1.20**
Sample Type:	**B**



Compaction Point:	**1**	**2**	**3**	**4**	**5**
Moisture Content	4	7	10	14	17
Bulk Density (Mg/m^3):	1.21	1.38	1.66	1.55	1.38
Dry Density (Mg/m^3):	1.16	1.29	1.51	1.36	1.18

Initial Moisture Content:	**7**	Method of Compaction:	VIBRO / Single Sample
Particle Density (Mg/m3):	**2.65* Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**0**
Maximum Dry Density (mg/m3):	**1.51**	Material Retained on 20.0 mm Test Sieve (%):	**15**
Optimum Moisture Content (%):	**10.2**	Sample Preparation Clause:	**3.2.4.2**

Remarks

GSTL
GEO Site & Testing Services Limited

[redacted]
Checked By

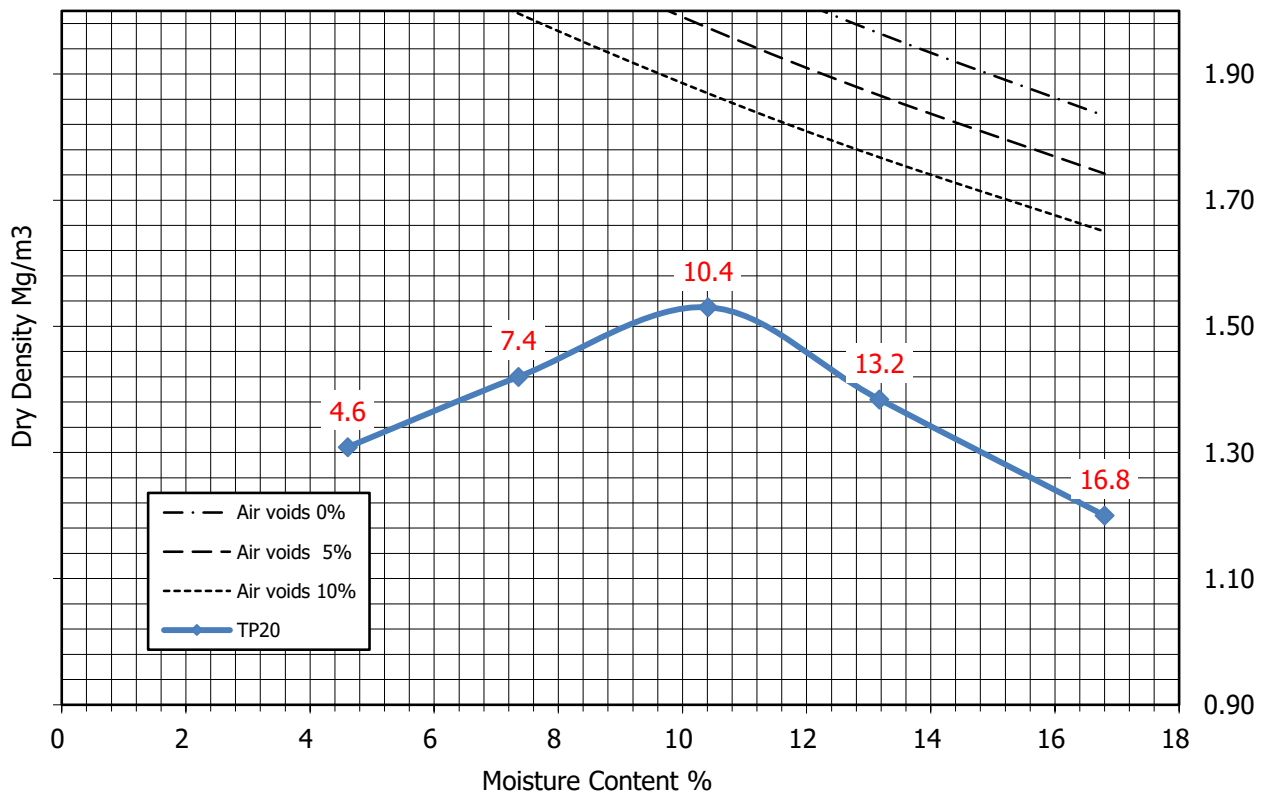
[redacted]
Approved By:

UKAS TESTING 2788

Date Approved: 27.3.19

Dry Density/Moisture Content Relationship Vibro Compaction
BS 1377:Part 4:1990 . Cl 3.7

Client ref:	**17076**
Location:	**A47 Wansford**
Contract Number:	**41731**
Hole Number:	**TP20**
Sample Number:	**N/A**
Depth (m):	**1**
Sample Type:	**B**



Compaction Point:	**1**	**2**	**3**	**4**	**5**
Moisture Content	5	7	10	13	17
Bulk Density (Mg/m^3):	1.37	1.52	1.69	1.57	1.40
Dry Density (Mg/m^3):	1.31	1.42	1.53	1.38	1.20

Initial Moisture Content:	**5**	Method of Compaction:	VIBRO / Single Sample
Particle Density (Mg/m3):	**2.65* Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**0**
Maximum Dry Density (mg/m3):	**1.53**	Material Retained on 20.0 mm Test Sieve (%):	**11**
Optimum Moisture Content (%):	**10.4**	Sample Preparation Clause:	**3.2.4.2**

Remarks

GSTL
GEO Site & Testing Services Limited

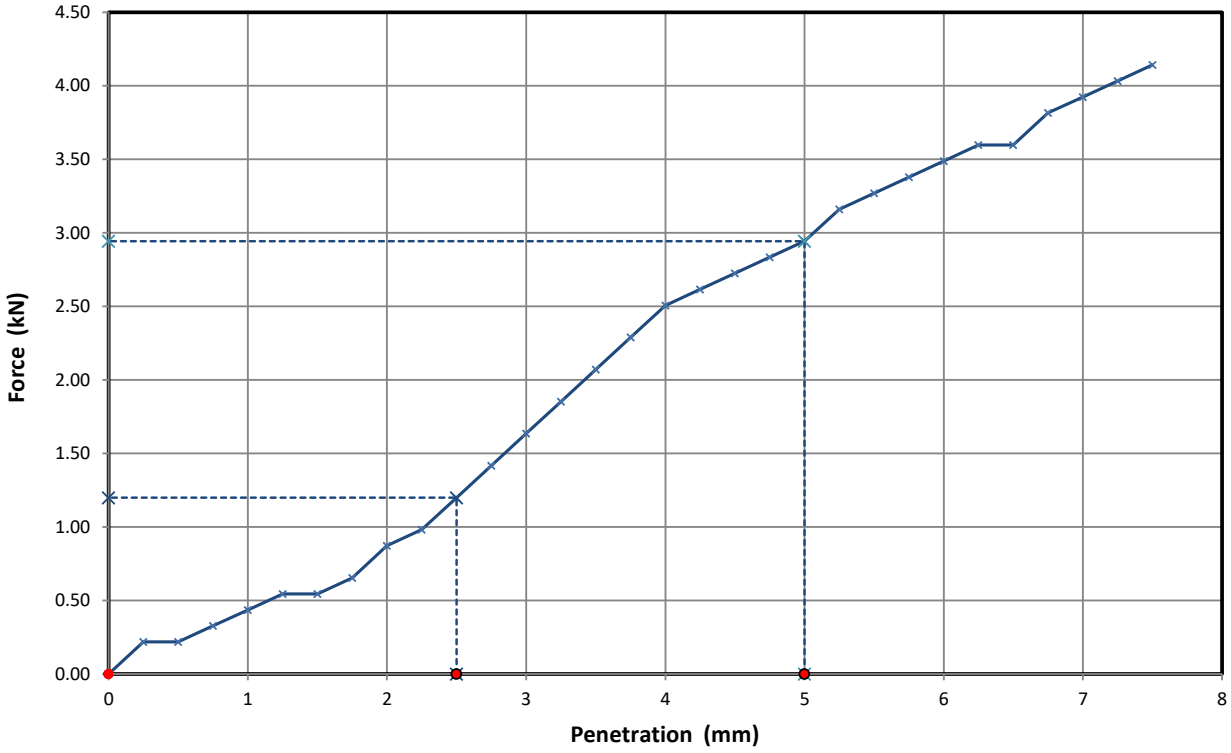
[redacted]
Checked By

[redacted]
Approved By:

UKAS TESTING 2788

Date Approved: 27.3.19

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	41731
		Borehole/Pit No.	TP16
Site Name	A47 Wansford	Sample No.	
Soil Description		Depth Top	0.80
Compaction Method	Vibrating Rammer	Depth Base	1.20
Retained 20mm	15%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	10
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.66
Dry Density (Mg/m3)	1.51

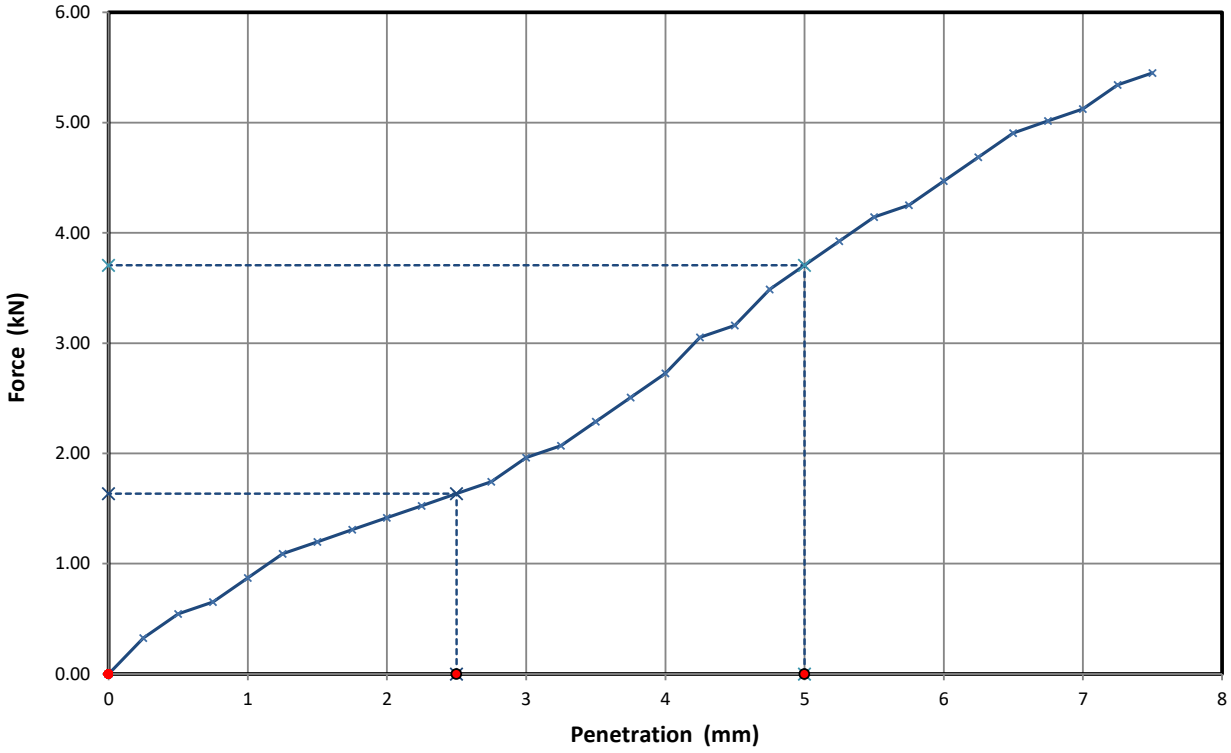
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	9.1	2.5mm Bottom	
5mm Top	14.7	5mm Bottom	
CBR Value %	**14.7**	**CBR Value %**	

Operators	Checked	05/12/2018	Sean Penn	[redacted]
RO/MH	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	41731
		Borehole/Pit No.	TP17
Site Name	A47 Wansford	Sample No.	
Soil Description		Depth Top	0.20
Compaction Method	4.5 Kg Rammer	Depth Base	0.50
Retained 20mm	26%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	12
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.29
Dry Density (Mg/m3)	2.05

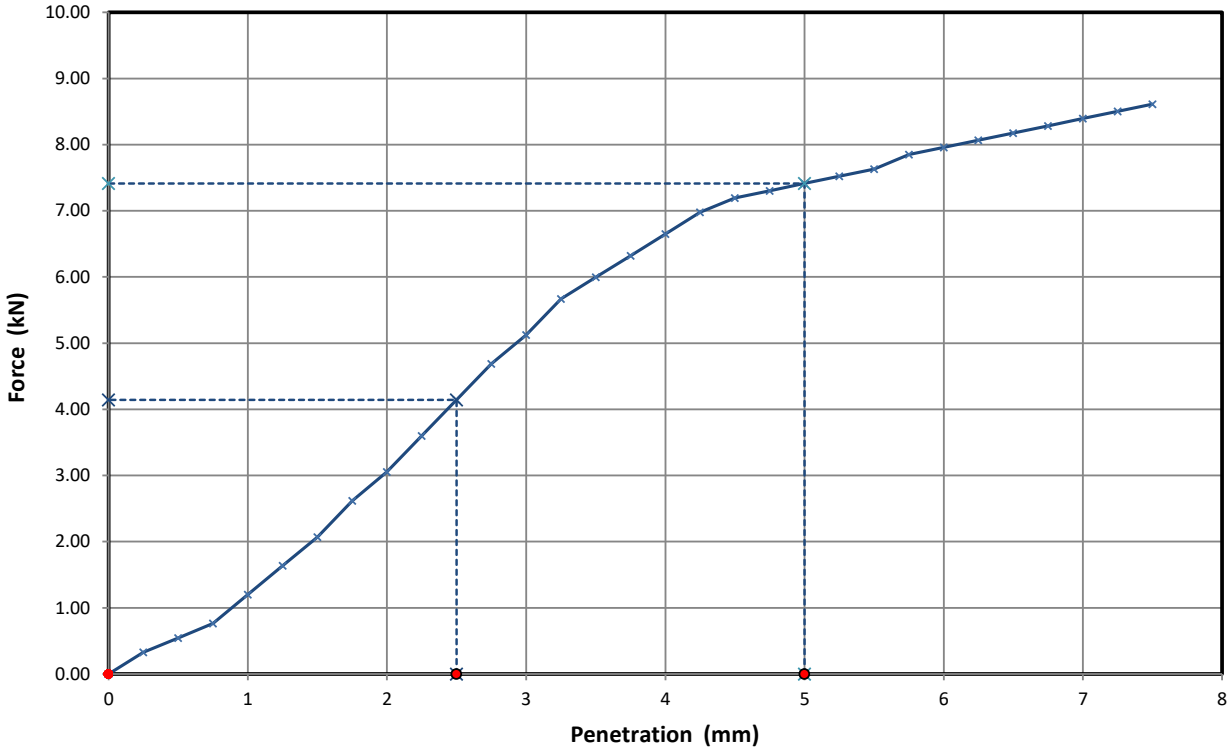
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	12.4	2.5mm Bottom	
5mm Top	18.5	5mm Bottom	
CBR Value %	**18.5**	**CBR Value %**	

Operators	Checked	05/12/2018	Sean Penn	[redacted]
RO/MH	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	41731
		Borehole/Pit No.	TP18
Site Name	A47 Wansford	Sample No.	
Soil Description		Depth Top	0.60
Compaction Method	4.5 Kg Rammer	Depth Base	1.00
Retained 20mm	0%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	8.6
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.00
Dry Density (Mg/m3)	1.84

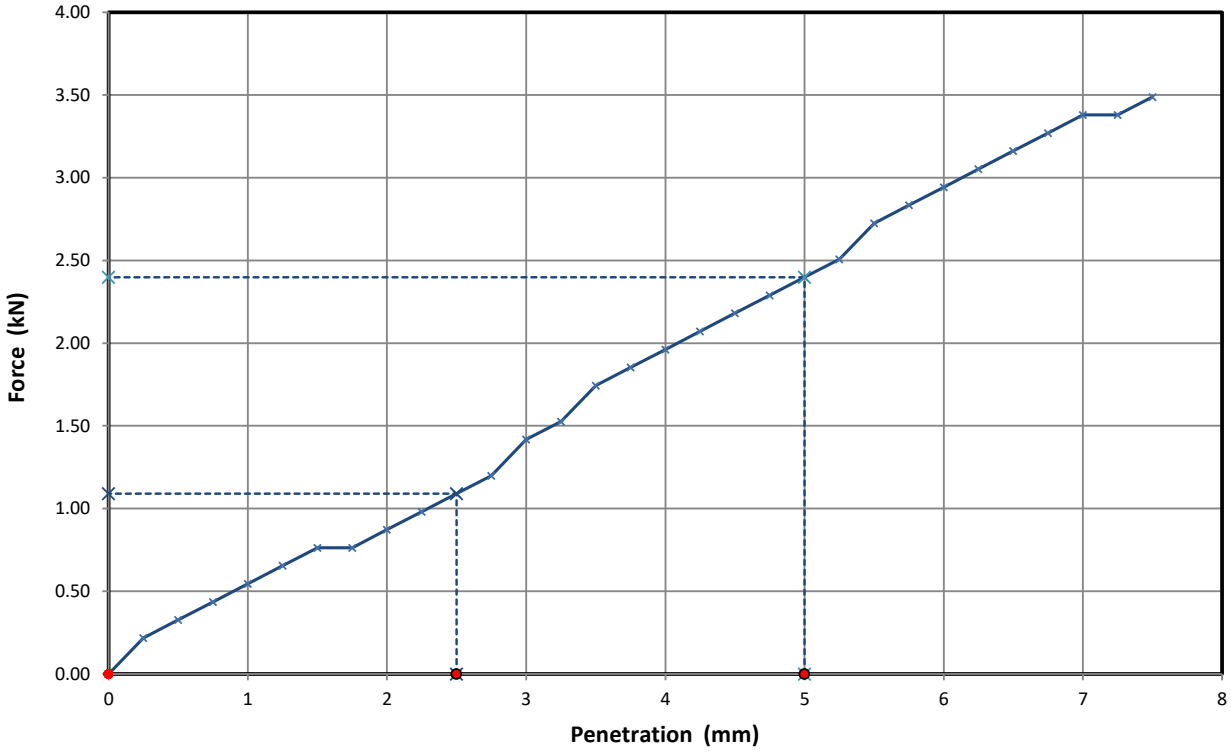
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	31.4	2.5mm Bottom	
5mm Top	37.1	5mm Bottom	
CBR Value %	**37.1**	**CBR Value %**	

Operators	Checked	05/12/2018	Sean Penn	[redacted]
RO/MH	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	41731
		Borehole/Pit No.	TP19
Site Name	A47 Wansford	Sample No.	
Soil Description		Depth Top	1.00
Compaction Method	4.5 Kg Rammer	Depth Base	1.50
Retained 20mm	0%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	13
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.22
Dry Density (Mg/m3)	1.97

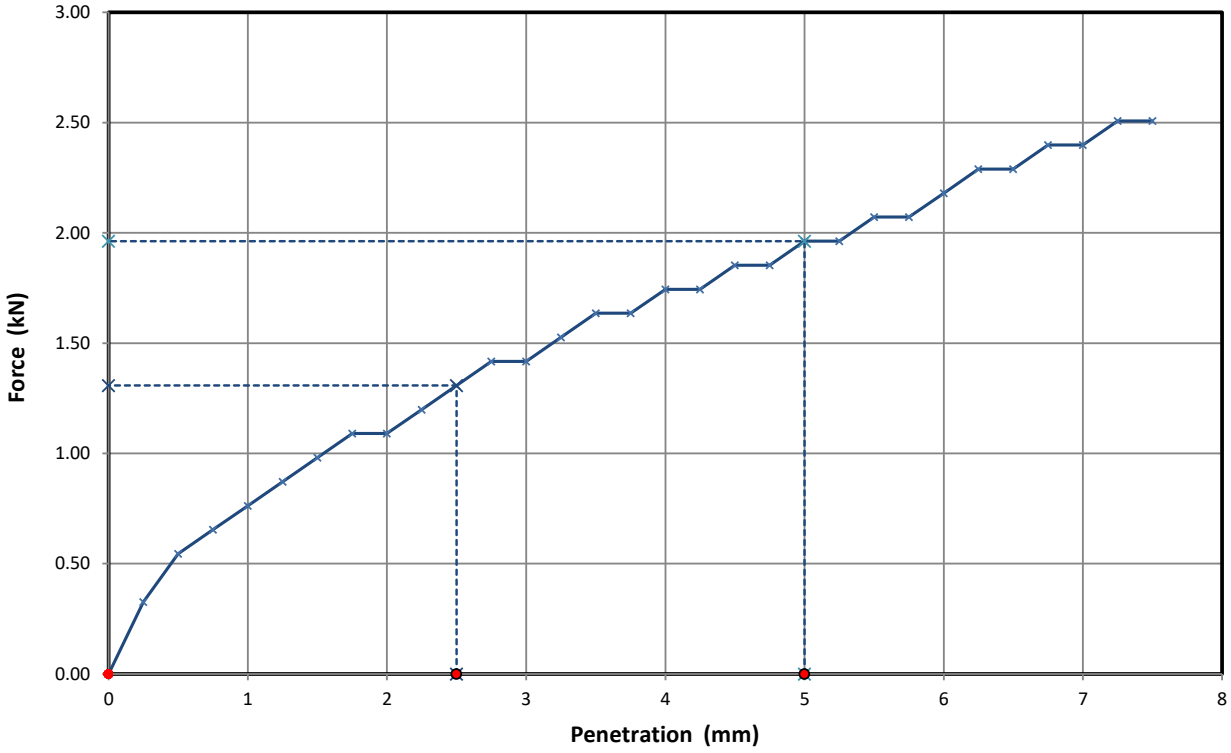
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	8.3	2.5mm Bottom	
5mm Top	12.0	5mm Bottom	
CBR Value %	**12.0**	**CBR Value %**	

Operators	Checked	05/12/2018	Sean Penn	[redacted]
RO/MH	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	41731
		Borehole/Pit No.	TP22
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown fine sandy silty CLAY	Depth Top	1.00
Compaction Method	4.5 Kg Rammer	Depth Base	
Retained 20mm	4%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	13
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.16
Dry Density (Mg/m3)	1.91

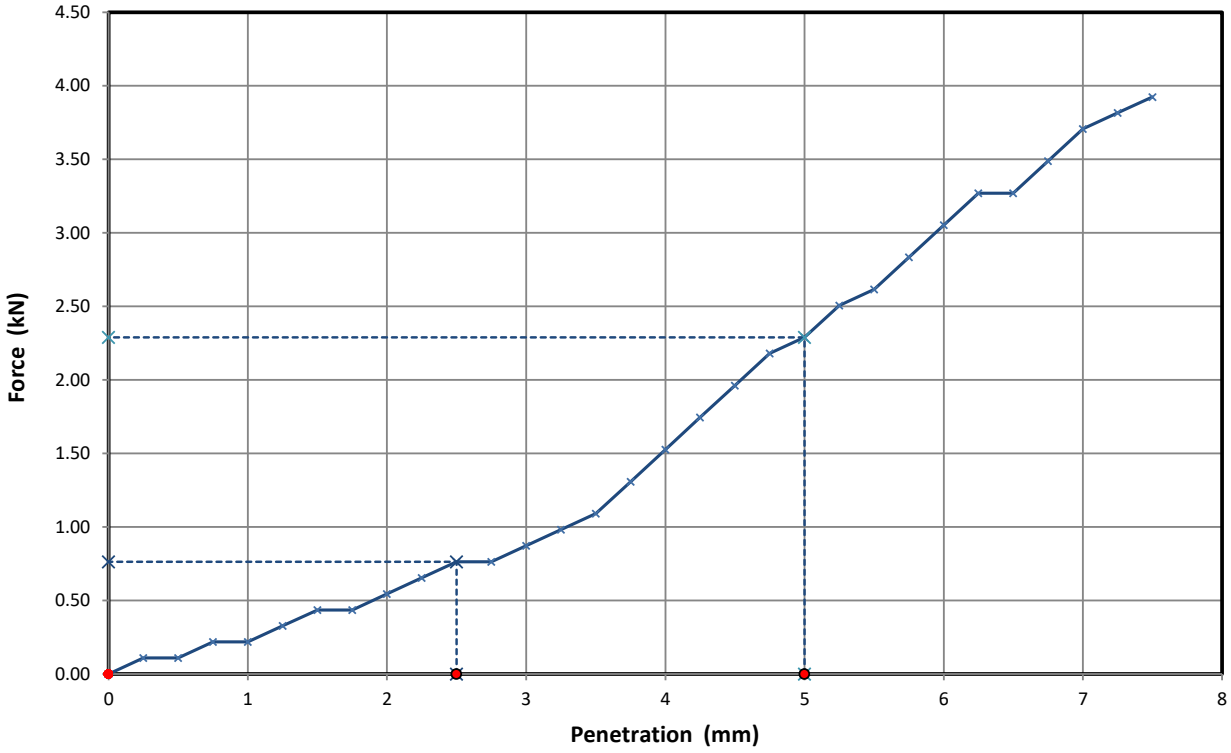
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	9.9	2.5mm Bottom	
5mm Top	9.8	5mm Bottom	
CBR Value %	**9.9**	**CBR Value %**	

Operators	Checked	05/12/2018	Sean Penn	[redacted]
RO/MH	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	41731
		Borehole/Pit No.	TP20
Site Name	A47 Wansford	Sample No.	
Soil Description		Depth Top	1.00
Compaction Method	Vibrating Rammer	Depth Base	
Retained 20mm	11%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	10
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.69
Dry Density (Mg/m3)	1.53

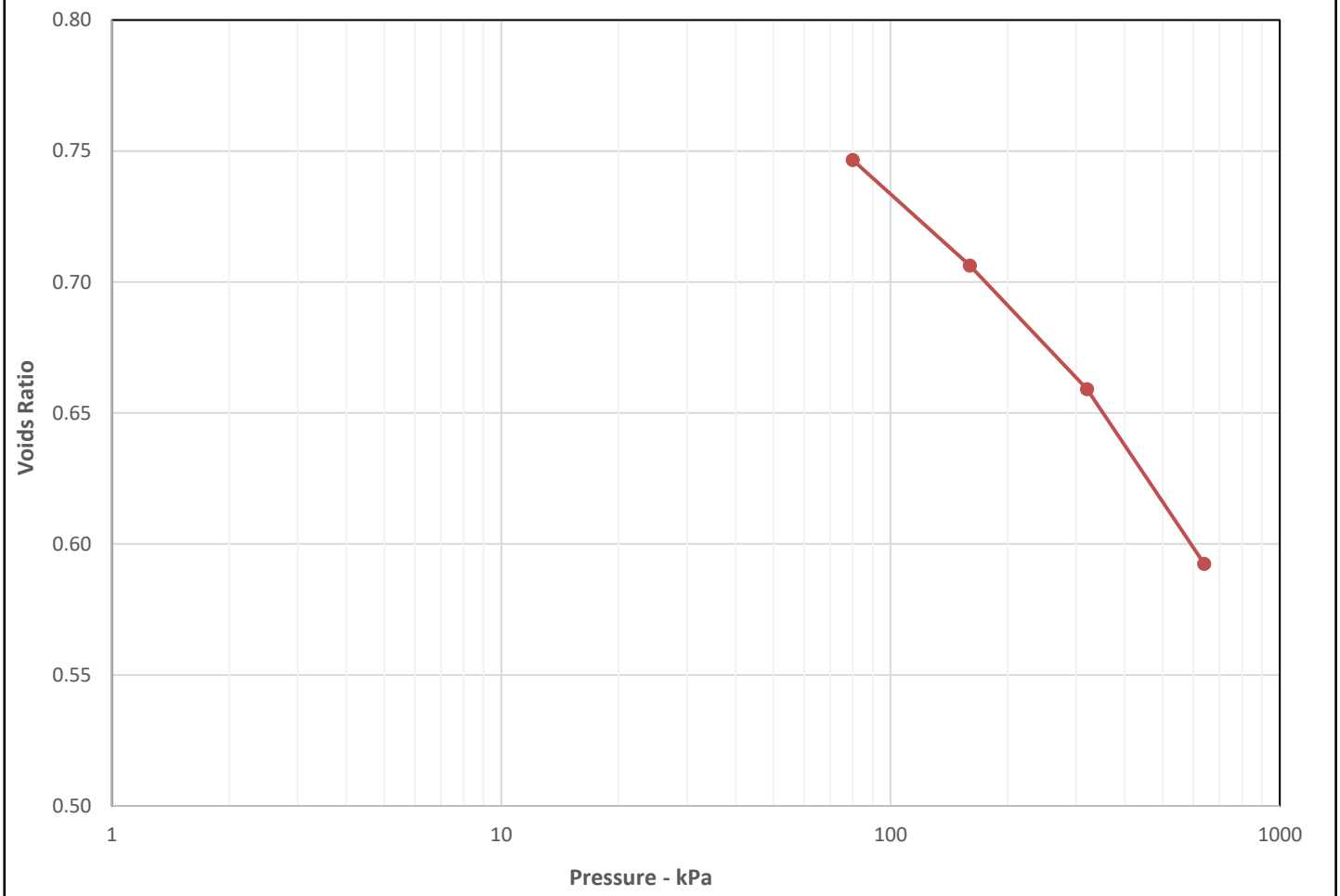
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	5.8	2.5mm Bottom	
5mm Top	11.4	5mm Bottom	
CBR Value %	**11.4**	**CBR Value %**	

Operators	Checked	05/12/2018	Sean Penn	[redacted]
RO/MH	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41210
		Borehole/Trialpit No.	BH01A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty stiff CLAY	Depth Top (m)	3.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

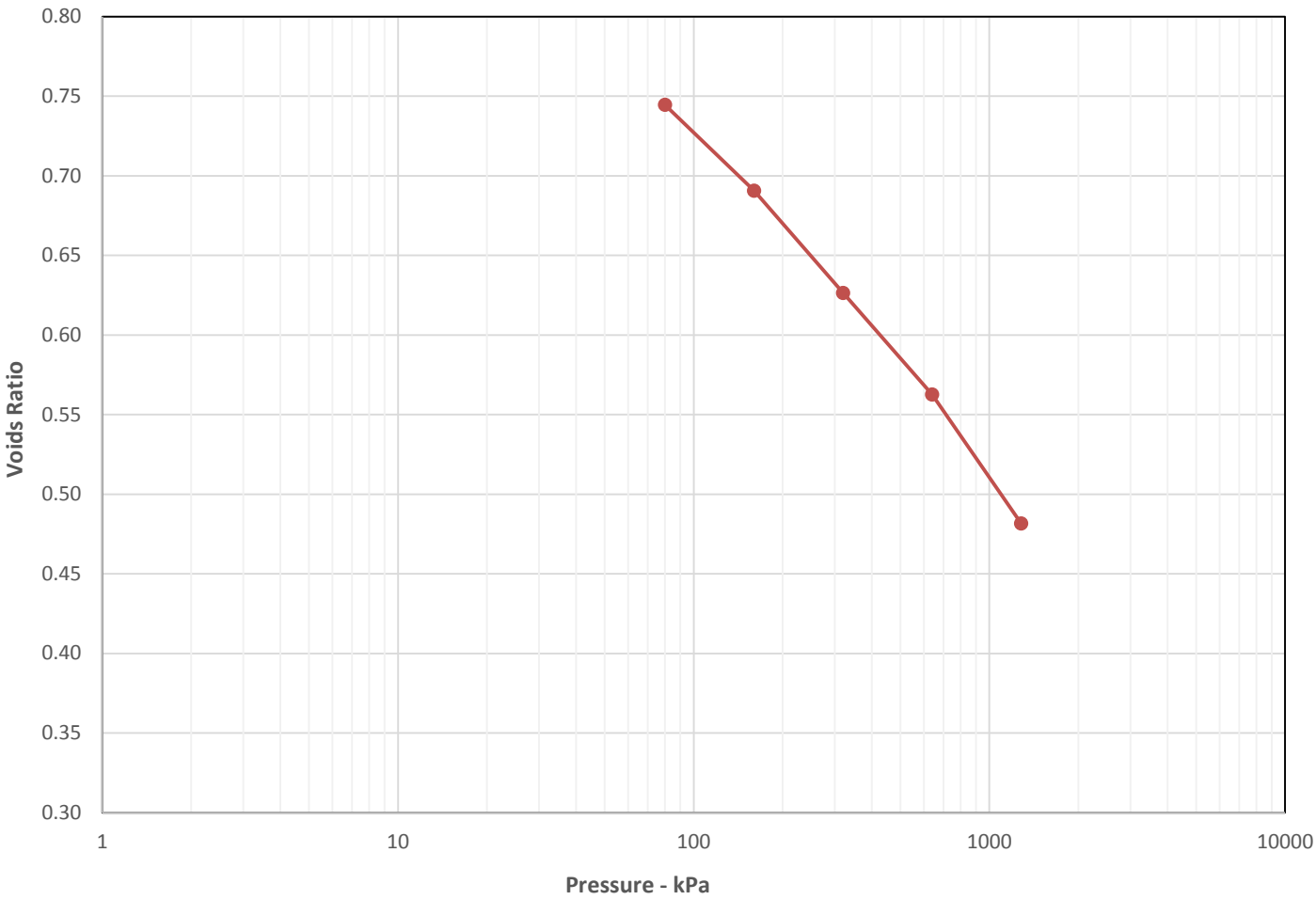


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	25	0	-	40	Swell	Stage		-			
Bulk Density (Mg/m3)	1.90	40	-	80	0.15	12		-			
Dry Density (Mg/m3)	1.51	80	-	160	0.29	11		-			
Voids Ratio	0.7496	160	-	320	0.170	6.6		-			
Degree of saturation	90.0	320	-	640	0.13	3.1		-			
Height (mm)	19.88		-					-			
Diameter (mm)	75.05		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	12-05-19	Richard John	[redacted]
LG	Approved	13-05-19	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41210
		Borehole/Trialpit No.	BH1A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty stiff CLAY	Depth Top (m)	8.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Swell test settled at 60kpa	Sample Type	U

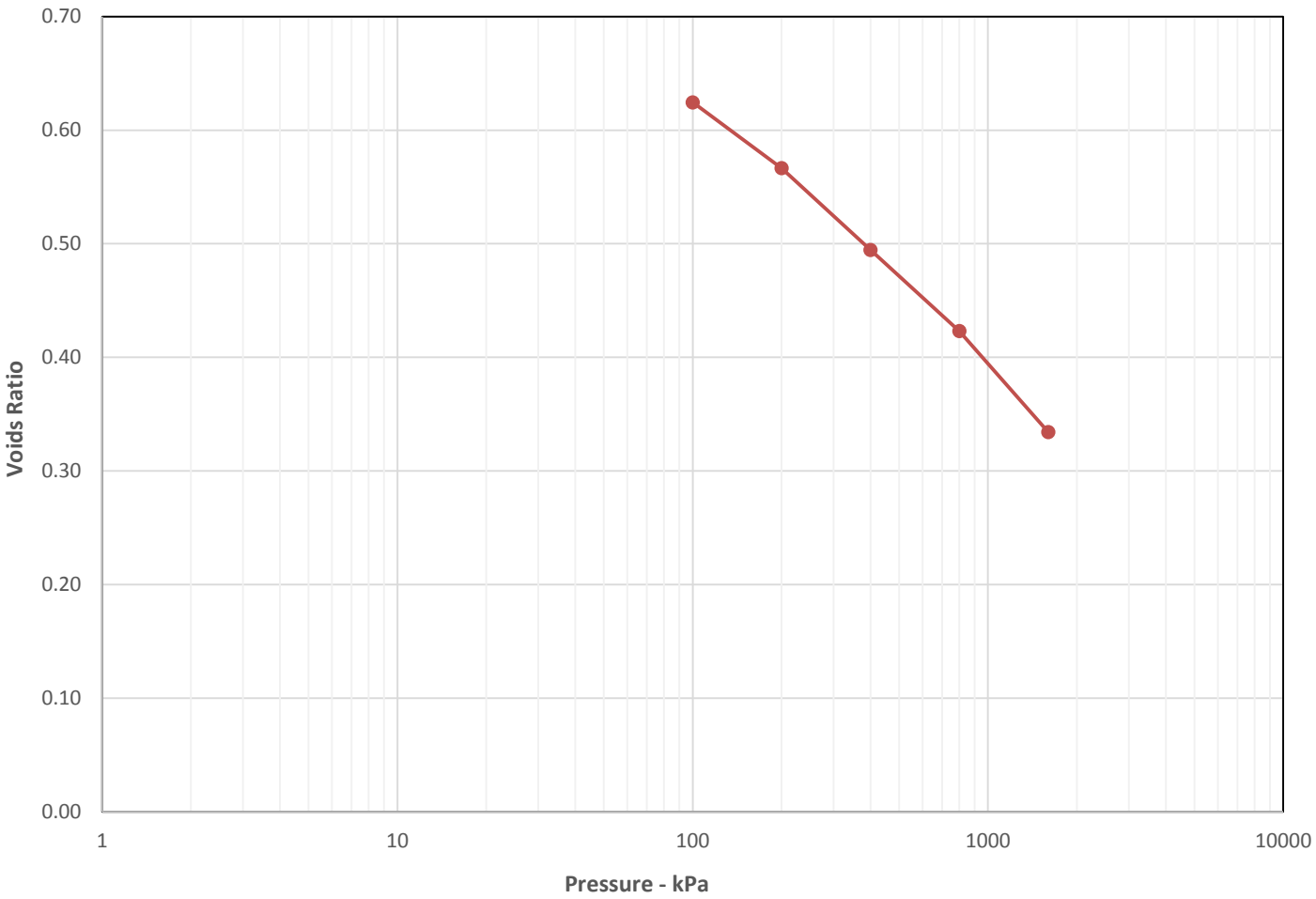


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	22	0	-	80	0.11	5.7		-			
Bulk Density (Mg/m3)	1.84	80	-	160	0.39	5.9		-			
Dry Density (Mg/m3)	1.51	160	-	320	0.24	5.1		-			
Voids Ratio	0.7600	320	-	640	0.120	2.5		-			
Degree of saturation	77.9	640	-	1280	0.081	1.6		-			
Height (mm)	15.62		-					-			
Diameter (mm)	75		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	29/10/2018	Richard John	[redacted]
LG	Approved	30/10/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41210
		Borehole/Trialpit No.	BH2
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty stiff CLAY	Depth Top (m)	8.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Swell test settled at 50kpa	Sample Type	U

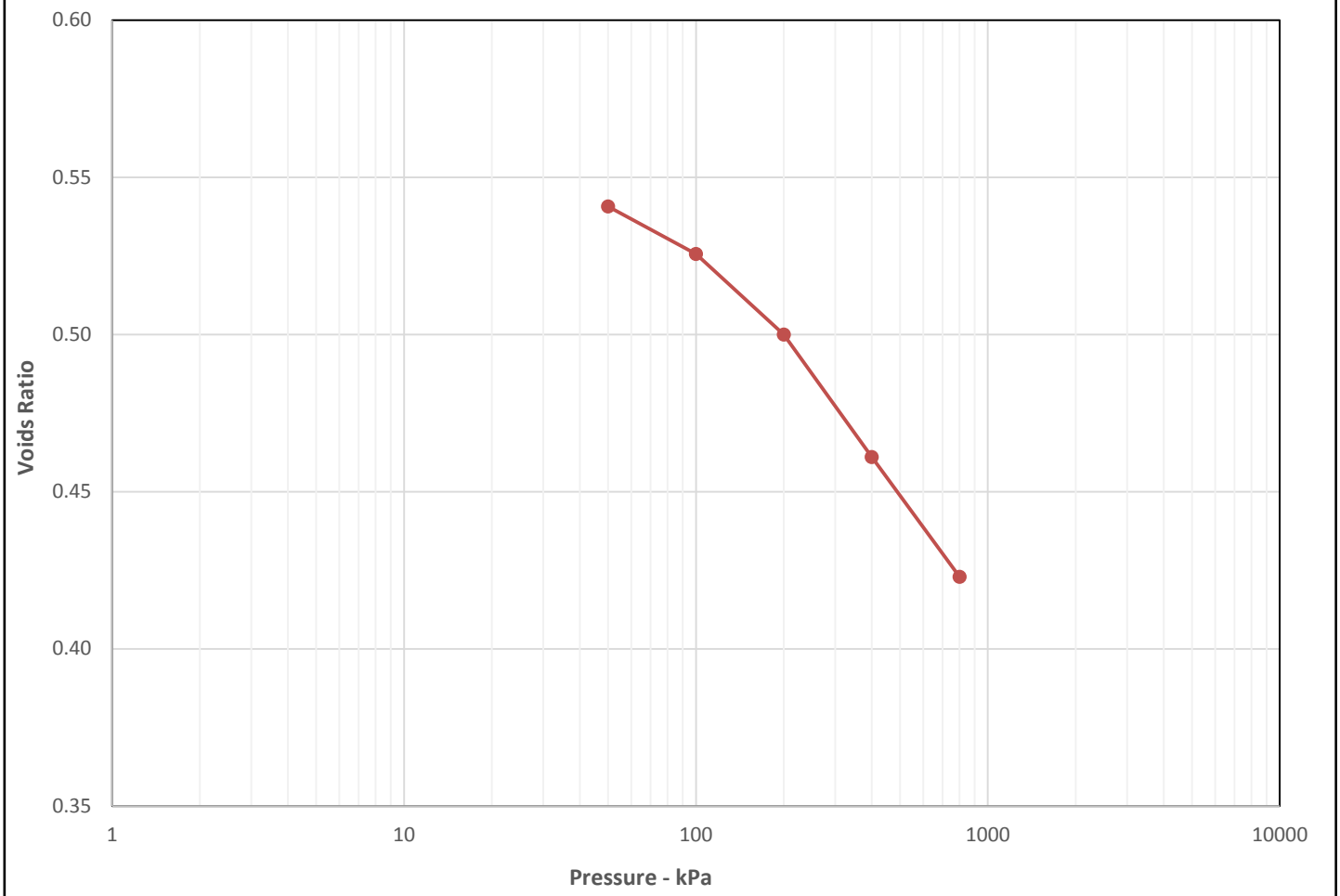


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	19	0	-	100	0.2	5.2		-			
Bulk Density (Mg/m3)	1.90	100	-	200	0.36	4.4		-			
Dry Density (Mg/m3)	1.60	200	-	400	0.23	3.1		-			
Voids Ratio	0.6574	400	-	800	0.120	3.2		-			
Degree of saturation	76.1	800	-	1600	0.078	2.1		-			
Height (mm)	15.3		-					-			
Diameter (mm)	75.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	29/10/2018	Richard John	[redacted]
LG	Approved	30/10/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41731
		Borehole/Trialpit No.	BH15
Site Name	A47 Wansford	Sample No.	
Soil Description	Dark grey silty stiff CLAY	Depth Top (m)	10.50
		Depth Base (m)	11.20
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

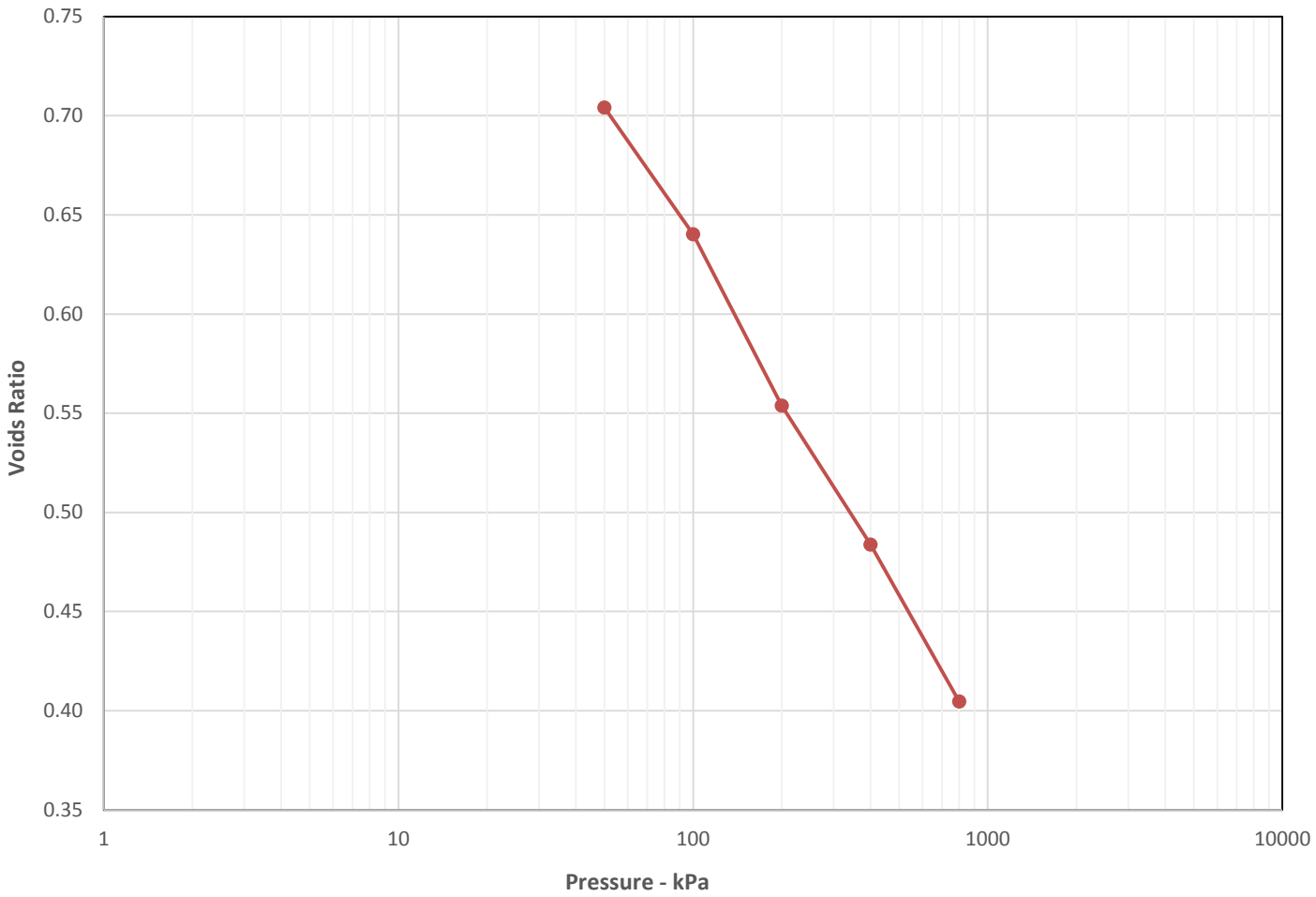


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	18	0	-	50	0.16	17		-			
Bulk Density (Mg/m3)	2.01	50	-	100	0.2	17		-			
Dry Density (Mg/m3)	1.71	100	-	200	0.17	7.3		-			
Voids Ratio	0.5530	200	-	400	0.130	14		-			
Degree of saturation	85.4	400	-	800	0.065	9.5		-			
Height (mm)	19.93		-					-			
Diameter (mm)	50.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05/12/2018	Richard John	[redacted]
LG	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41731
		Borehole/Trialpit No.	BH15
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey fine-medium gravelly slightly sandy silty stiff CLAY	Depth Top (m)	20.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

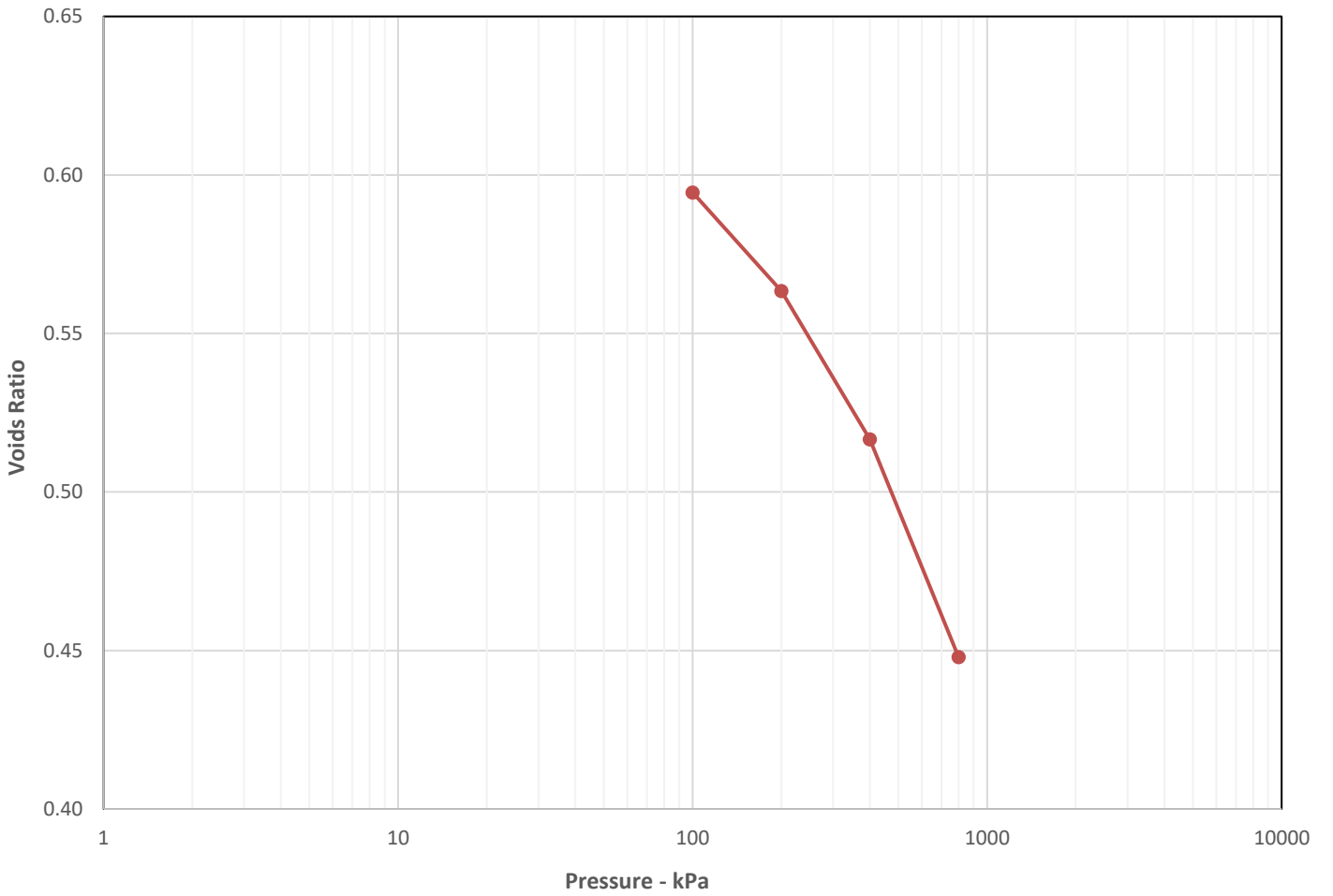


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	31	0	-	50	0.38	23		-			
Bulk Density (Mg/m3)	2.00	50	-	100	0.75	6.4		-			
Dry Density (Mg/m3)	1.53	100	-	200	0.53	5.9		-			
Voids Ratio	0.7370	200	-	400	0.230	4.8		-			
Degree of saturation	111.6	400	-	800	0.13	4.8		-			
Height (mm)	19.96		-					-			
Diameter (mm)	49.92		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	05/12/2018	Richard John	[redacted]
LG	Approved	06/12/2018	Ben Sharp	[redacted]

UKAS TESTING 3788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	42204
		Borehole/Trialpit No.	BH24A
Site Name	A47 Wansford	Sample No.	
Soil Description	Dark grey silty stiff CLAY	Depth Top (m)	11.70
		Depth Base (m)	12.00
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

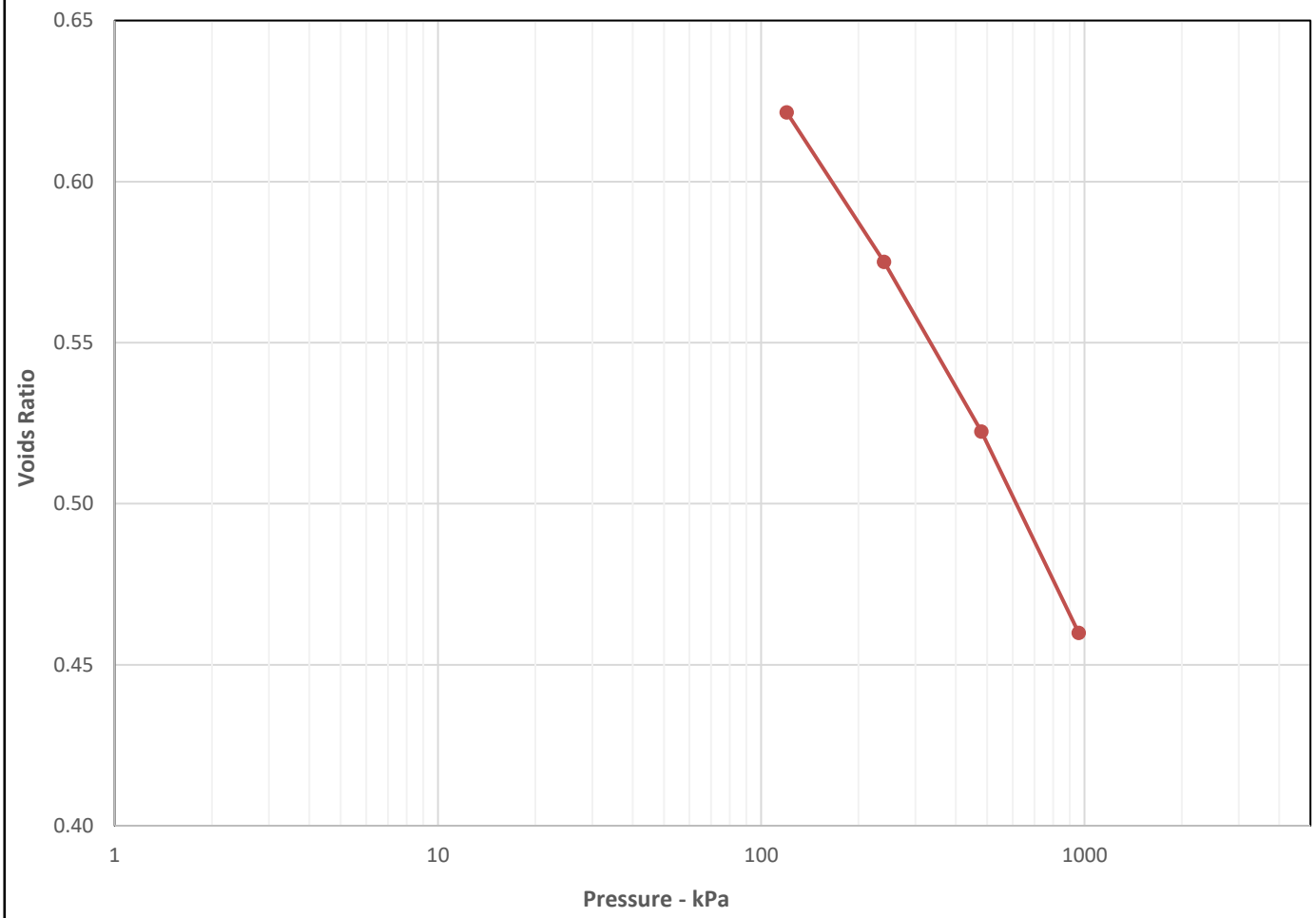


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	21	0	-	50	Swell	Stage		-			
Bulk Density (Mg/m3)	2.01	50	-	100	0.19	11		-			
Dry Density (Mg/m3)	1.67	100	-	200	0.2	8.5		-			
Voids Ratio	0.5908	200	-	400	0.150	9.8		-			
Degree of saturation	93.5	400	-	800	0.11	0.18		-			
Height (mm)	18.84		-					-			
Diameter (mm)	74.85		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	12-05-19	Richard John	[redacted]
LG	Approved	13-05-19	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	42000
		Borehole/Trialpit No.	BH26
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty stiff CLAY	Depth Top (m)	12.20
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

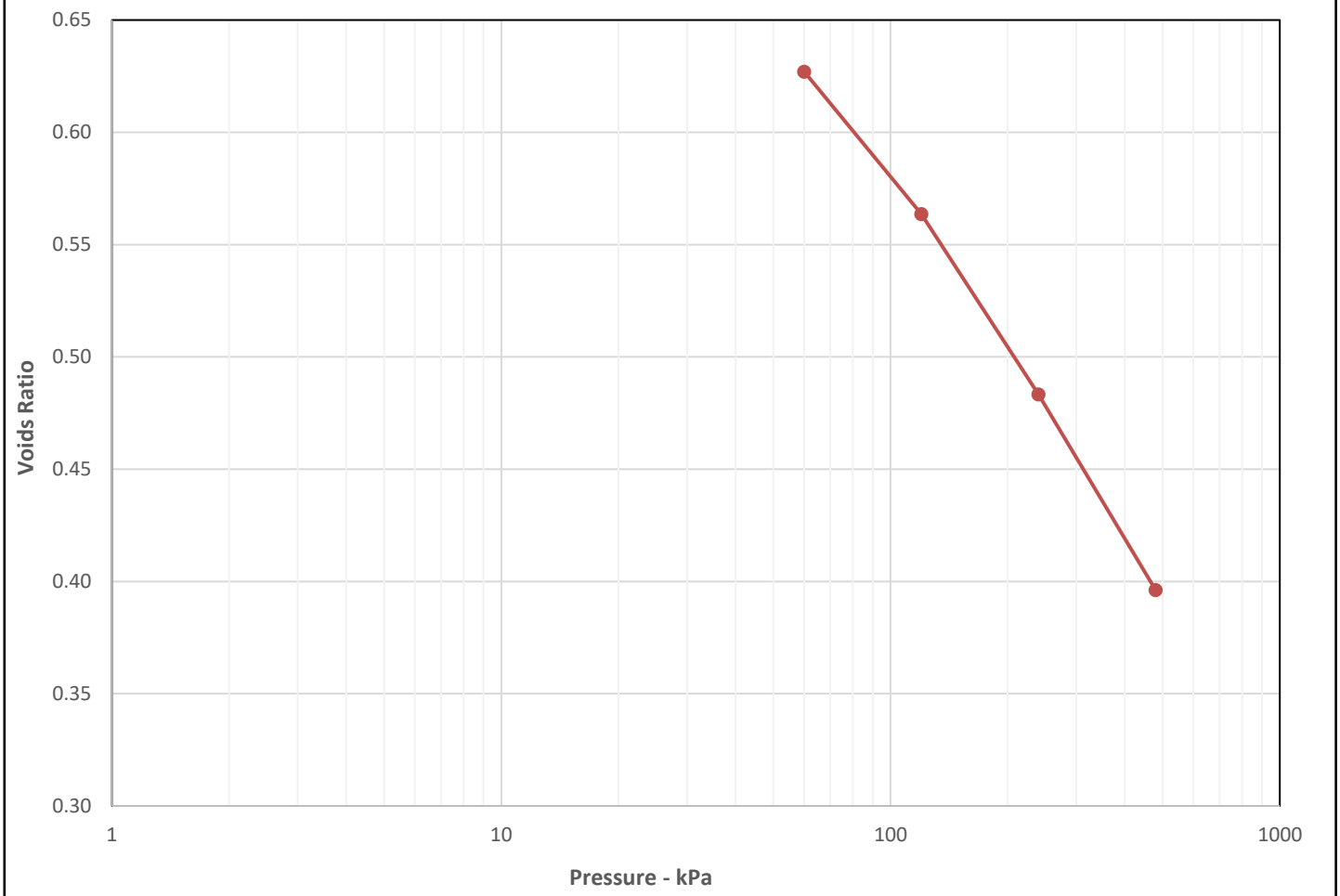


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	23	0	-	60	Swell	Stage		-			
Bulk Density (Mg/m3)	1.97	60	-	120	0.32	8.5		-			
Dry Density (Mg/m3)	1.61	120	-	240	0.24	9.5		-			
Voids Ratio	0.6473	240	-	480	0.140	8.6		-			
Degree of saturation	93.0	480	-	960	0.086	3.8		-			
Height (mm)	19.09		-					-			
Diameter (mm)	50		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	12-05-19	Richard John	[redacted]
LG	Approved	13-05-19	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	42000
		Borehole/Trialpit No.	BH27
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty stiff CLAY	Depth Top (m)	6.00
		Depth Base (m)	6.45
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

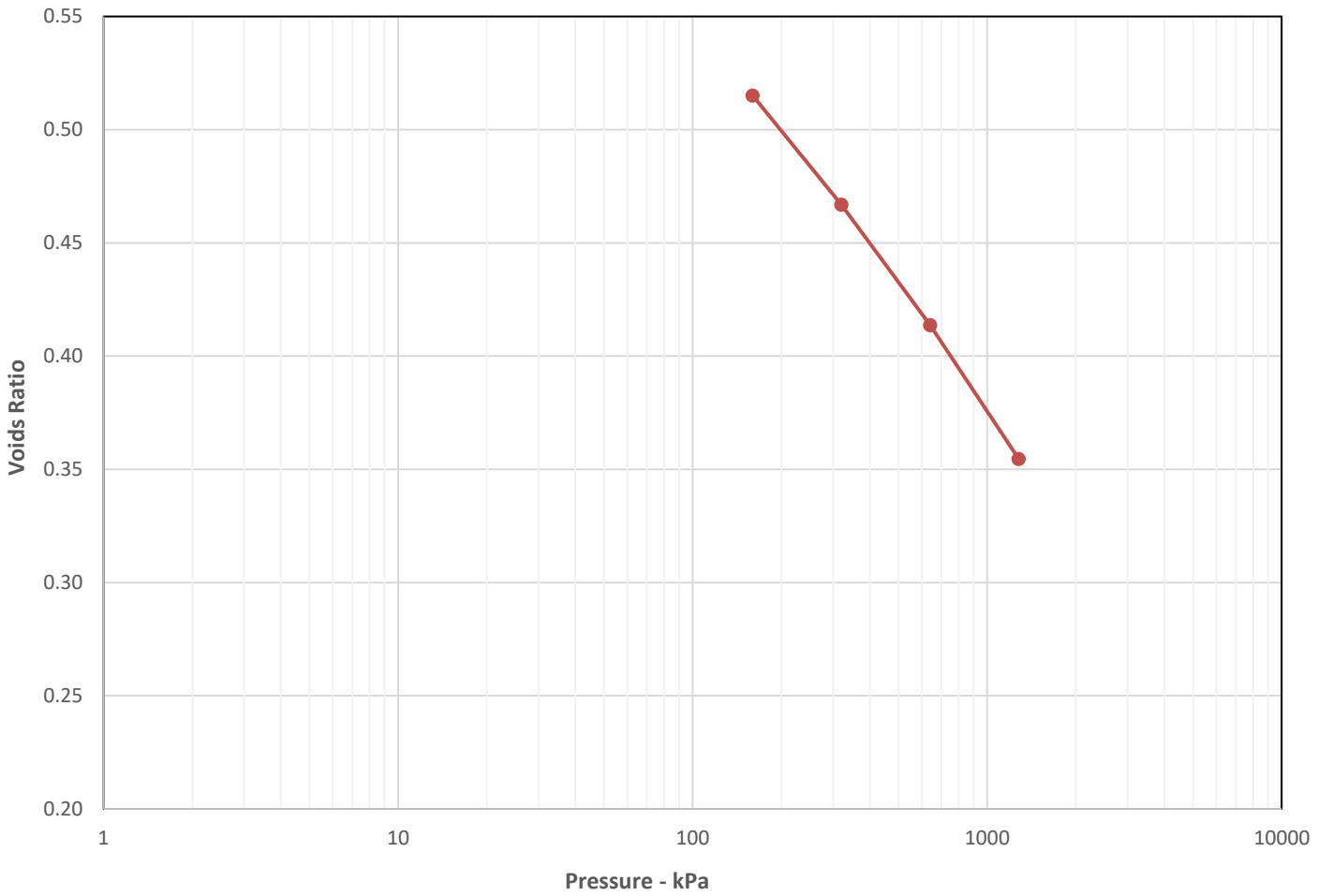


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	20	0	-	30	Swell	Stage		-			
Bulk Density (Mg/m3)	1.94	30	-	60	0.45	12		-			
Dry Density (Mg/m3)	1.61	60	-	120	0.65	4.6		-			
Voids Ratio	0.6420	120	-	240	0.430	2		-			
Degree of saturation	84.4	240	-	480	0.24	5		-			
Height (mm)	19.92		-					-			
Diameter (mm)	49.99		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	12-05-19	Richard John	[redacted]
LG	Approved	13-05-19	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41210
		Borehole/Trialpit No.	BH29
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty stiff CLAY	Depth Top (m)	8.40
		Depth Base (m)	8.75
Lab Temperature	20°c	Sample Location	Top
Remarks	Cv Calculated Using T90	Sample Type	U

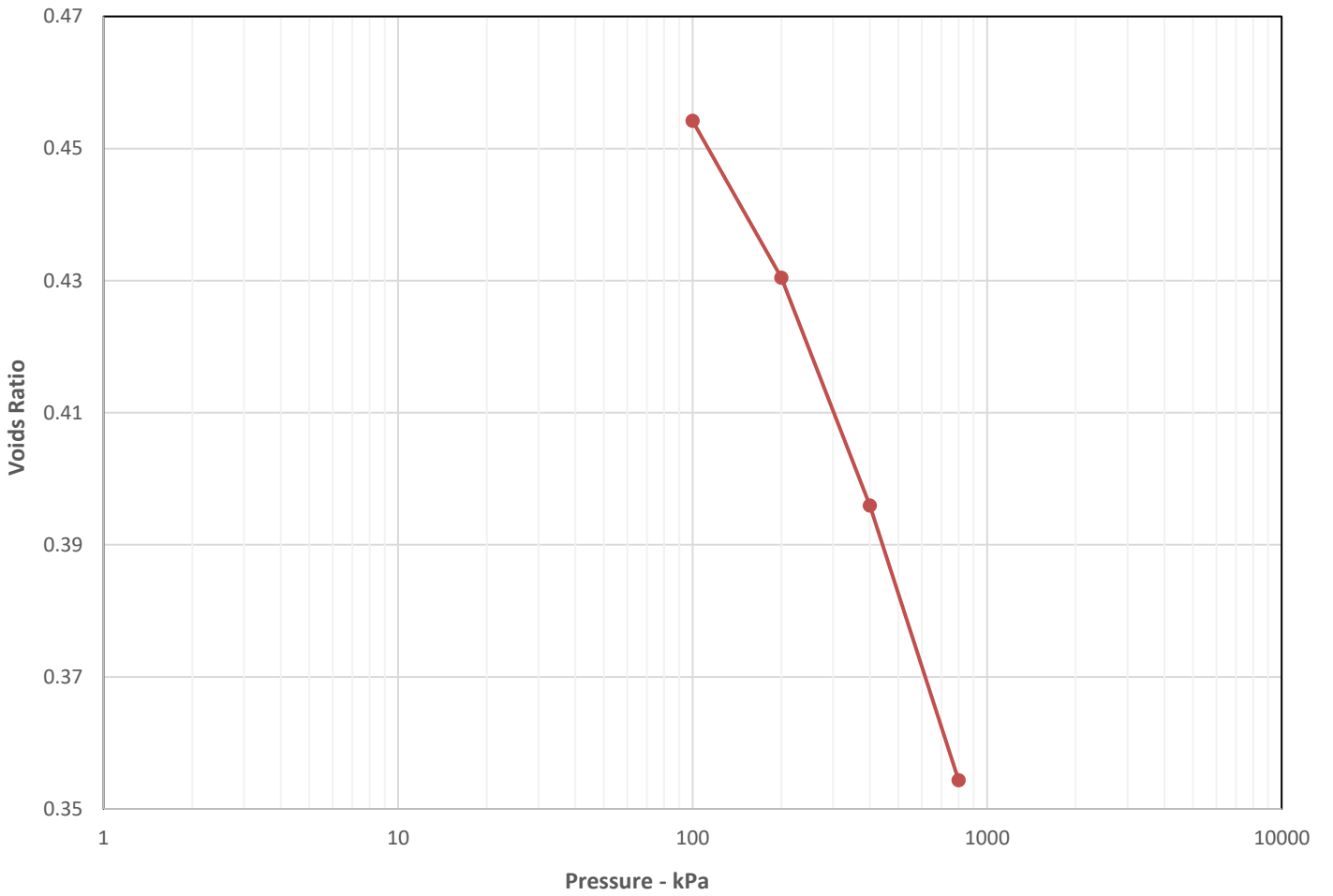


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	18	0	-	80	Swell	Stage		-			
Bulk Density (Mg/m3)	2.07	80	-	160	0.24	12		-			
Dry Density (Mg/m3)	1.74	160	-	320	0.2	11		-			
Voids Ratio	0.5189	320	-	640	0.110	6.5		-			
Degree of saturation	94.2	640	-	1280	0.065	3		-			
Height (mm)	19.93		-					-			
Diameter (mm)	50.01		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	12-05-19	Richard John	[redacted]
LG	Approved	13-05-19	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	41731
		Borehole/Trialpit No.	BH30
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey fine-coarse gravelly silty stiff CLAY	Depth Top (m)	10.00
		Depth Base (m)	10.45
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90	Sample Type	U

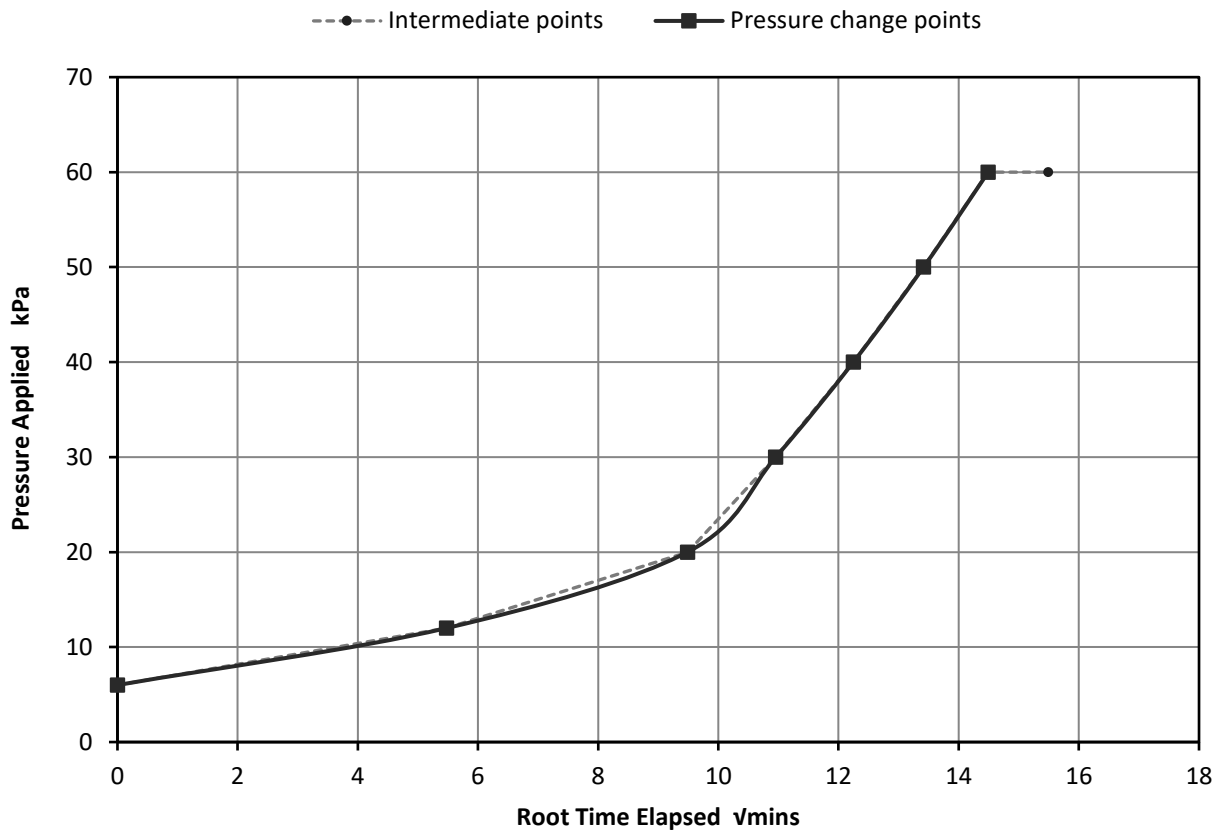


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	14	0	-	50	Swell	Stage		-			
Bulk Density (Mg/m3)	2.08	50	-	100	0.16	9.8		-			
Dry Density (Mg/m3)	1.82	100	-	200	0.16	7.9		-			
Voids Ratio	0.4578	200	-	400	0.120	7.6		-			
Degree of saturation	82.6	400	-	800	0.074	5.5		-			
Height (mm)	18.72		-					-			
Diameter (mm)	74.89		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	12-05-19	Richard John	[redacted]
LG	Approved	13-05-19	Ben Sharp	[redacted]

UKAS TESTING 2788

GSTL	Determination of Swelling and Collapse Characteristics **Measurement of Swelling Pressure**	Job Ref	41210
		Borehole/Pit No.	BH01A
Site Name	A47 Wansford	Sample No.	
Soil Description	Firm grey slightly sandy silty CLAY.	Depth	8.00
Test Method	BS1377:Part 5:1990, clause 4.3	Sample Type	UT
		Date started	23 October 2018



Preparation — Specimen undisturbed. Swelling pressure measured in accordance with BS clause 4.3

Specimen details

Diameter	75.00	mm	
Height	15.62	mm	
Bulk density	1.83	Mg/m^3	
Moisture Content	22.0	%	
Dry density	1.50	Mg/m^3	
Particle density	2.65	Mg/m^3	assumed
Voids ratio	0.766		
Saturation	76	%	

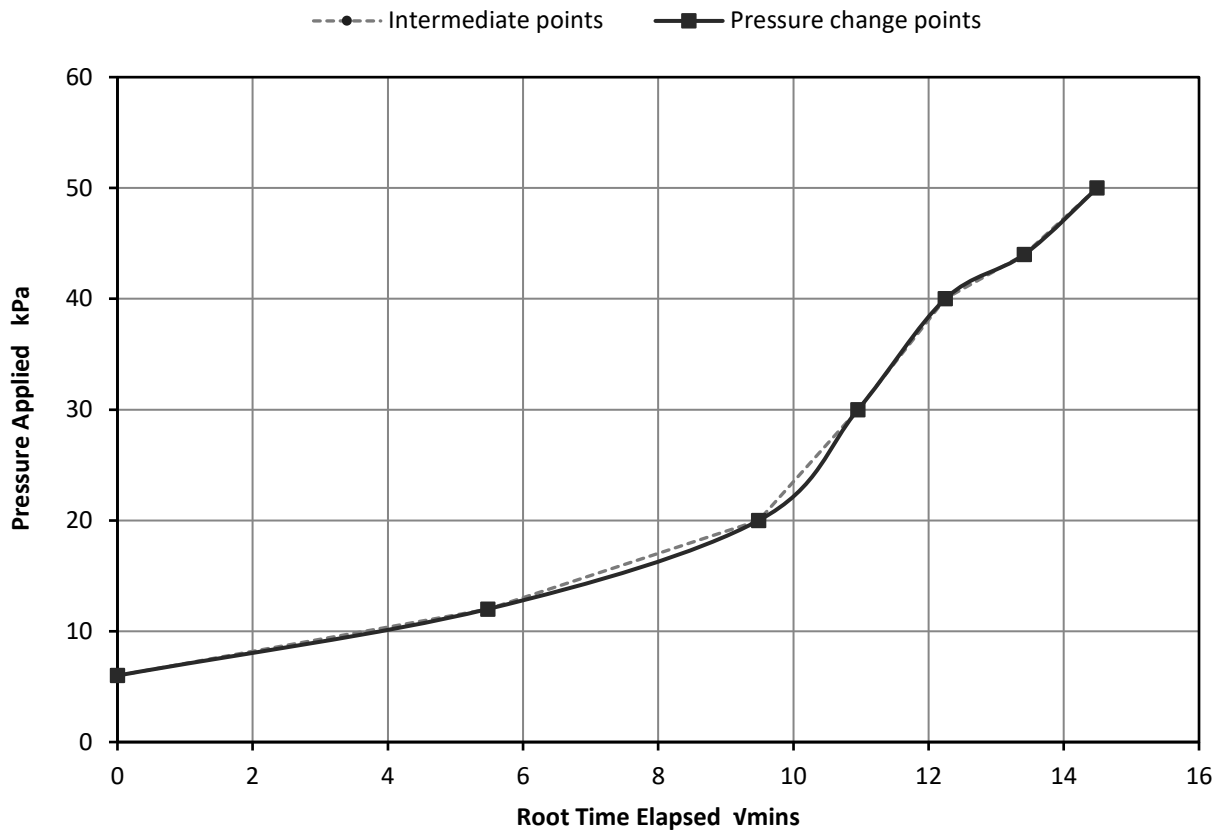
After test — Moisture Content: %

Measured Swelling Pressure **60** **kPa**

Remarks

Operators	Checked	05/11/2018	Paul Evans (Quality Manager)
Lee Gliddon	Approved	05/11/2018	Richard John (Laboratory Manager)

GSTL	Determination of Swelling and Collapse Characteristics **Measurement of Swelling Pressure**	Job Ref	41210
		Borehole/Pit No.	BH02
Site Name	A47 Wansford	Sample No.	
Soil Description	Firm grey slightly sandy silty CLAY.	Depth	8.50
Test Method	BS1377:Part 5:1990, clause 4.3	Sample Type	UT
		Date started	23 October 2018



Preparation — Specimen undisturbed. Swelling pressure measured in accordance with BS clause 4.3

Specimen details

Diameter	75.00	mm	
Height	15.30	mm	
Bulk density	1.89	Mg/m^3	
Moisture Content	19.0	%	
Dry density	1.59	Mg/m^3	
Particle density	2.65	Mg/m^3	assumed
Voids ratio	0.669		
Saturation	75	%	

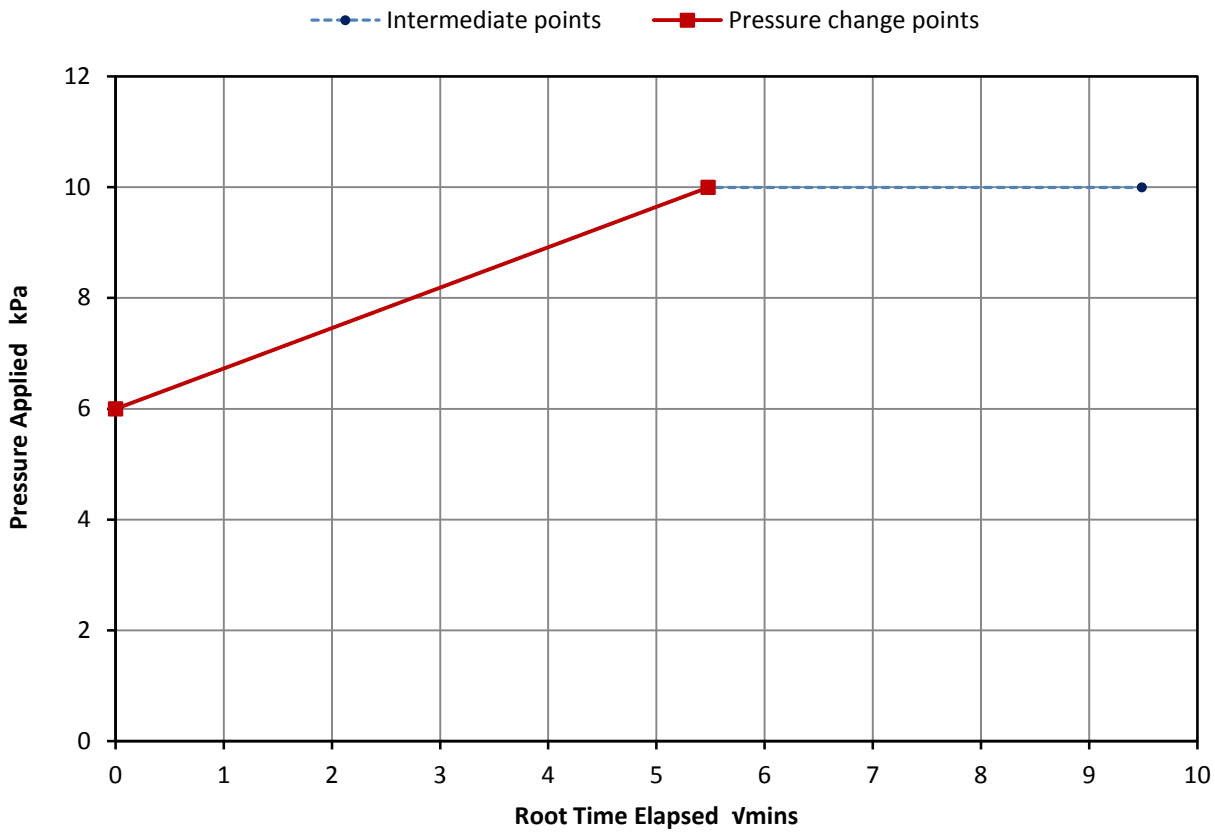
After test — Moisture Content — %

Measured Swelling Pressure **50** **kPa**

Remarks

Operators	Checked	05/11/2018	Paul Evans (Quality Manager)
Lee Gliddon	Approved	05/11/2018	Richard John (Laboratory Manager)

GSTL	Determination of Swelling and Collapse Characteristics **Measurement of Swelling Pressure**	Job Ref	41210
		Borehole/Pit No.	BH14
Site Name	A47 Wansford	Sample No.	
Soil Description	Firm grey slightly sandy silty CLAY.	Depth	12.20
Test Method	BS1377:Part 5:1990, clause 4.3	Sample Type	UT
		Date started	23 October 2018



Preparation

Specimen undisturbed. Swelling pressure measured in accordance with BS clause 4.3

Specimen details

Diameter	74.97	mm	
Height	15.51	mm	
Bulk density	1.78	Mg/m^3	
Moisture Content	30.9	%	
Dry density	1.36	Mg/m^3	
Particle density	2.65	Mg/m^3	assumed
Voids ratio	0.945		
Saturation	87	%	

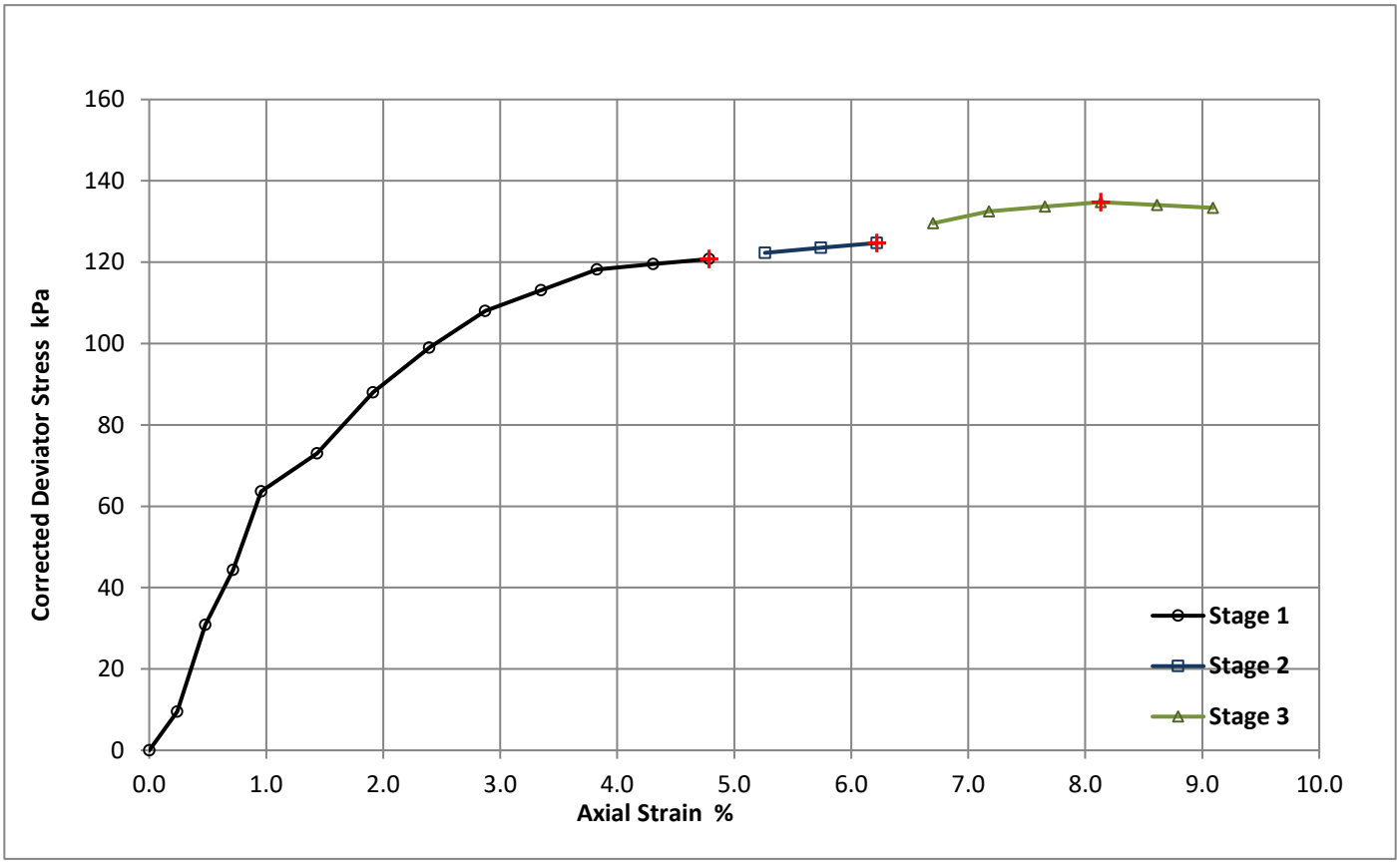
After test

Moisture Content		%
Measured Swelling Pressure	**10**	**kPa**

Remarks

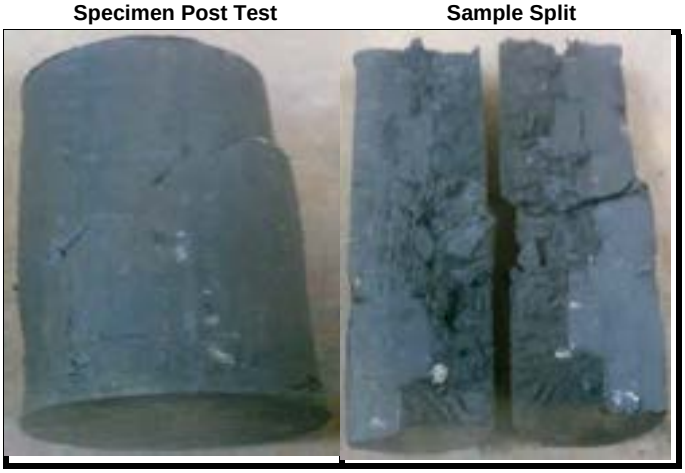
Operators	Checked	31/10/2018	Paul Evans (Quality Manager)
Lee Gliddon	Approved	31/10/2018	Richard John (Laboratory Manager)

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH01A
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	5.00
		Depth Base	5.45
		Sample Type	U



Moisture Content (%)	25		
Bulk Density (Mg/m^3)	1.99		
Dry Density (Mg/m^3)	1.60		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	104		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	121	125	135
Undrained Shear Strength (kPa)	60	62	67
Failure Strain (%)	4.8	6.2	8.1
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

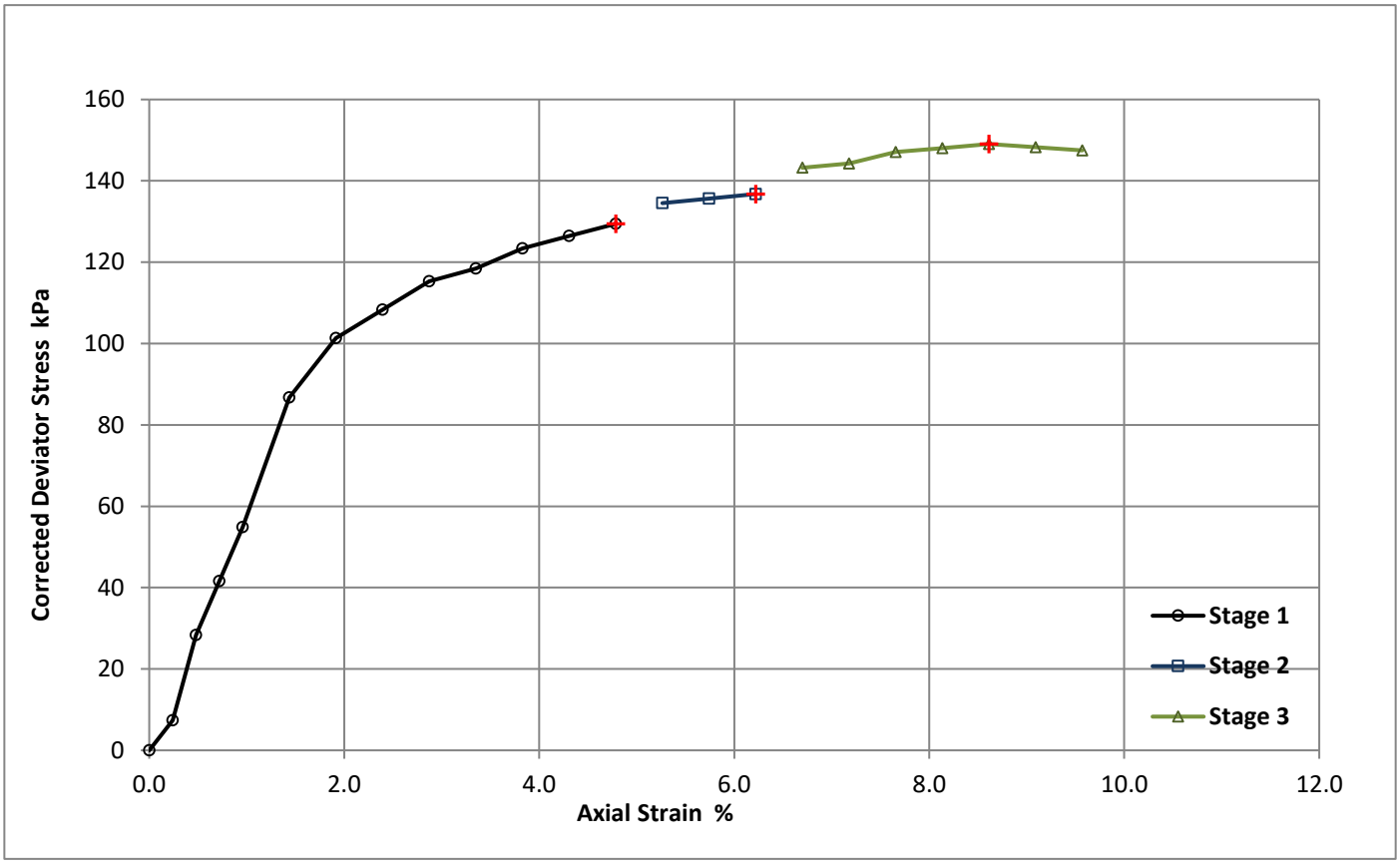
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

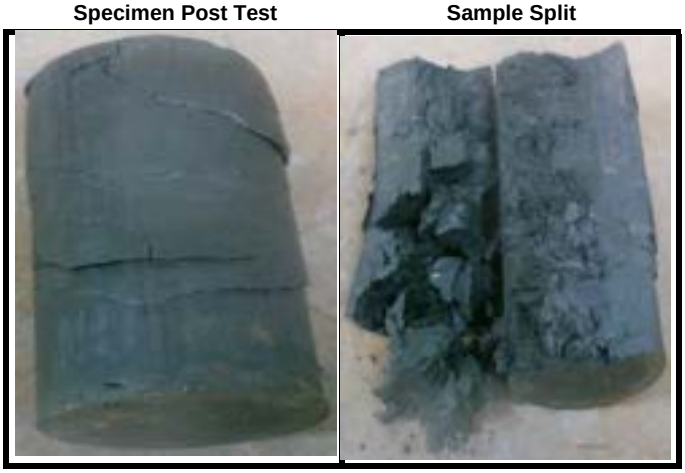
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH02
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	6.20
		Depth Base	6.70
		Sample Type	U



Moisture Content (%)	24		
Bulk Density (Mg/m^3)	1.97		
Dry Density (Mg/m^3)	1.59		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	105		
Cell Pressures (kPa)	40	80	160
Deviator Stress (kPa)	129	137	149
Undrained Shear Strength (kPa)	65	68	75
Failure Strain (%)	4.8	6.2	8.6
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

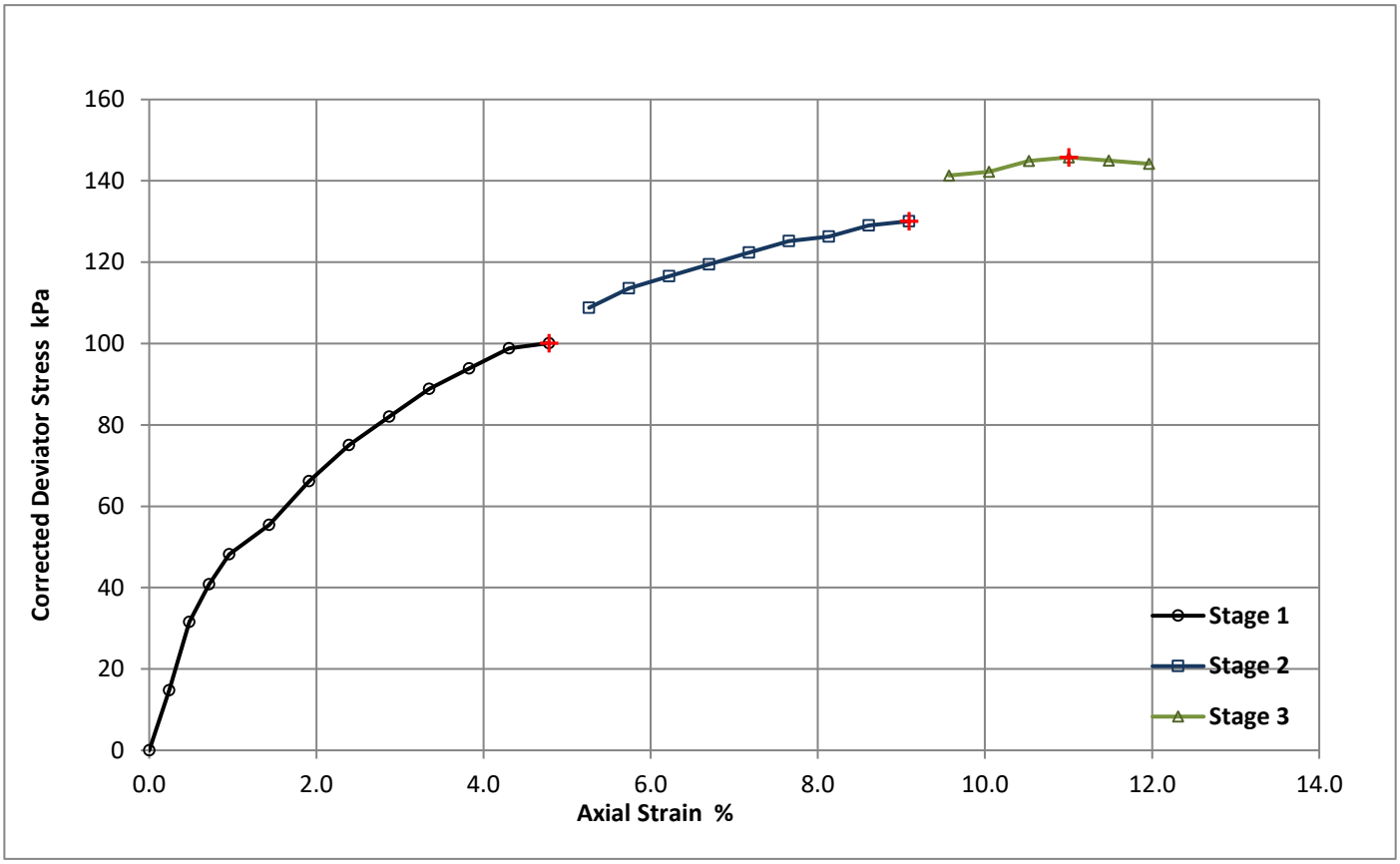
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

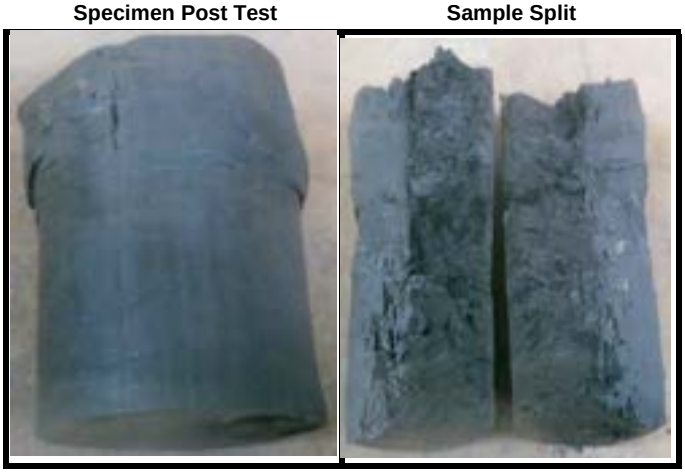
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH08
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	9.00
		Depth Base	9.37
		Sample Type	U



Moisture Content (%)	24		
Bulk Density (Mg/m^3)	1.94		
Dry Density (Mg/m^3)	1.57		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	106		
Cell Pressures (kPa)	90	180	360
Deviator Stress (kPa)	100	130	146
Undrained Shear Strength (kPa)	50	65	73
Failure Strain (%)	4.8	9.1	11
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

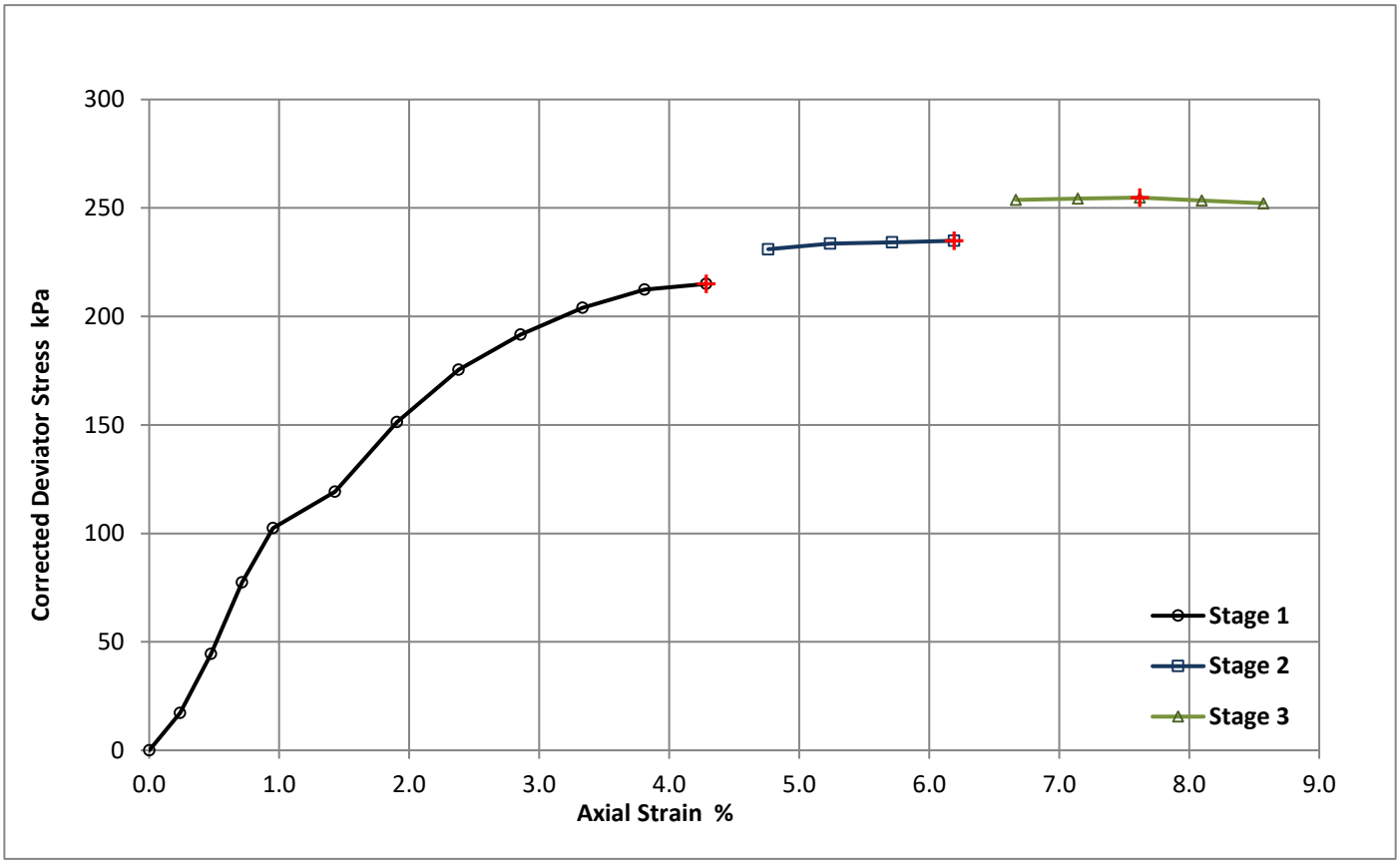
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

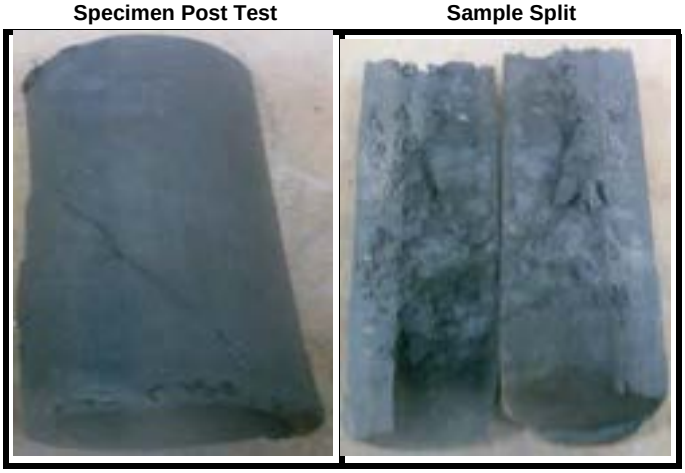
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH14
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	14.20
		Depth Base	14.60
		Sample Type	U



Moisture Content (%)	24		
Bulk Density (Mg/m^3)	2.05		
Dry Density (Mg/m^3)	1.65		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	104		
Cell Pressures (kPa)	140	280	560
Deviator Stress (kPa)	215	235	255
Undrained Shear Strength (kPa)	108	117	127
Failure Strain (%)	4.3	6.2	7.6
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

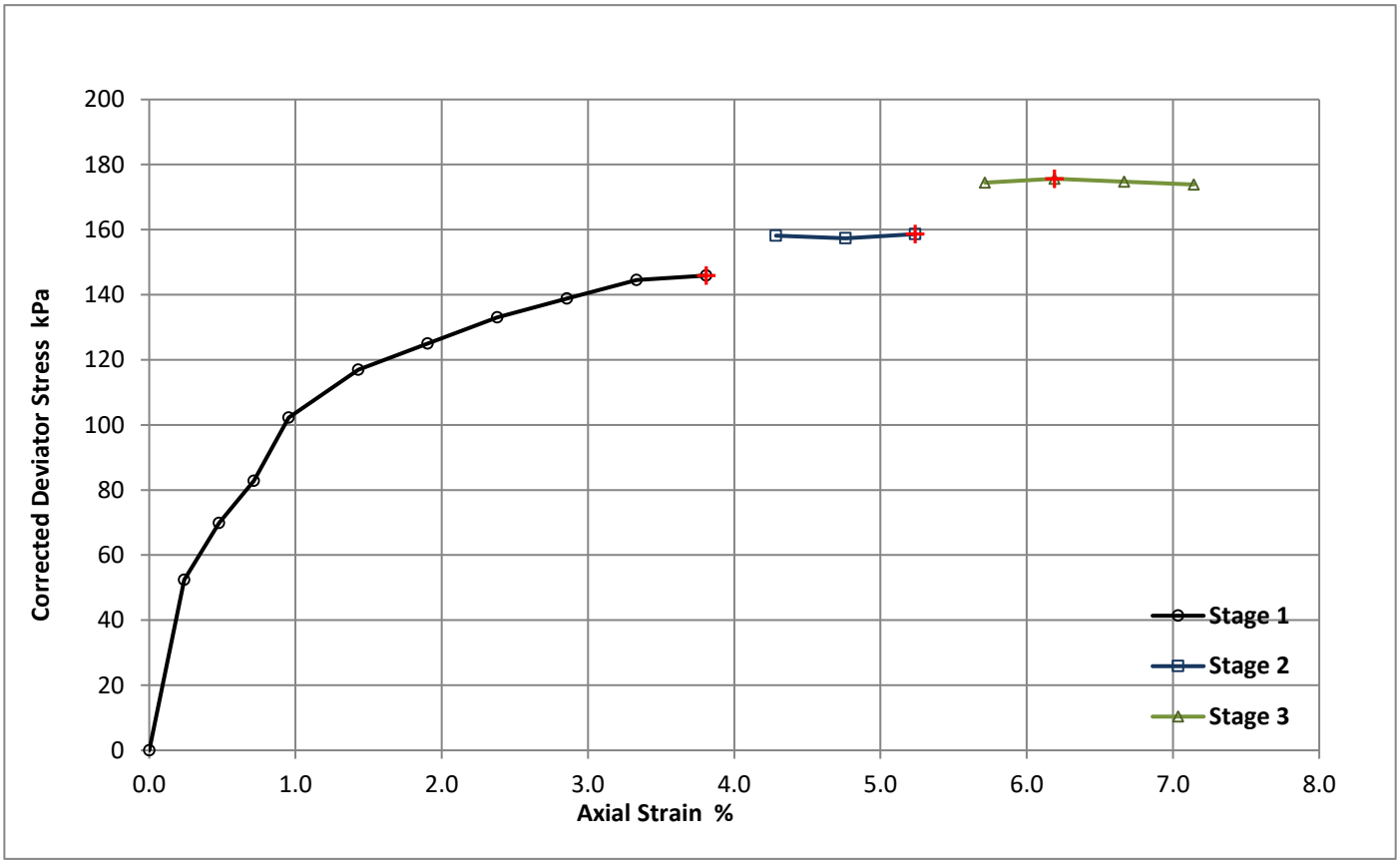
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

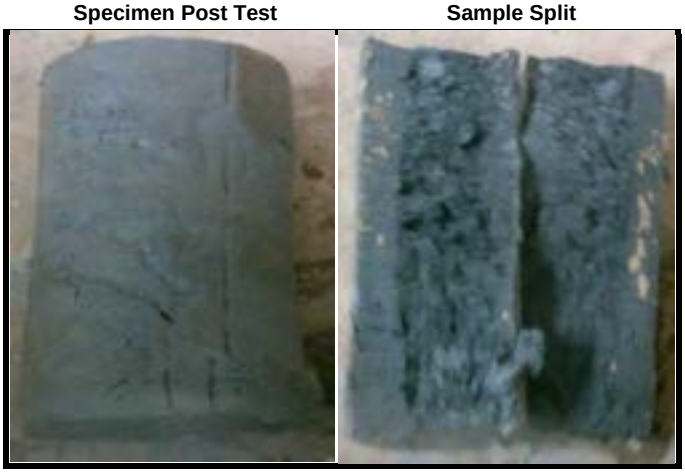
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH14A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	12.05
		Depth Base	12.55
		Sample Type	U



Moisture Content (%)	21		
Bulk Density (Mg/m^3)	1.95		
Dry Density (Mg/m^3)	1.61		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	98		
Cell Pressures (kPa)	120	240	480
Deviator Stress (kPa)	146	159	176
Undrained Shear Strength (kPa)	73	79	88
Failure Strain (%)	3.8	5.2	6.2
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

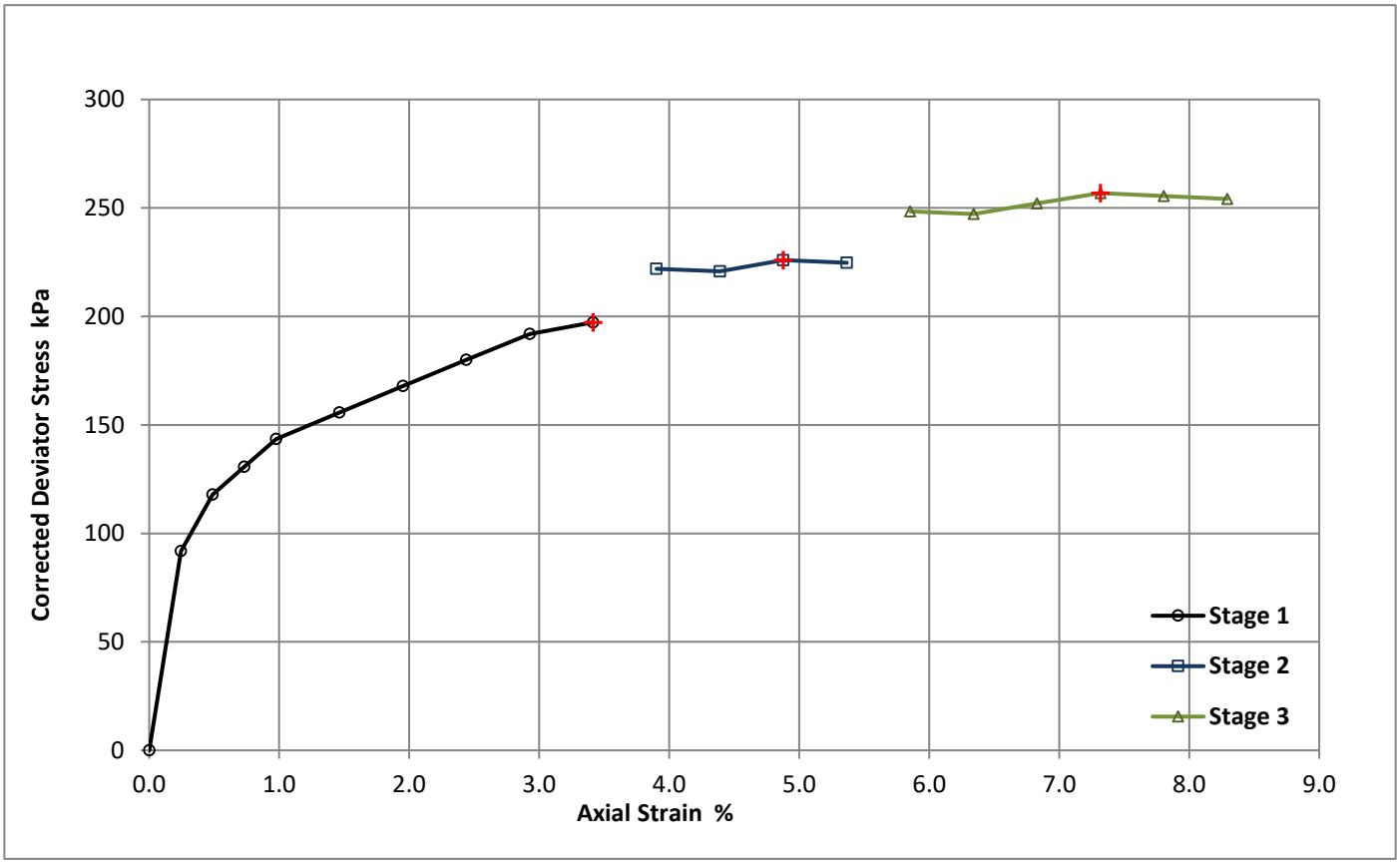
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

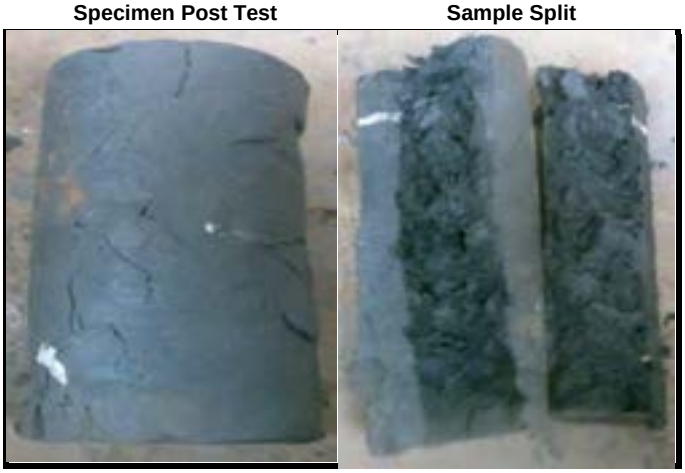
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH14A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	16.80
		Depth Base	17.20
		Sample Type	U



Moisture Content (%)	19		
Bulk Density (Mg/m^3)	2.06		
Dry Density (Mg/m^3)	1.73		
Specimen Length (mm)	205		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	170	340	680
Deviator Stress (kPa)	197	226	257
Undrained Shear Strength (kPa)	99	113	128
Failure Strain (%)	3.4	4.9	7.3
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

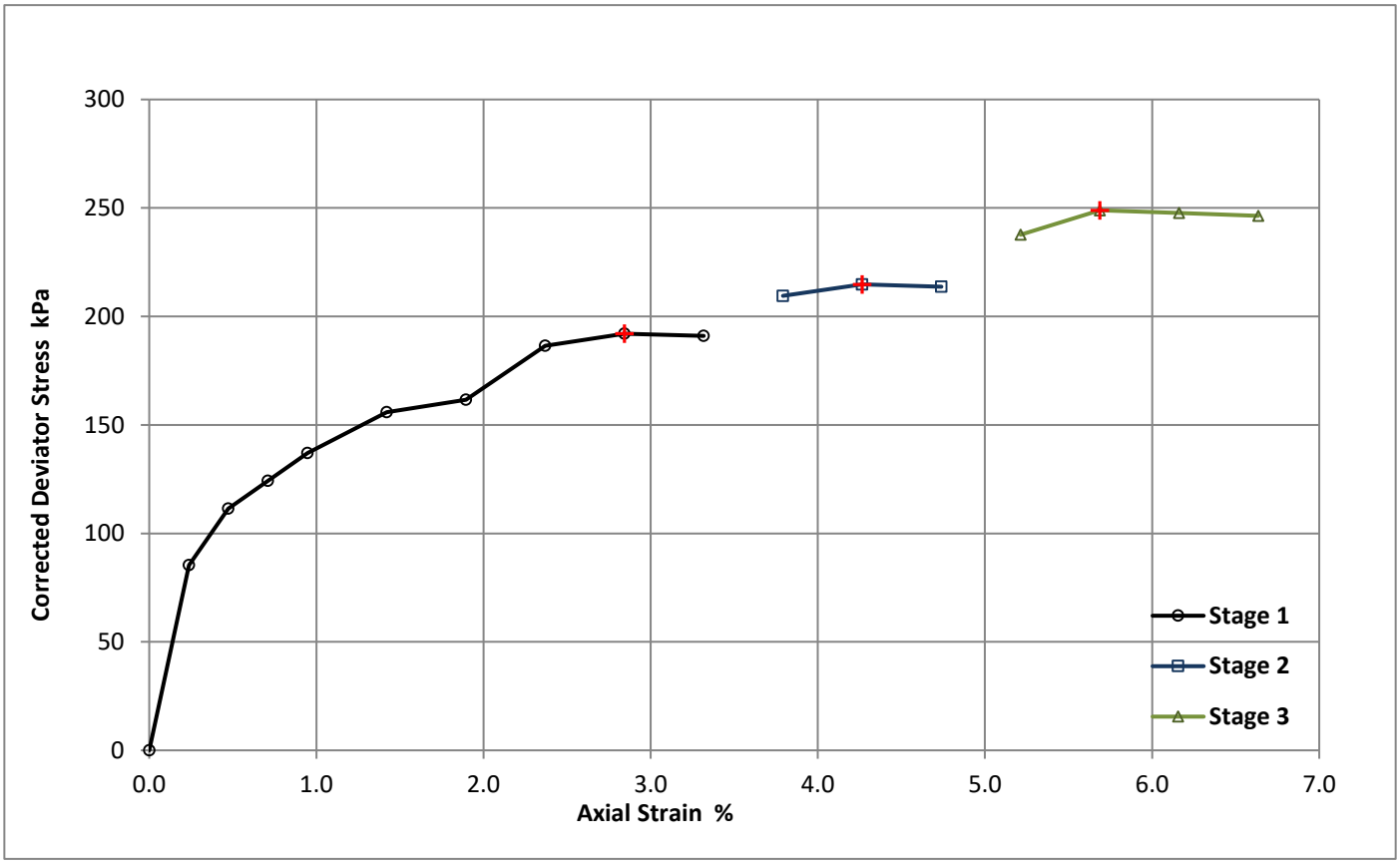
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

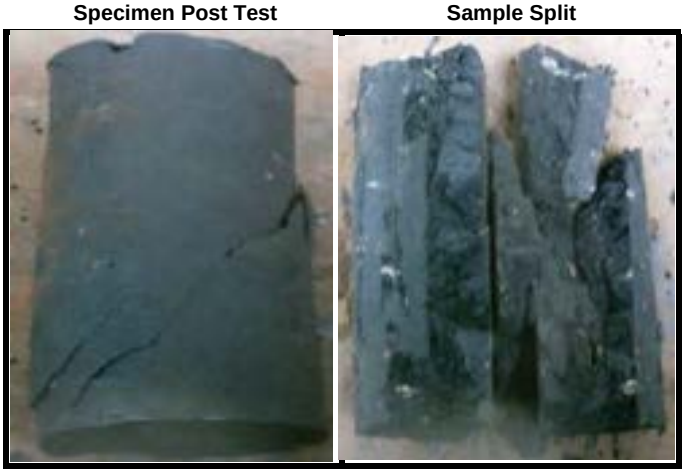
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH14A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	19.84
		Depth Base	20.24
		Sample Type	U



Moisture Content (%)	15		
Bulk Density (Mg/m^3)	2.09		
Dry Density (Mg/m^3)	1.81		
Specimen Length (mm)	211		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	200	400	800
Deviator Stress (kPa)	192	215	249
Undrained Shear Strength (kPa)	96	107	124
Failure Strain (%)	2.8	4.3	5.7
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

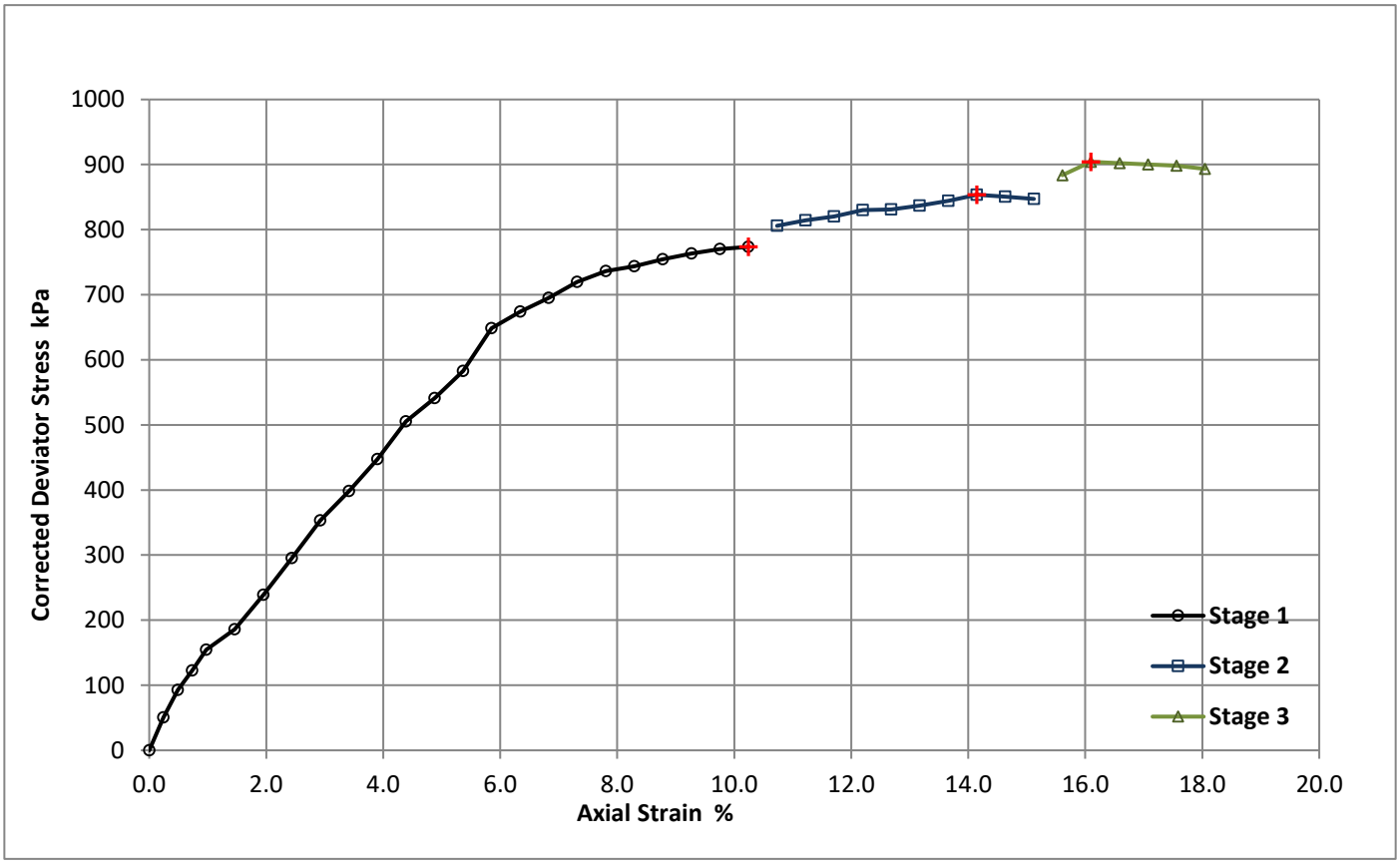
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

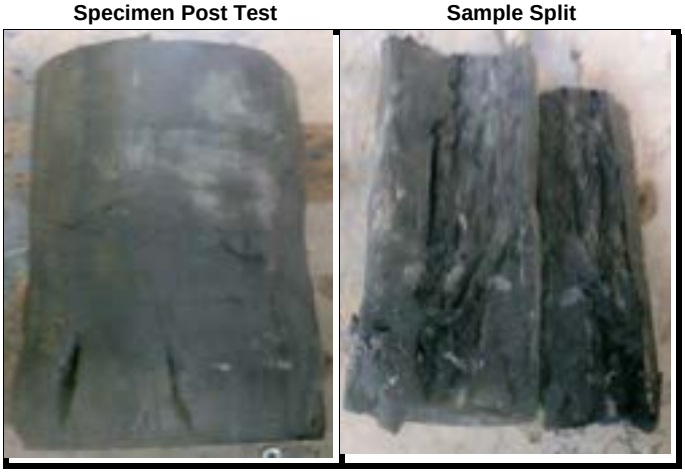
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH15
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY.	Depth Top	10.50
		Depth Base	11.20
		Sample Type	U



Moisture Content (%)	19		
Bulk Density (Mg/m^3)	2.36		
Dry Density (Mg/m^3)	1.99		
Specimen Length (mm)	205		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	100	200	400
Deviator Stress (kPa)	774	854	904
Undrained Shear Strength (kPa)	387	427	452
Failure Strain (%)	10	14	16
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

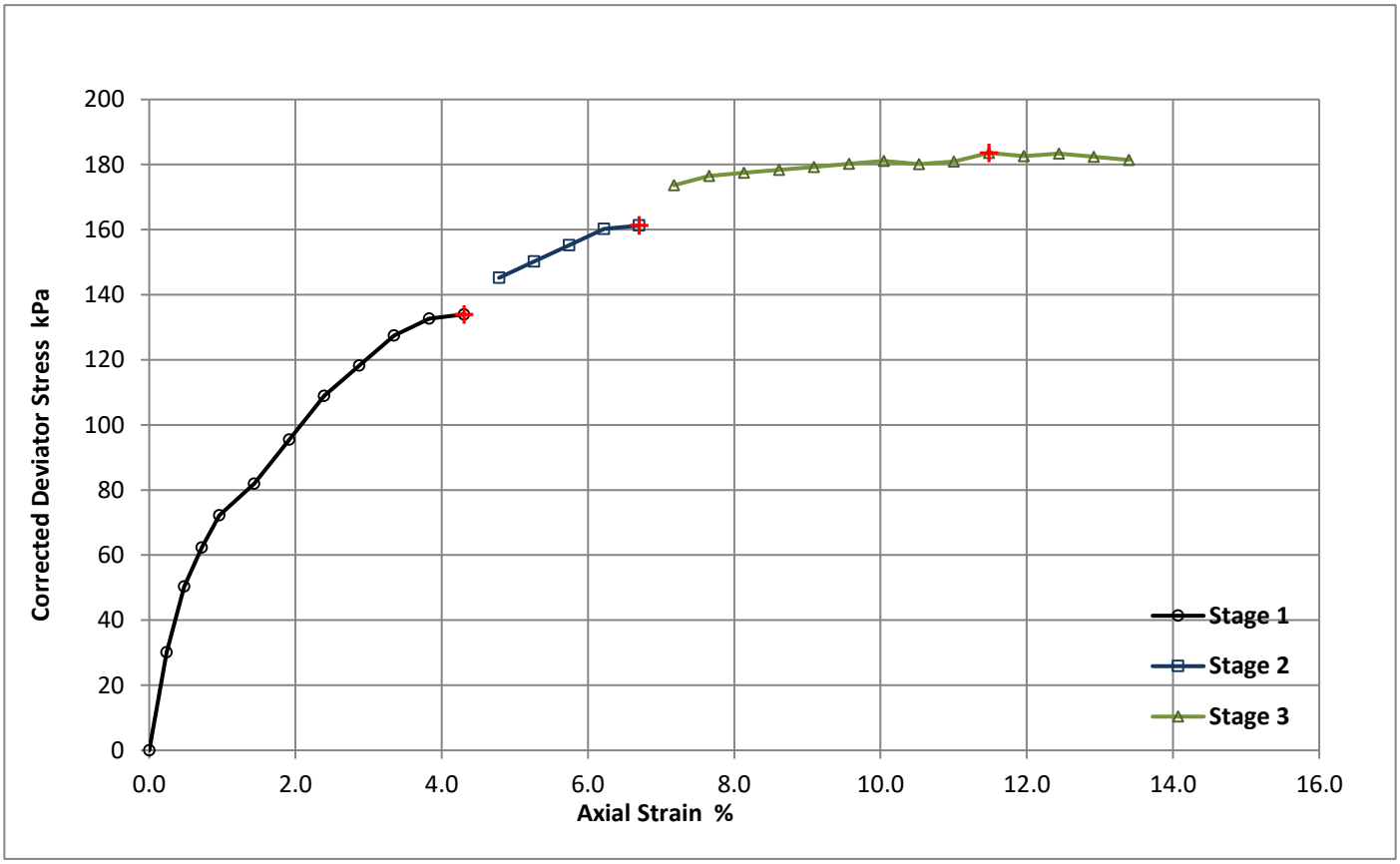
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

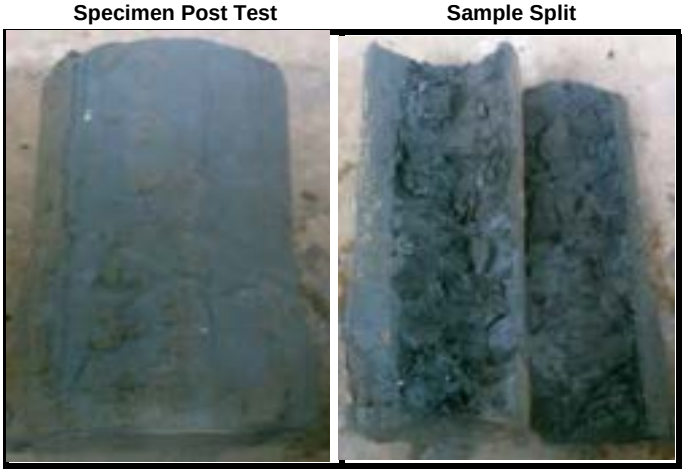
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH20
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	7.50
		Depth Base	7.95
		Sample Type	U



Moisture Content (%)	21		
Bulk Density (Mg/m^3)	2.09		
Dry Density (Mg/m^3)	1.72		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	75	150	300
Deviator Stress (kPa)	134	161	184
Undrained Shear Strength (kPa)	67	81	92
Failure Strain (%)	4.3	6.7	11
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

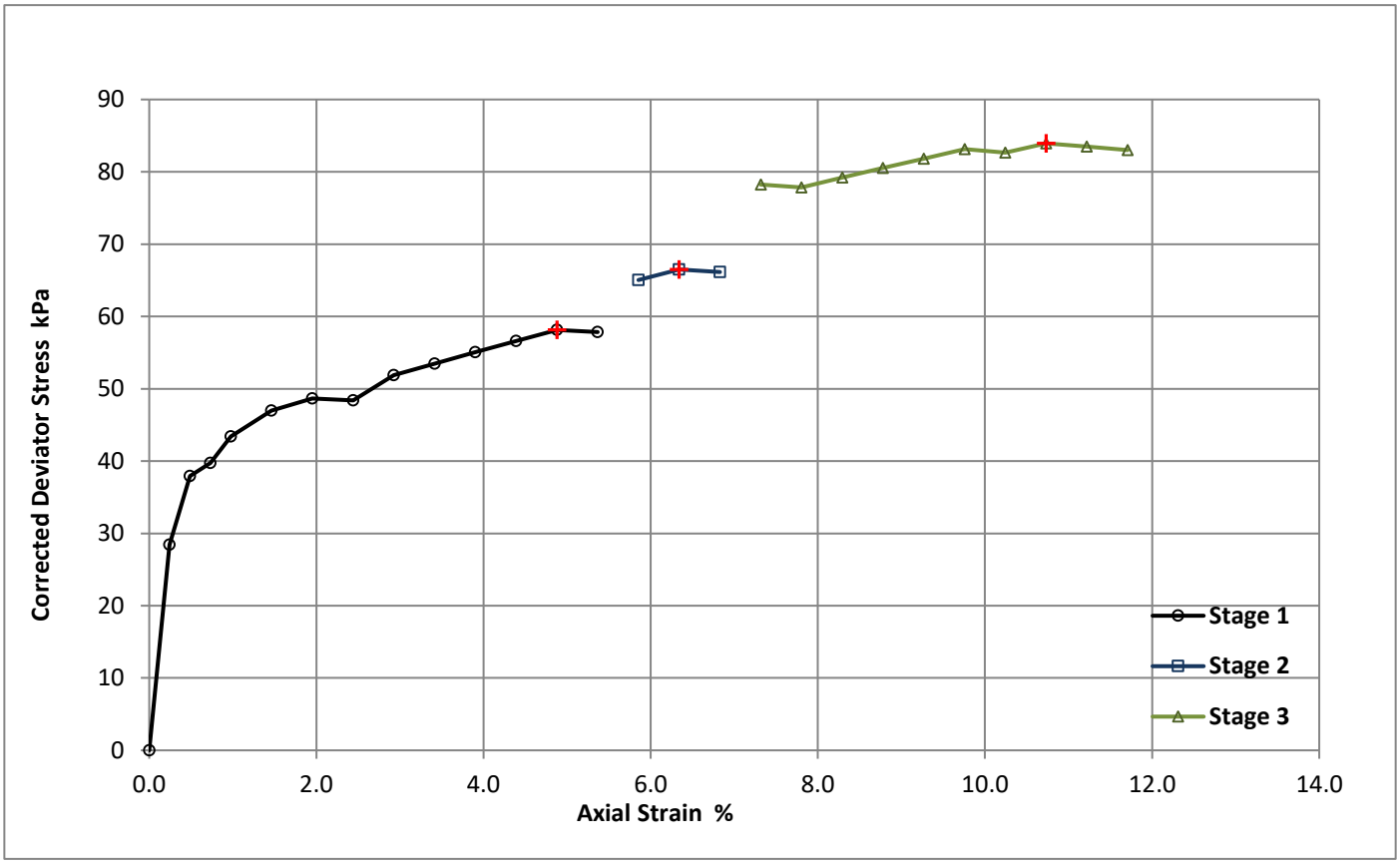
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

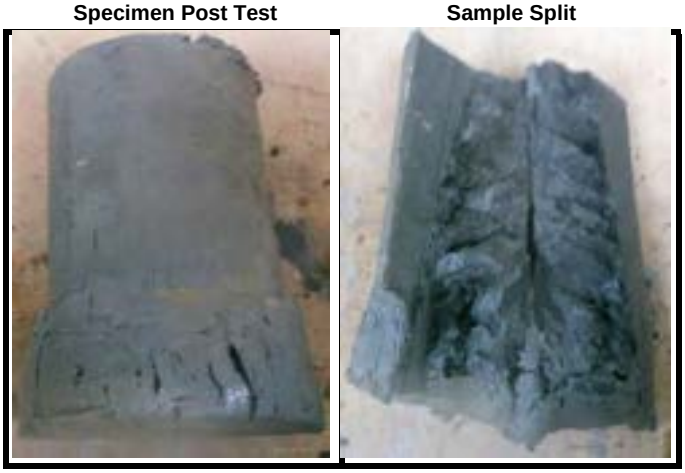
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH21A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	12.52
		Depth Base	12.82
		Sample Type	U



Moisture Content (%)	36		
Bulk Density (Mg/m^3)	1.98		
Dry Density (Mg/m^3)	1.46		
Specimen Length (mm)	205		
Specimen Diamteter (mm)	105		
Cell Pressures (kPa)	120	240	480
Deviator Stress (kPa)	58	66	84
Undrained Shear Strength (kPa)	29	33	42
Failure Strain (%)	4.9	6.3	11
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

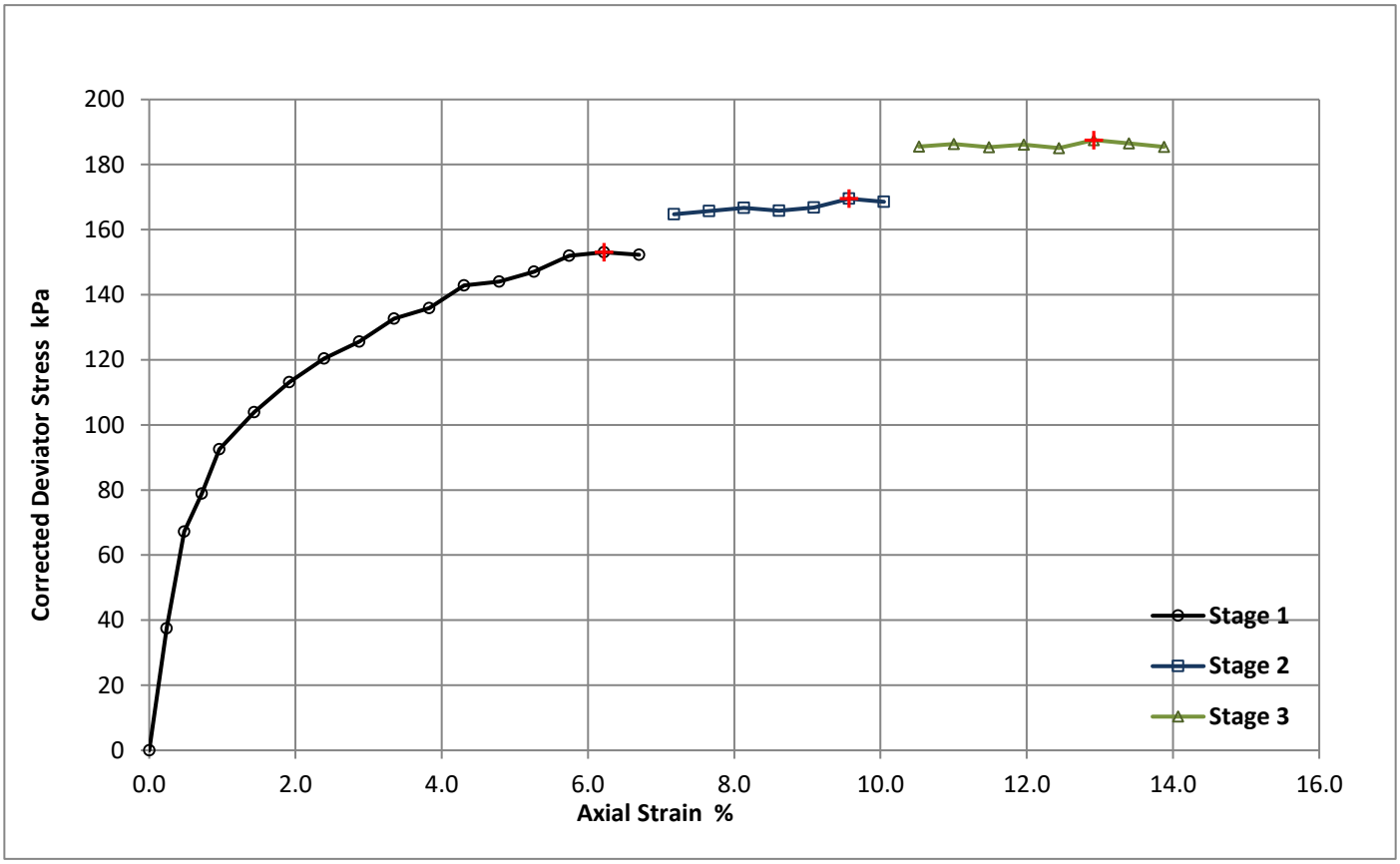
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

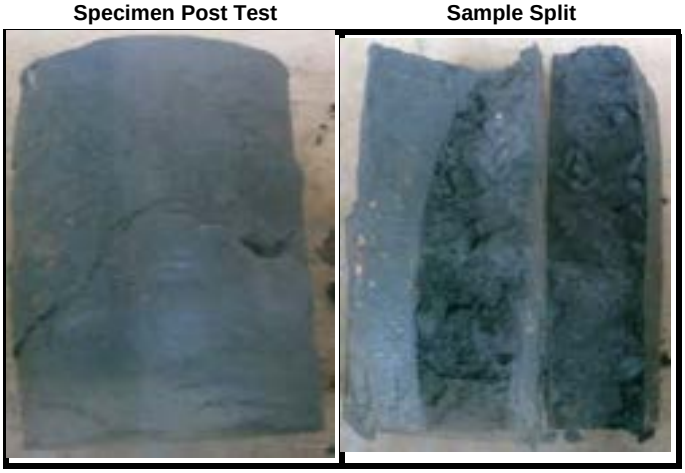
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH21A
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	13.80
		Depth Base	14.27
		Sample Type	U



Moisture Content (%)	19		
Bulk Density (Mg/m^3)	2.02		
Dry Density (Mg/m^3)	1.70		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	140	280	560
Deviator Stress (kPa)	153	170	188
Undrained Shear Strength (kPa)	77	85	94
Failure Strain (%)	6.2	9.6	13
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

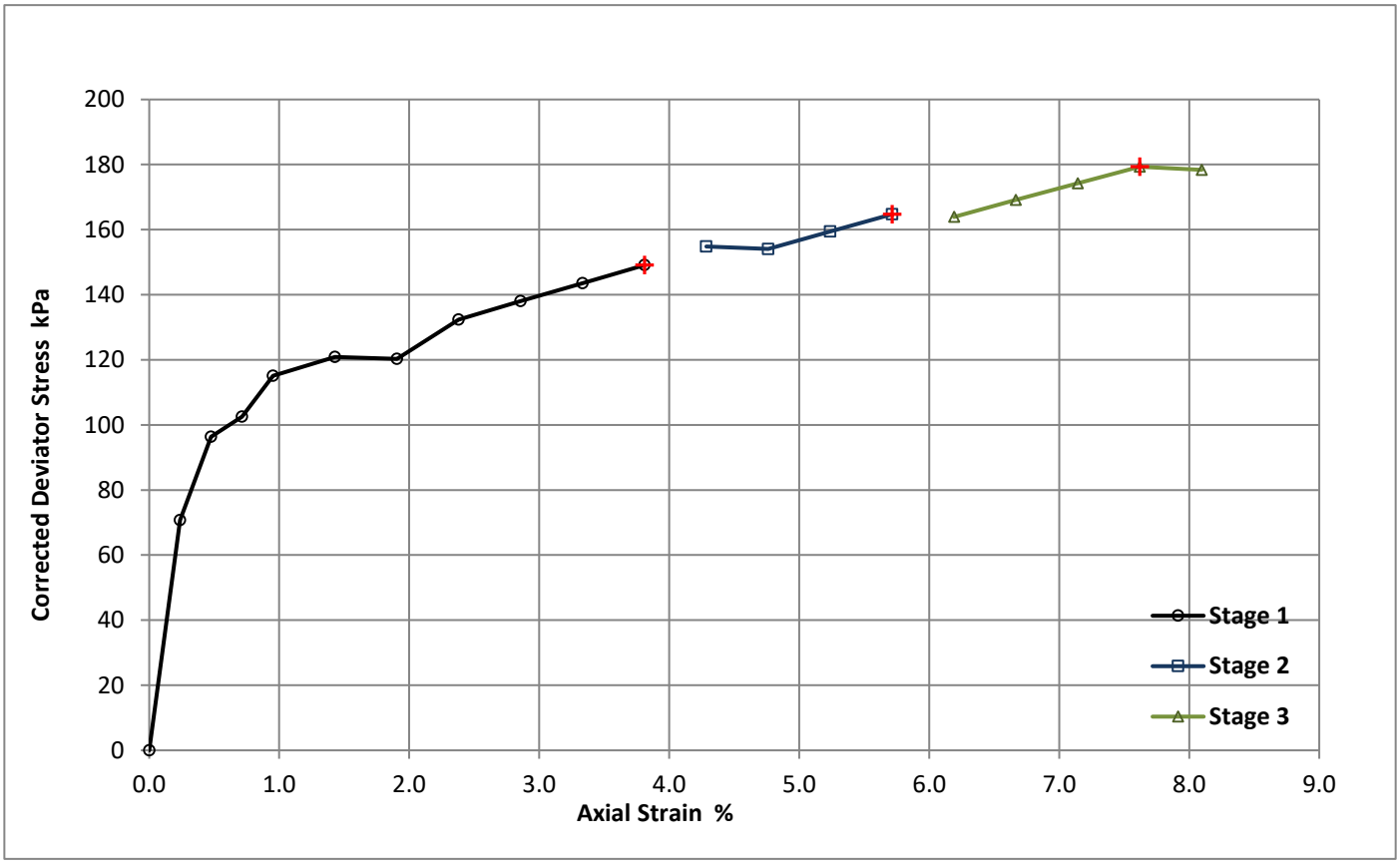
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH22
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	9.50
		Depth Base	10.00
		Sample Type	U



Moisture Content (%)	19		
Bulk Density (Mg/m^3)	2.06		
Dry Density (Mg/m^3)	1.73		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	100	200	400
Deviator Stress (kPa)	149	165	179
Undrained Shear Strength (kPa)	75	82	90
Failure Strain (%)	3.8	5.7	7.6
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

Specimen Post Test



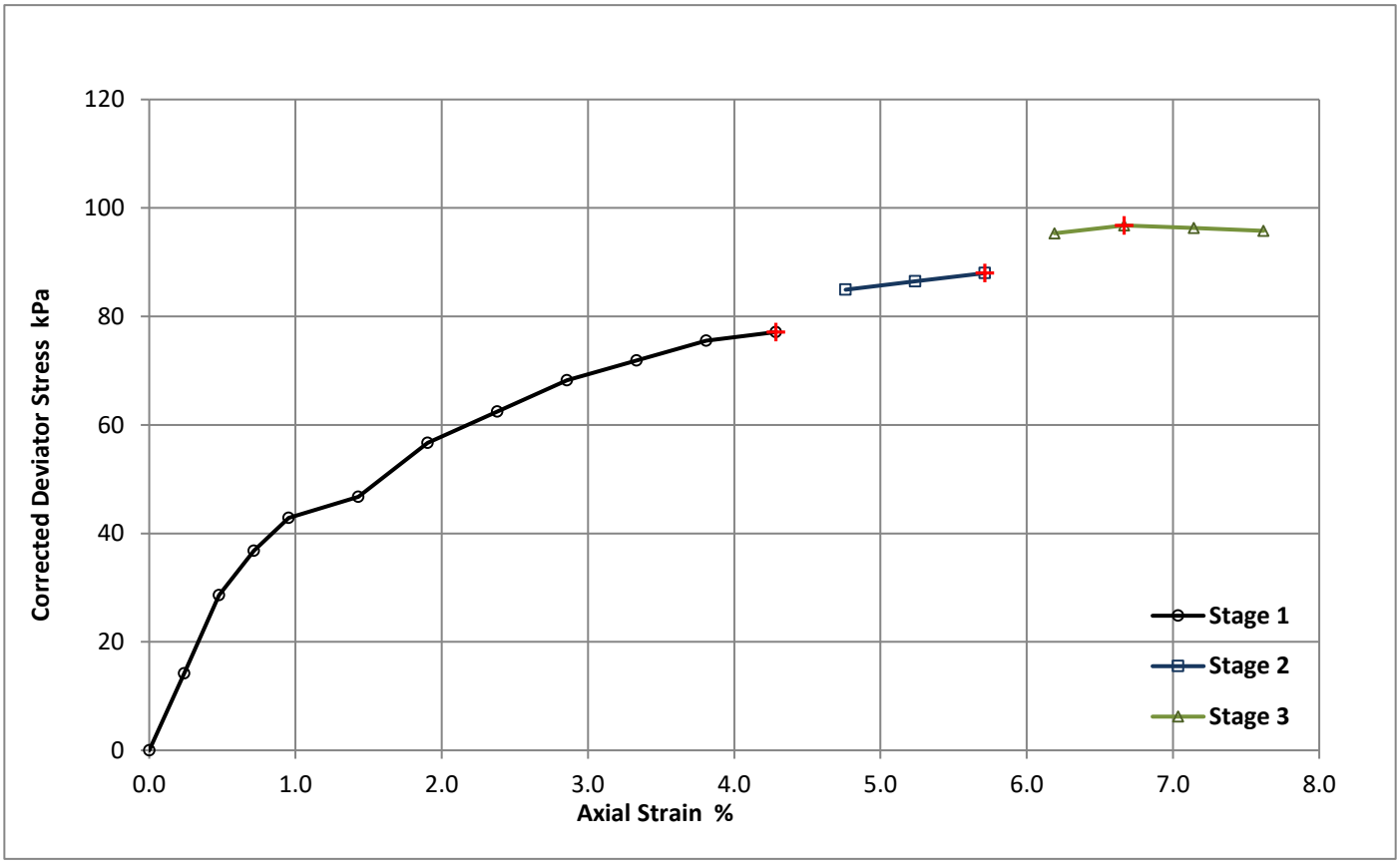
Sample Split



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

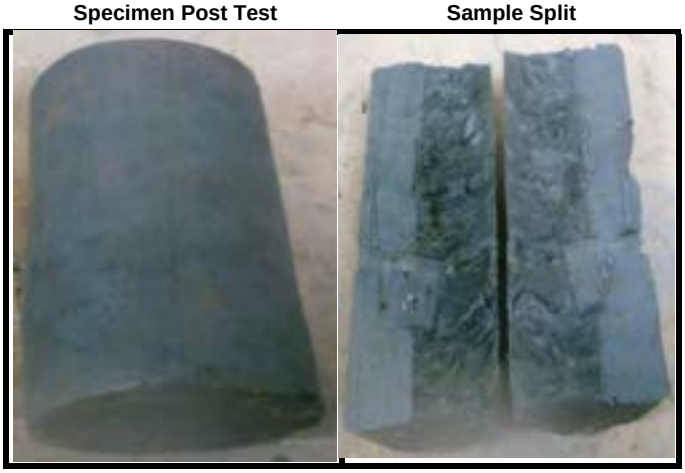
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH24
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	5.50
		Depth Base	
		Sample Type	U



Moisture Content (%)	31		
Bulk Density (Mg/m^3)	2.00		
Dry Density (Mg/m^3)	1.53		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	101		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	77	88	97
Undrained Shear Strength (kPa)	39	44	48
Failure Strain (%)	4.3	5.7	6.7
Mode Of Failure	Plastic		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

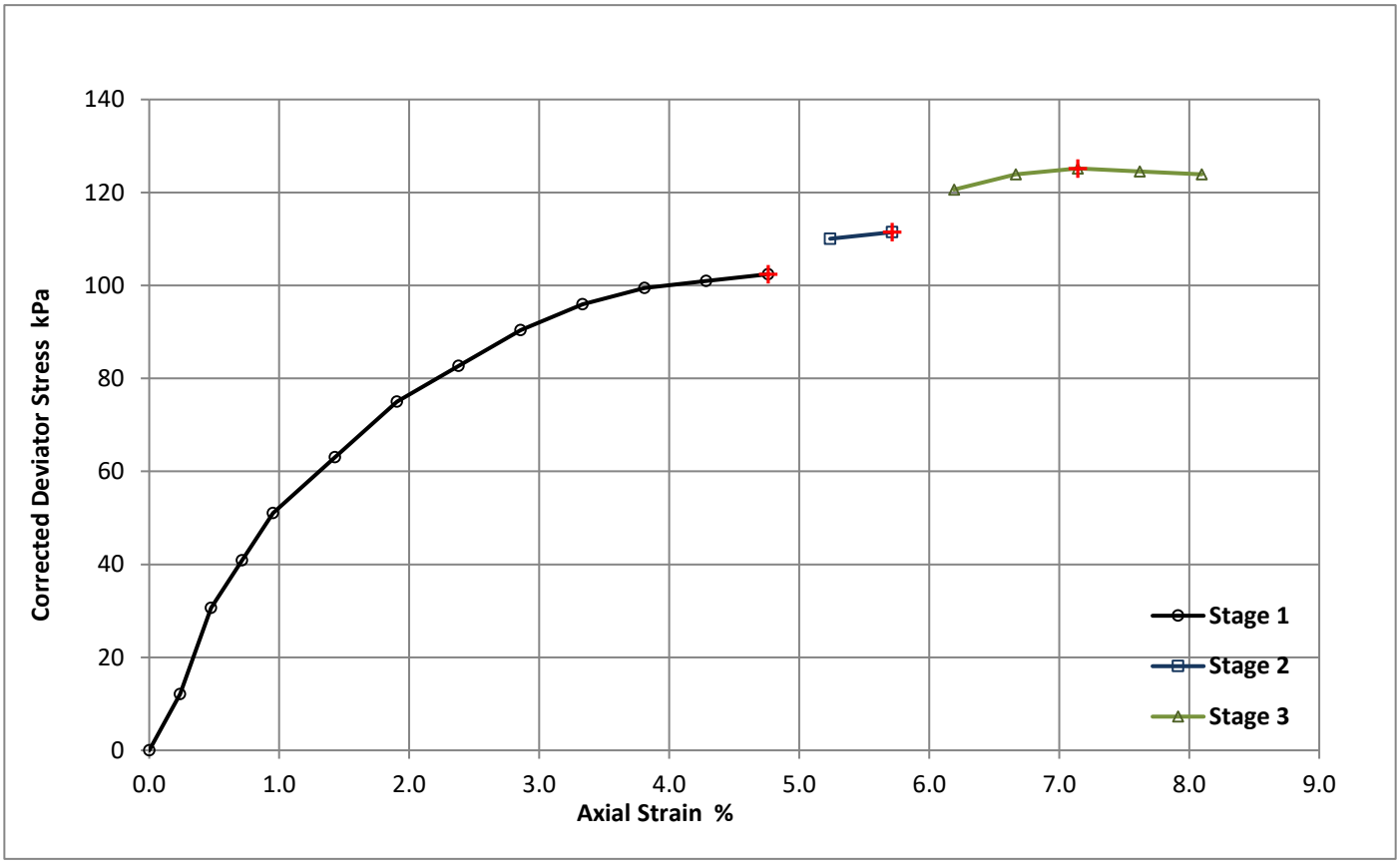
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

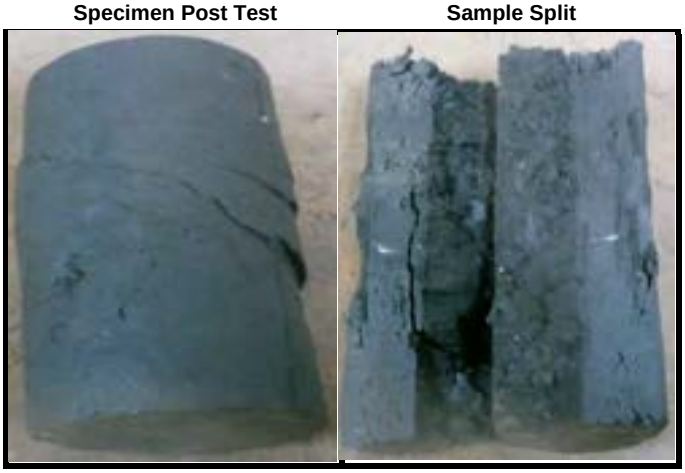
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH24
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	6.80
		Depth Base	7.30
		Sample Type	U



Moisture Content (%)	22		
Bulk Density (Mg/m^3)	2.00		
Dry Density (Mg/m^3)	1.64		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	101		
Cell Pressures (kPa)	70	140	280
Deviator Stress (kPa)	102	111	125
Undrained Shear Strength (kPa)	51	56	63
Failure Strain (%)	4.8	5.7	7.1
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

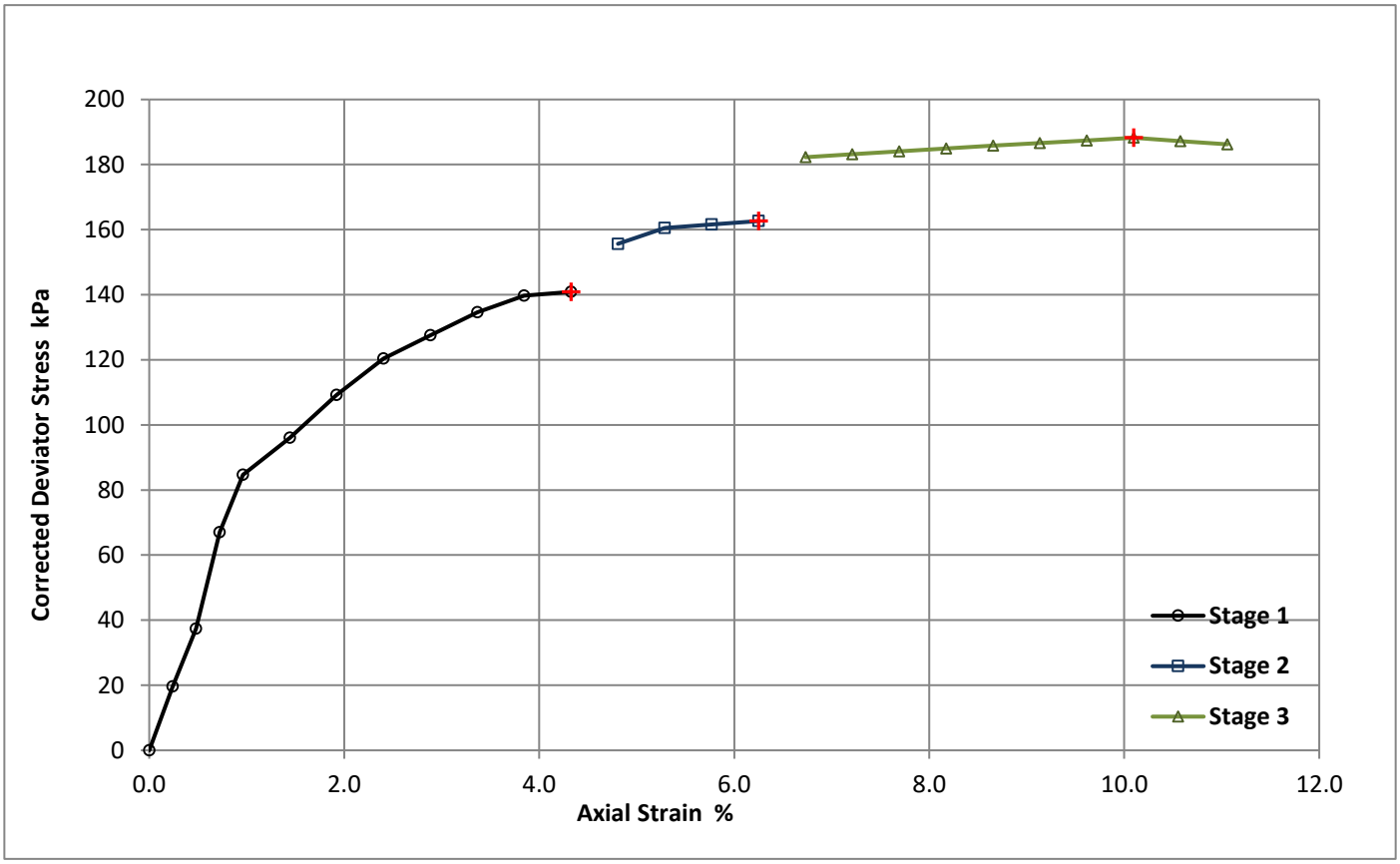
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

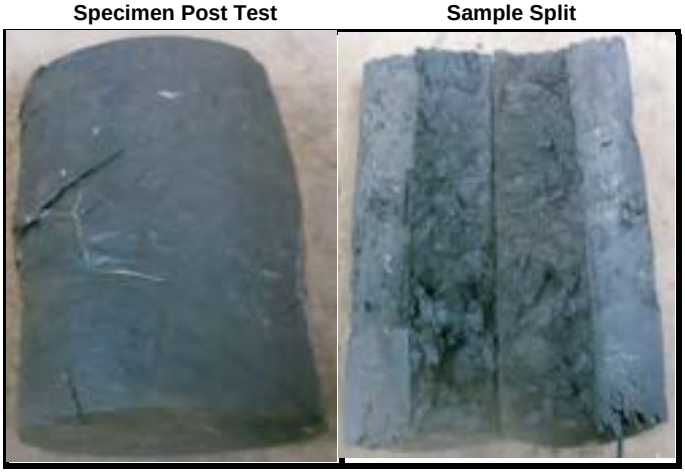
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42204
		Borehole/Pit No.	BH24
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	14.50
		Depth Base	15.00
		Sample Type	U



Moisture Content (%)	21		
Bulk Density (Mg/m^3)	1.99		
Dry Density (Mg/m^3)	1.64		
Specimen Length (mm)	208		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	150	300	600
Deviator Stress (kPa)	141	163	188
Undrained Shear Strength (kPa)	70	81	94
Failure Strain (%)	4.3	6.3	10
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

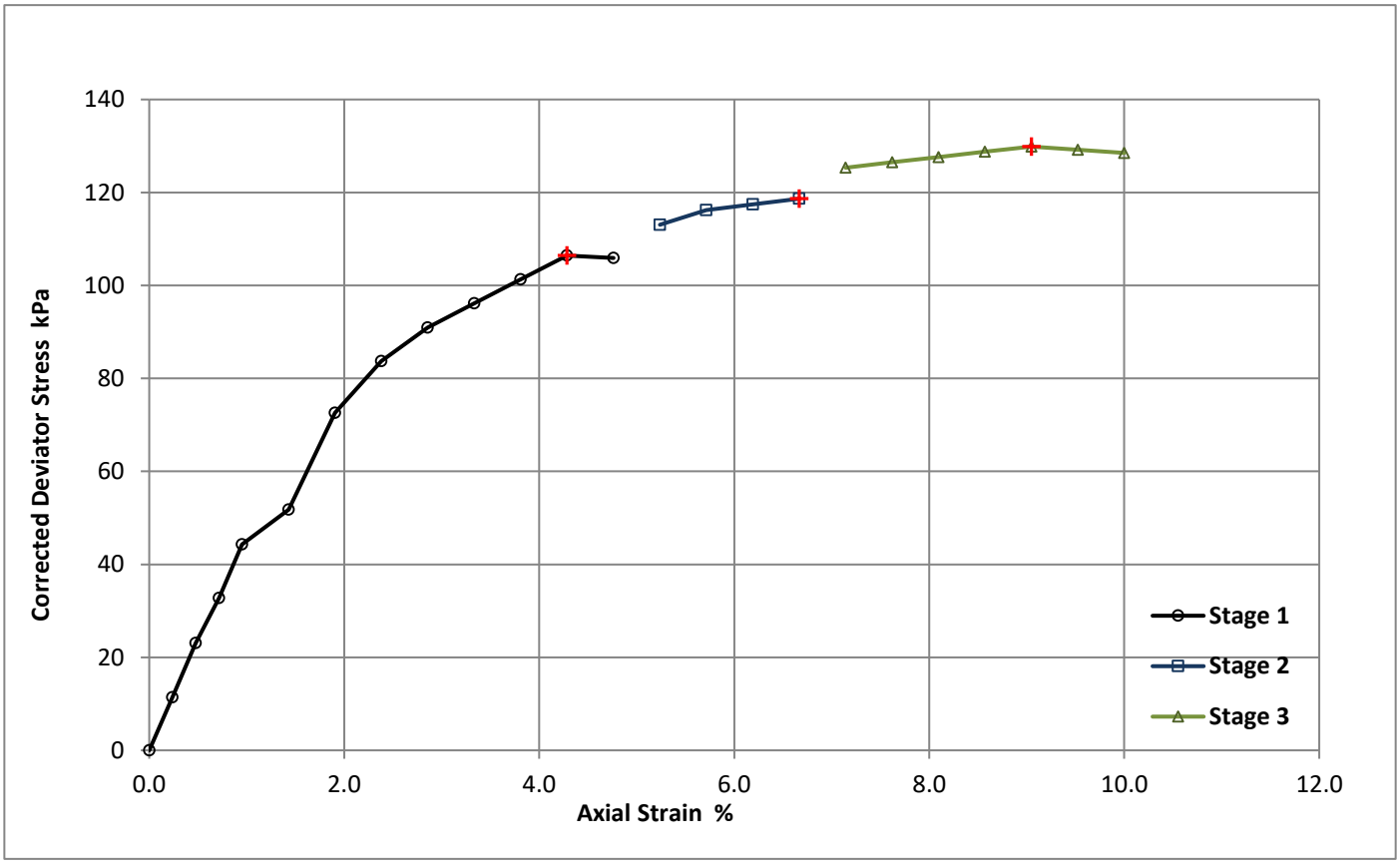
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

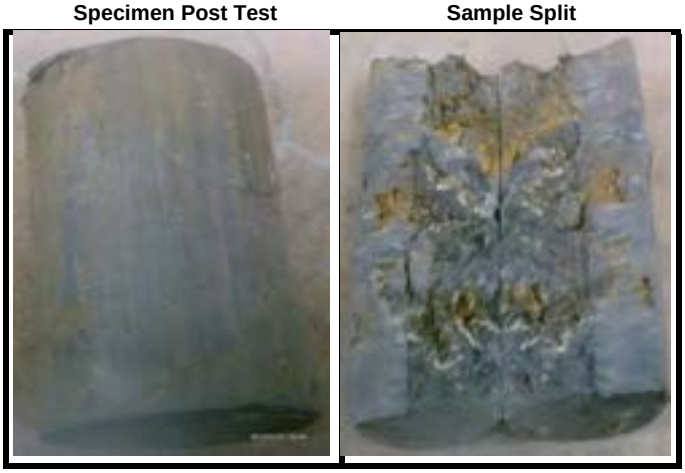
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH25
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown sandy silty CLAY	Depth Top	3.50
		Depth Base	3.95
		Sample Type	U



Moisture Content (%)	31		
Bulk Density (Mg/m^3)	1.92		
Dry Density (Mg/m^3)	1.46		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	104		
Cell Pressures (kPa)	40	80	160
Deviator Stress (kPa)	106	119	130
Undrained Shear Strength (kPa)	53	59	65
Failure Strain (%)	4.3	6.7	9.0
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

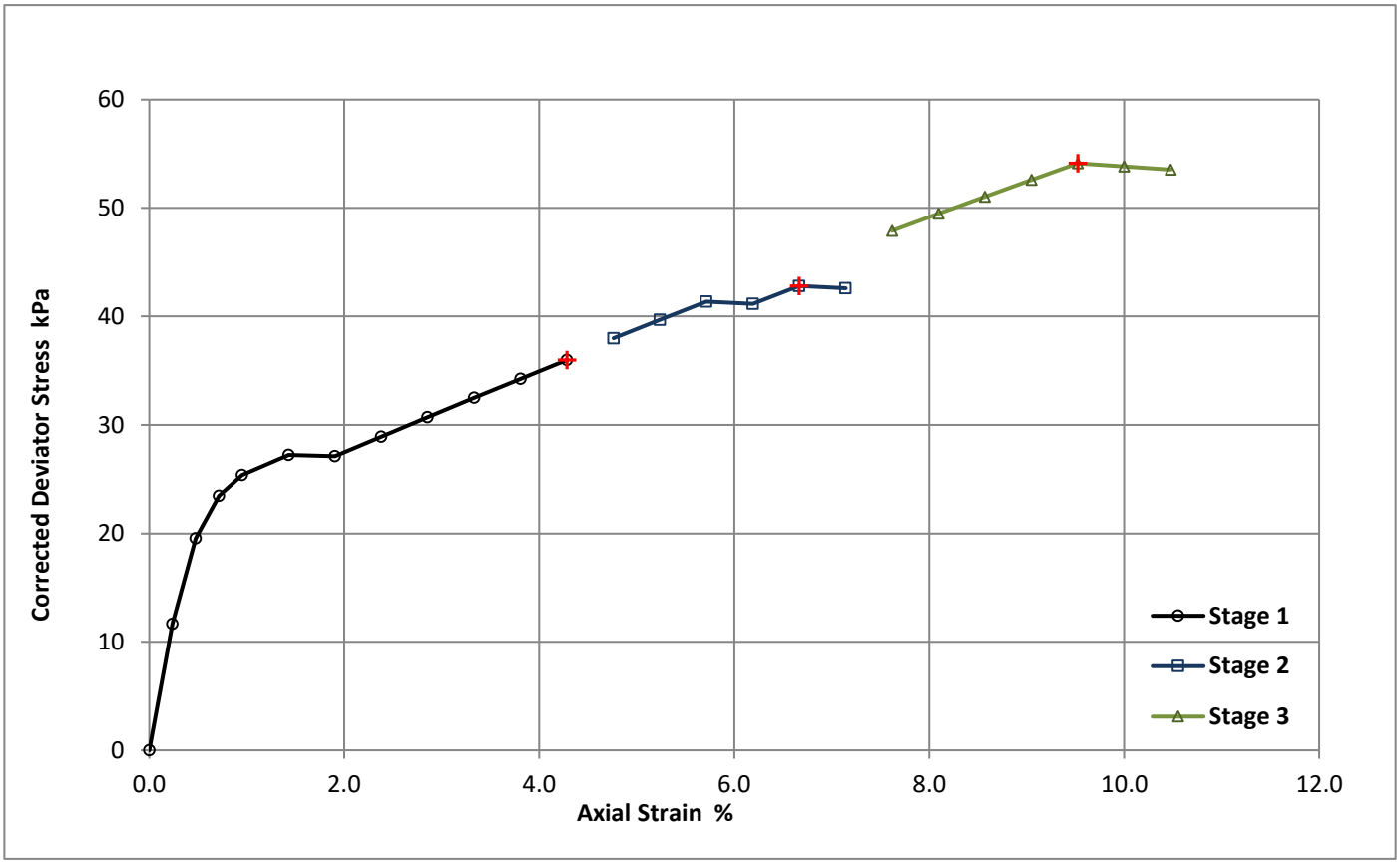
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

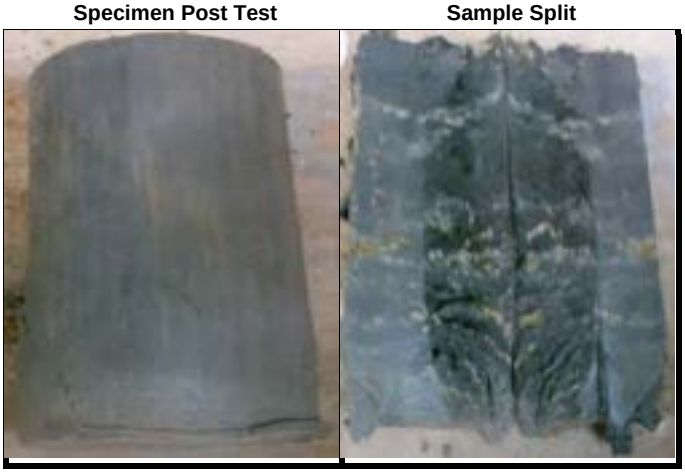
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH26
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	5.20
		Depth Base	5.70
		Sample Type	U



Moisture Content (%)	23		
Bulk Density (Mg/m^3)	1.96		
Dry Density (Mg/m^3)	1.60		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	36	43	54
Undrained Shear Strength (kPa)	18	21	27
Failure Strain (%)	4.3	6.7	9.5
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

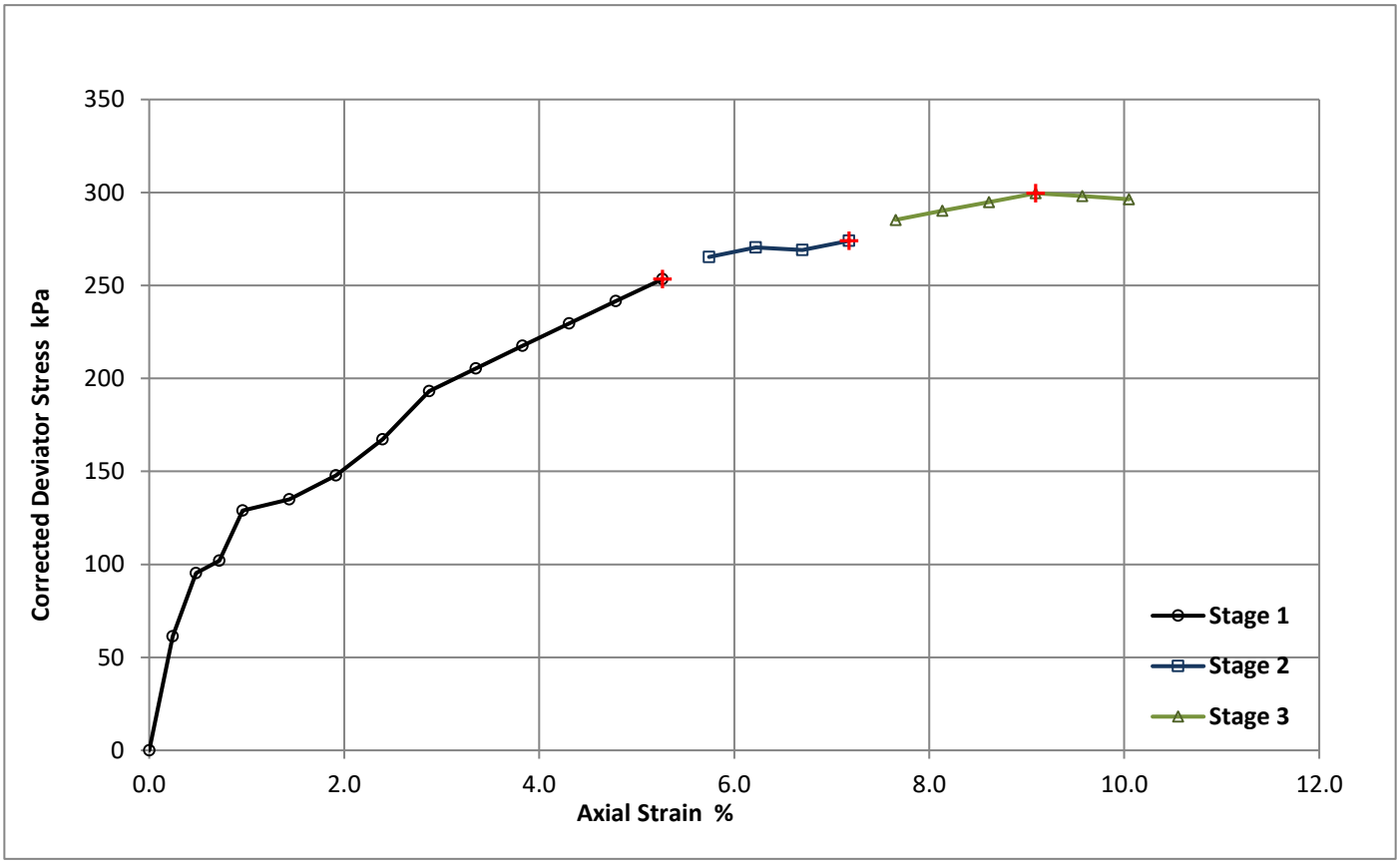
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH26
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	9.20
		Depth Base	9.70
		Sample Type	U



Moisture Content (%)	25		
Bulk Density (Mg/m^3)	2.20		
Dry Density (Mg/m^3)	1.76		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	100		
Cell Pressures (kPa)	100	200	400
Deviator Stress (kPa)	253	274	300
Undrained Shear Strength (kPa)	127	137	150
Failure Strain (%)	5.3	7.2	9.1
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

Specimen Post Test



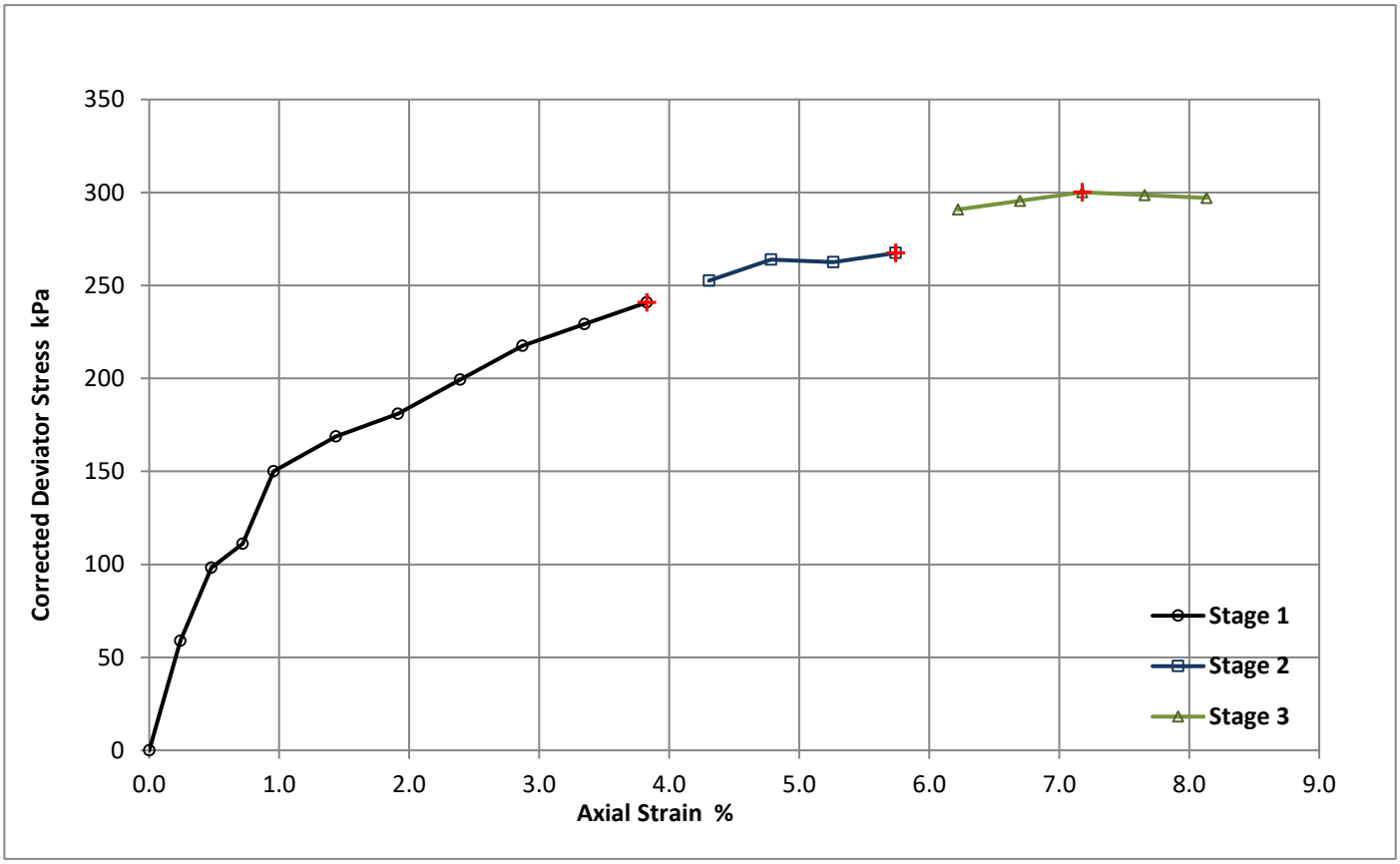
Sample Split



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

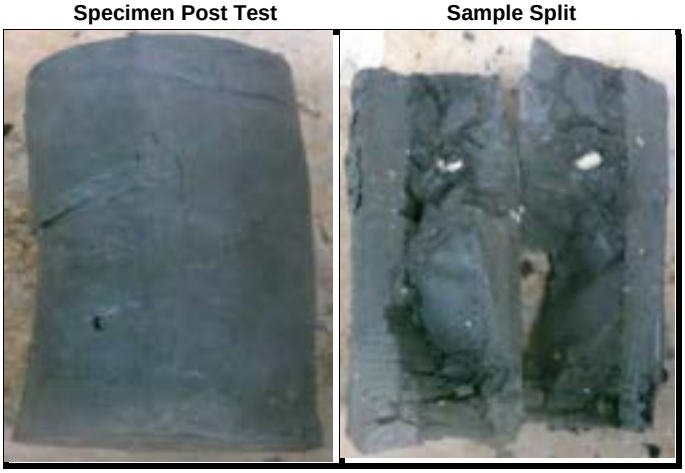
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH26
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	15.00
		Depth Base	
		Sample Type	U



Moisture Content (%)	21		
Bulk Density (Mg/m^3)	2.12		
Dry Density (Mg/m^3)	1.75		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	150	300	600
Deviator Stress (kPa)	241	267	300
Undrained Shear Strength (kPa)	120	134	150
Failure Strain (%)	3.8	5.7	7.2
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

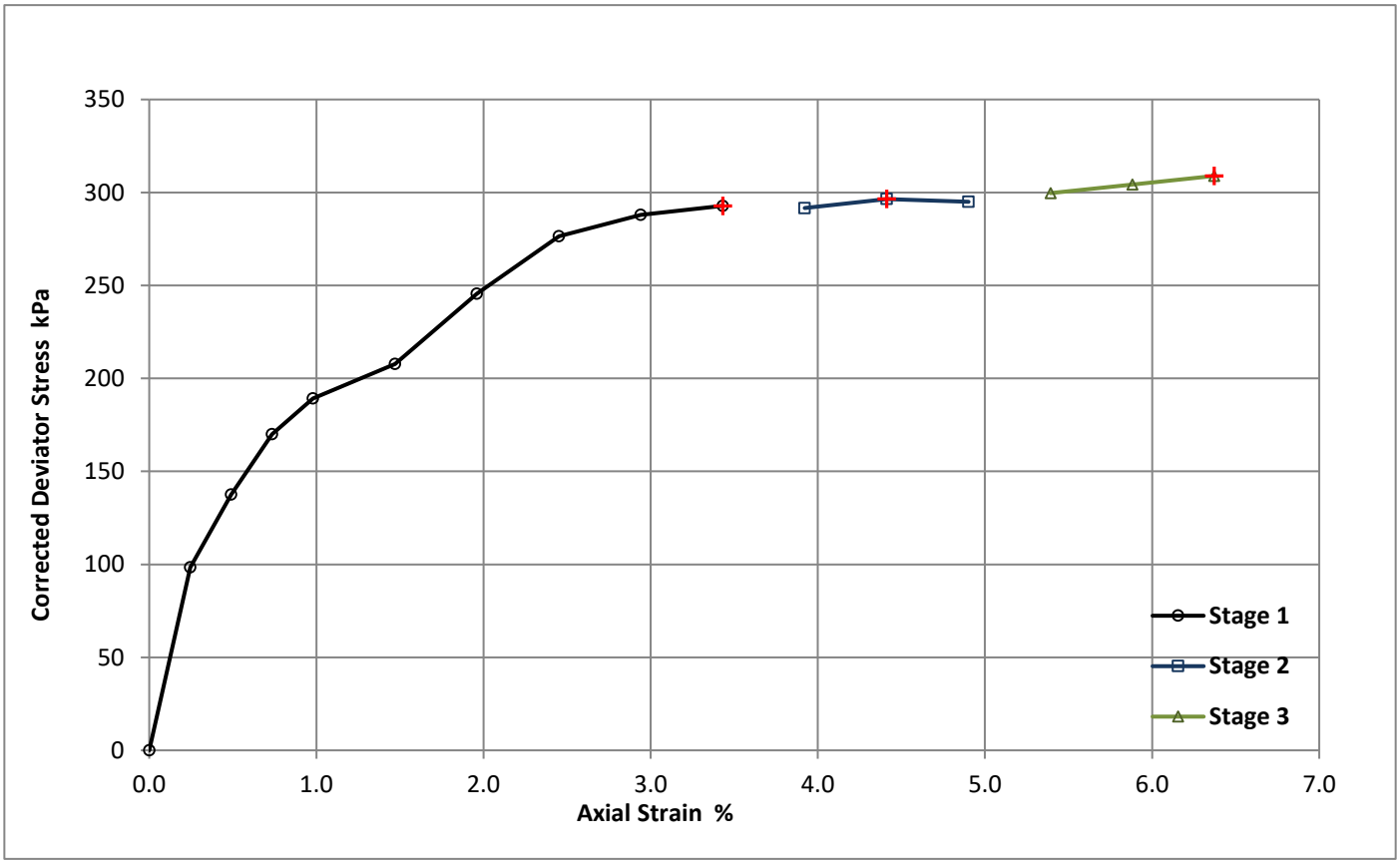
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

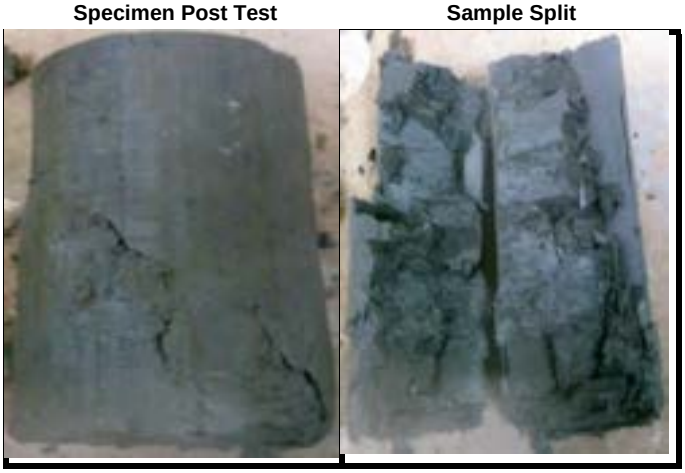
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH27
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	9.00
		Depth Base	9.45
		Sample Type	U



Moisture Content (%)	19		
Bulk Density (Mg/m^3)	2.10		
Dry Density (Mg/m^3)	1.76		
Specimen Length (mm)	204		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	90	180	360
Deviator Stress (kPa)	293	296	309
Undrained Shear Strength (kPa)	146	148	154
Failure Strain (%)	3.4	4.4	6.4
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

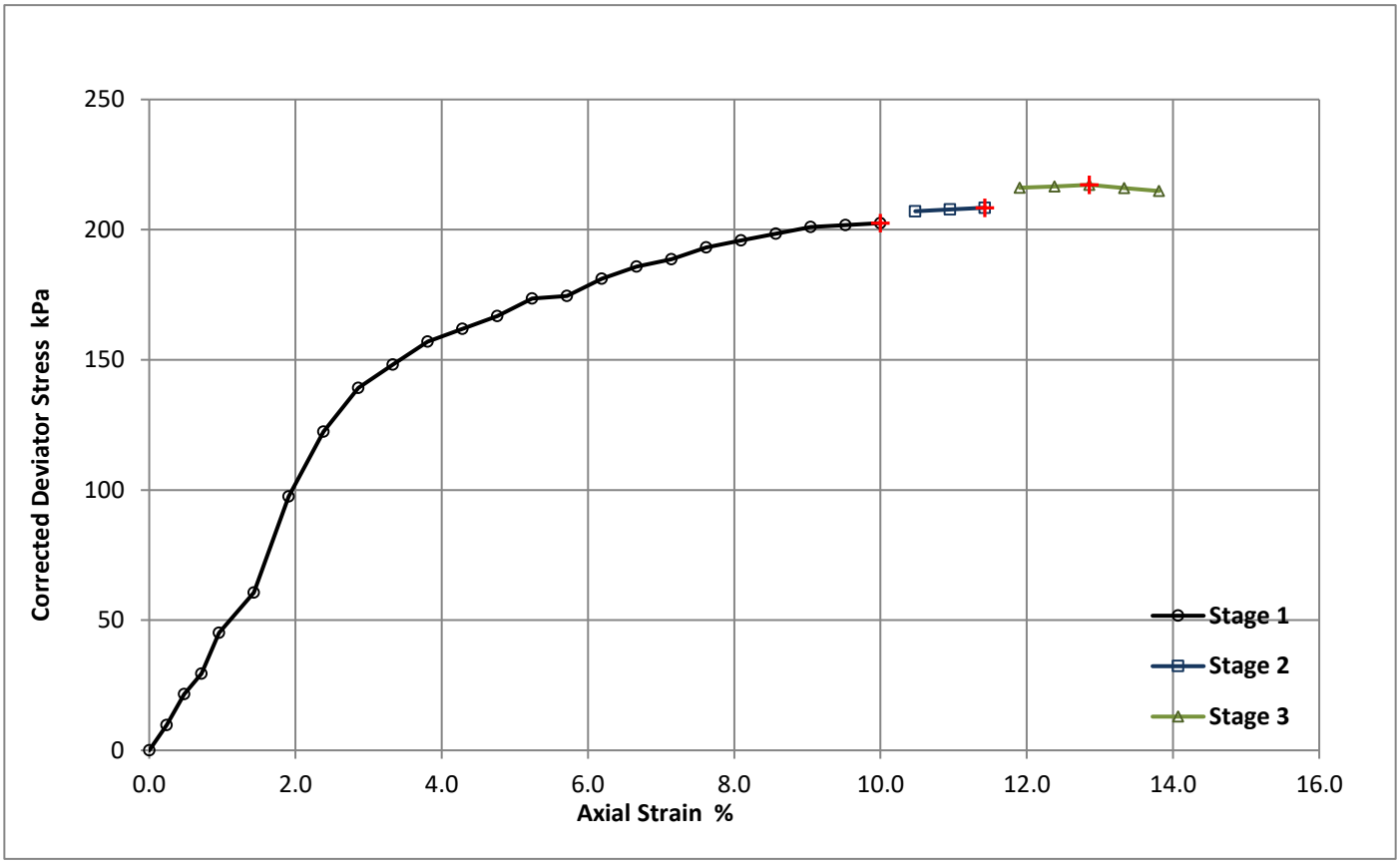
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

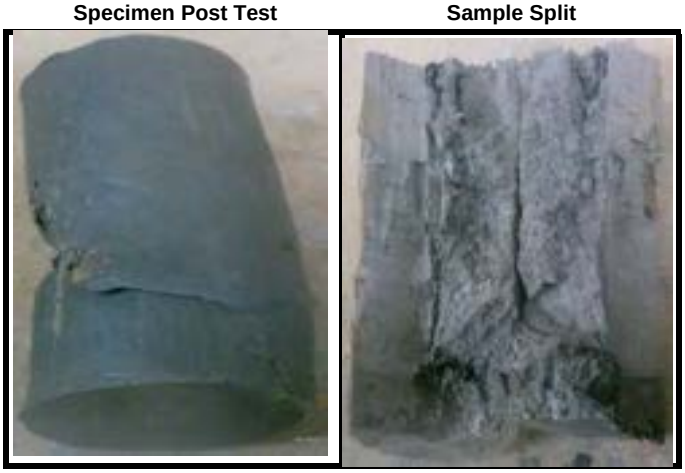
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH28
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	4.50
		Depth Base	4.80
		Sample Type	U



Moisture Content (%)	17		
Bulk Density (Mg/m^3)	2.14		
Dry Density (Mg/m^3)	1.82		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	203	208	217
Undrained Shear Strength (kPa)	101	104	109
Failure Strain (%)	10.0	11	13
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

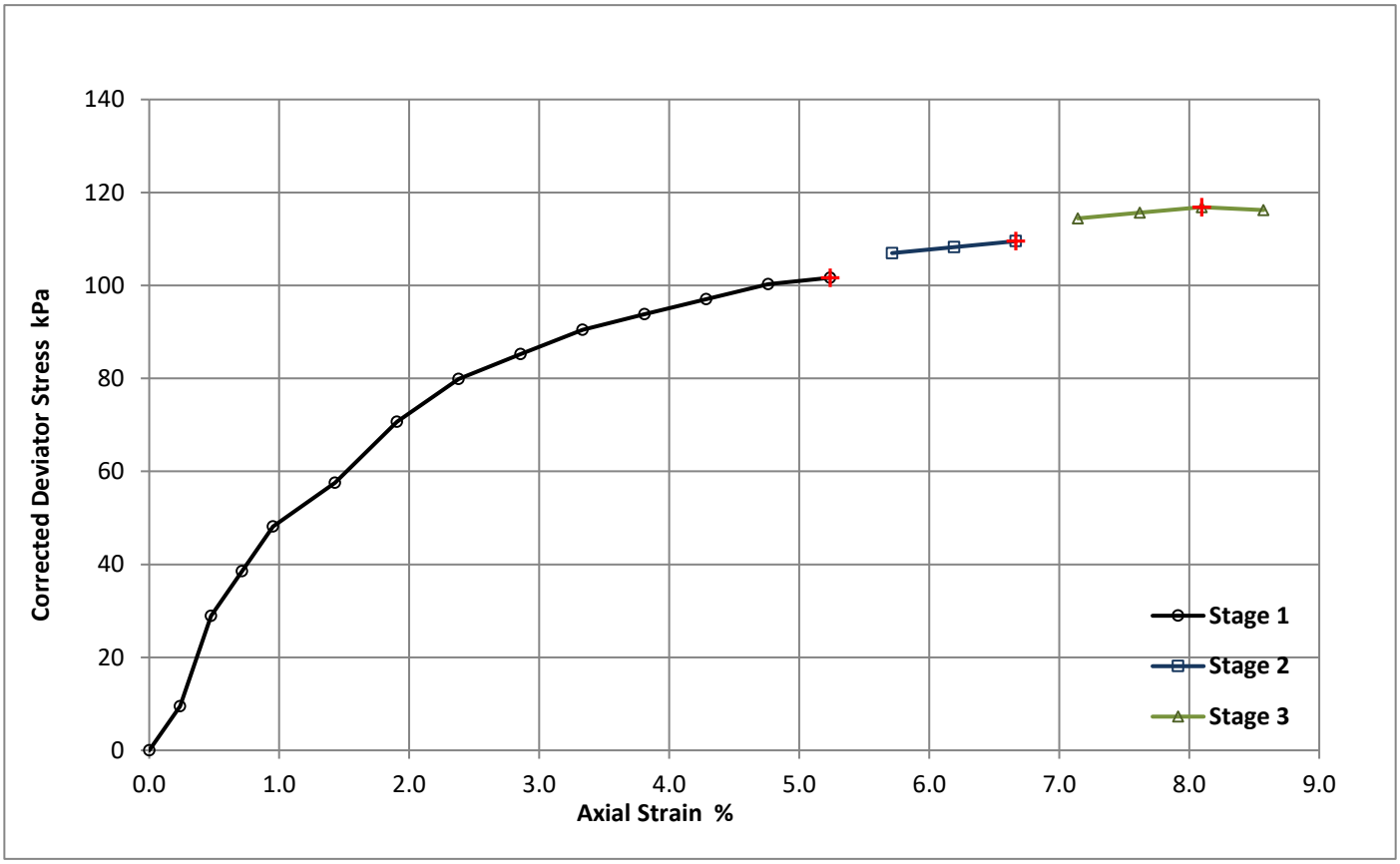
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

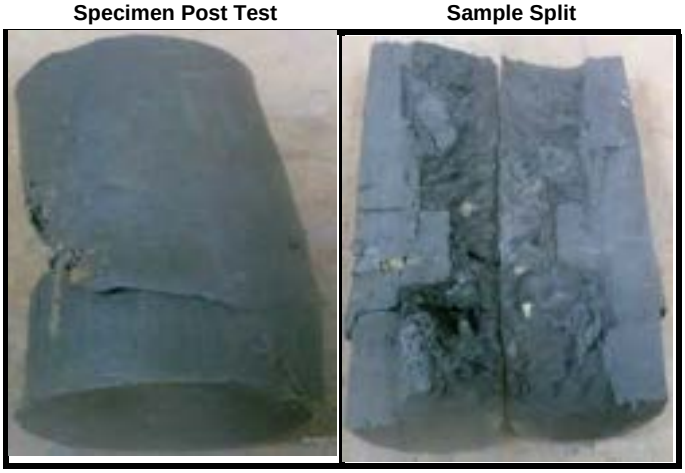
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH29
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	4.50
		Depth Base	4.85
		Sample Type	U



Moisture Content (%)	21		
Bulk Density (Mg/m^3)	1.95		
Dry Density (Mg/m^3)	1.61		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	104		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	102	110	117
Undrained Shear Strength (kPa)	51	55	58
Failure Strain (%)	5.2	6.7	8.1
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

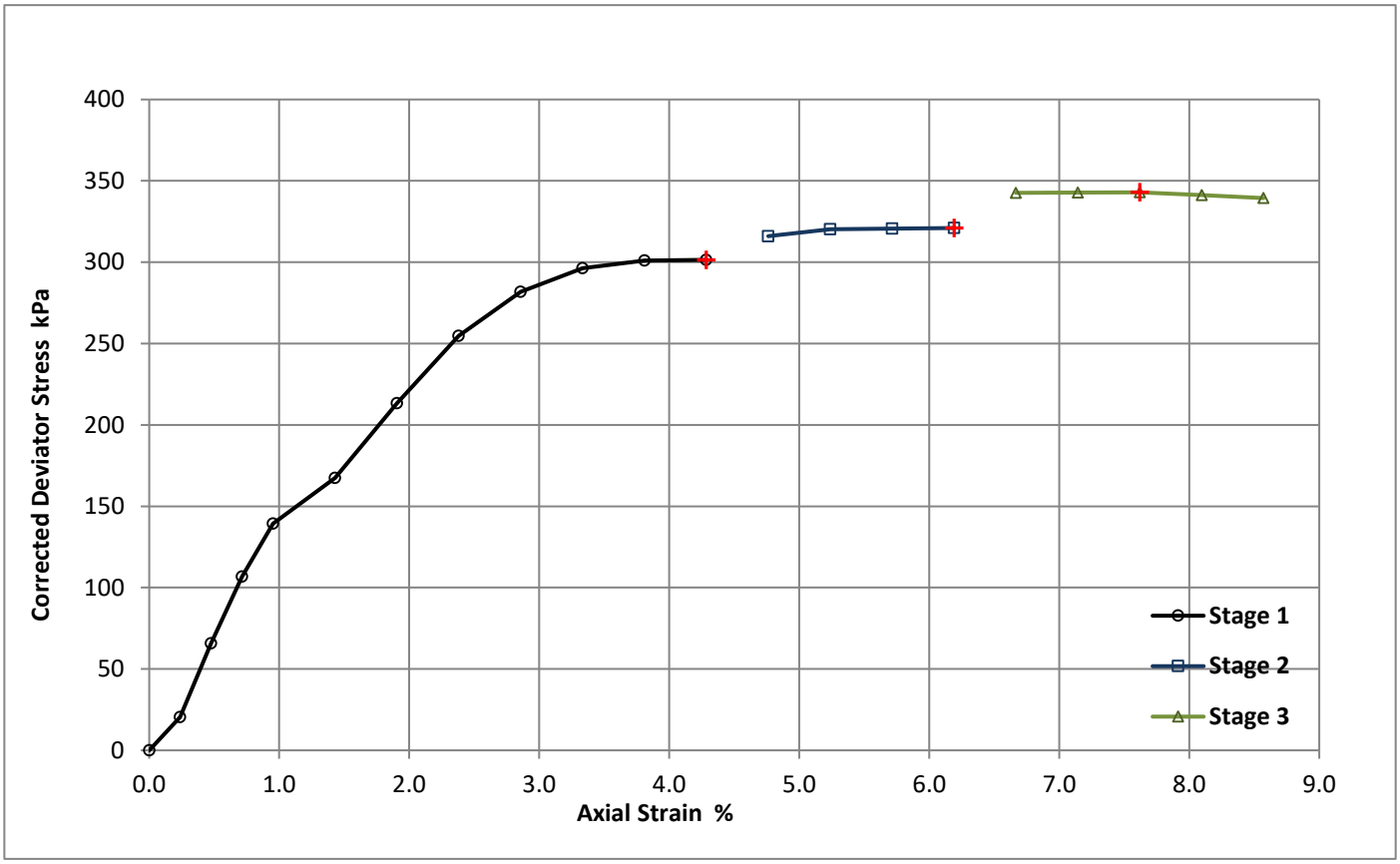
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

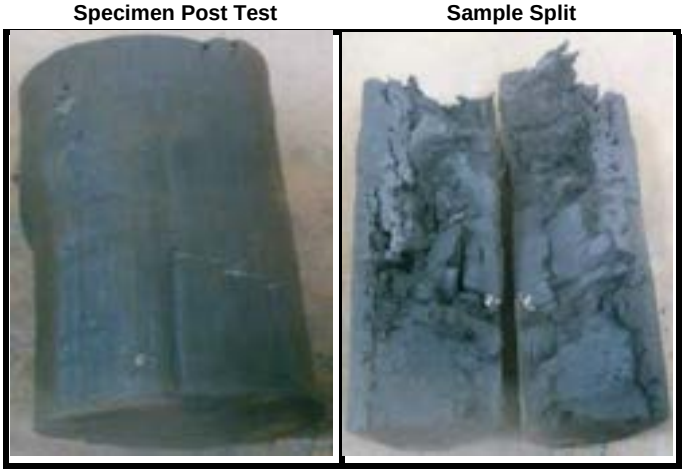
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH29
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	11.50
		Depth Base	11.95
		Sample Type	U



Moisture Content (%)	17		
Bulk Density (Mg/m^3)	2.18		
Dry Density (Mg/m^3)	1.87		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	101		
Cell Pressures (kPa)	120	240	480
Deviator Stress (kPa)	301	321	343
Undrained Shear Strength (kPa)	151	160	171
Failure Strain (%)	4.3	6.2	7.6
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

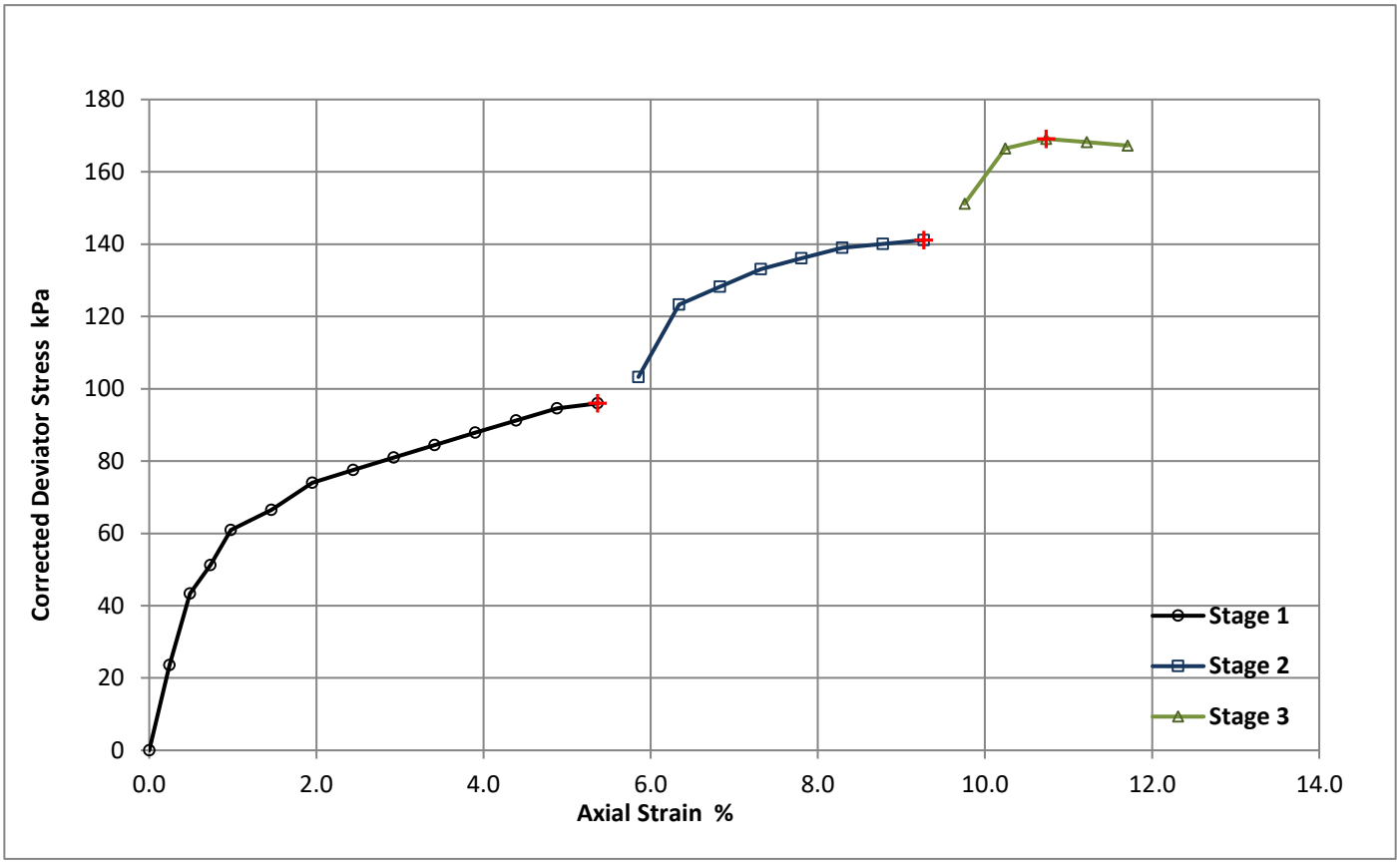
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

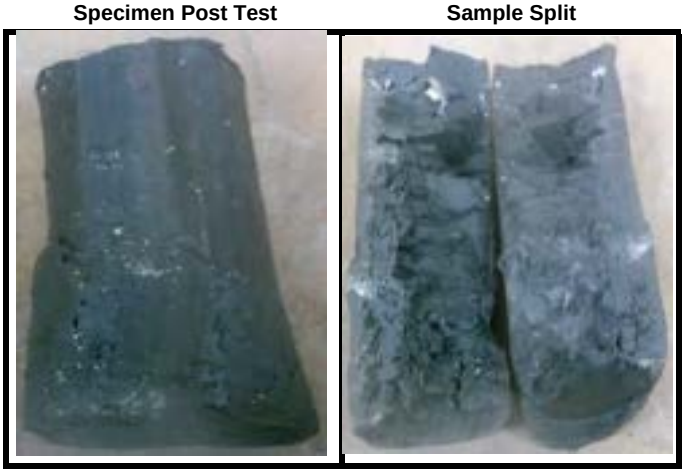
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41210
		Borehole/Pit No.	BH29
Site Name	A47 Wansford	Sample No.	
Soil Description	Brown silty CLAY	Depth Top	14.50
		Depth Base	
		Sample Type	U



Moisture Content (%)	17		
Bulk Density (Mg/m^3)	2.05		
Dry Density (Mg/m^3)	1.75		
Specimen Length (mm)	205		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	150	300	600
Deviator Stress (kPa)	96	141	169
Undrained Shear Strength (kPa)	48	71	85
Failure Strain (%)	5.4	9.3	11
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

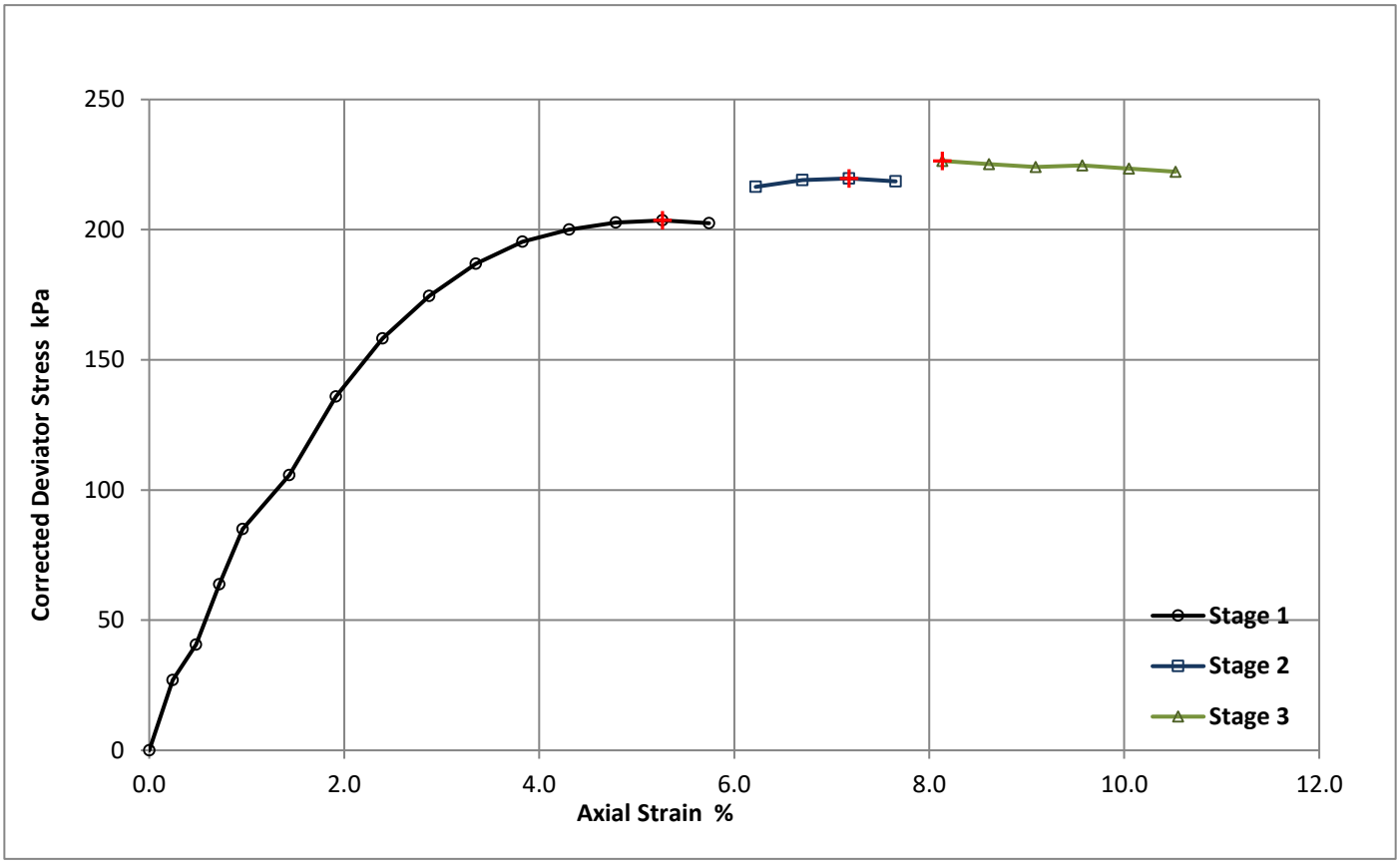
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

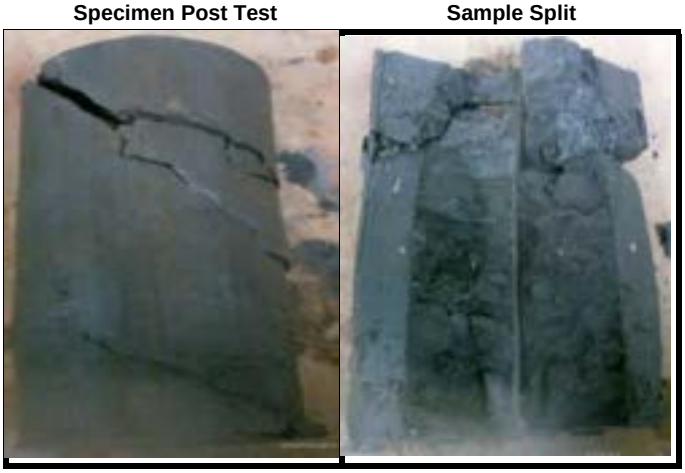
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH30
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	6.60
		Depth Base	7.05
		Sample Type	U



Moisture Content (%)	20		
Bulk Density (Mg/m^3)	2.05		
Dry Density (Mg/m^3)	1.71		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	104		
Cell Pressures (kPa)	75	150	300
Deviator Stress (kPa)	204	220	226
Undrained Shear Strength (kPa)	102	110	113
Failure Strain (%)	5.3	7.2	8.1
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

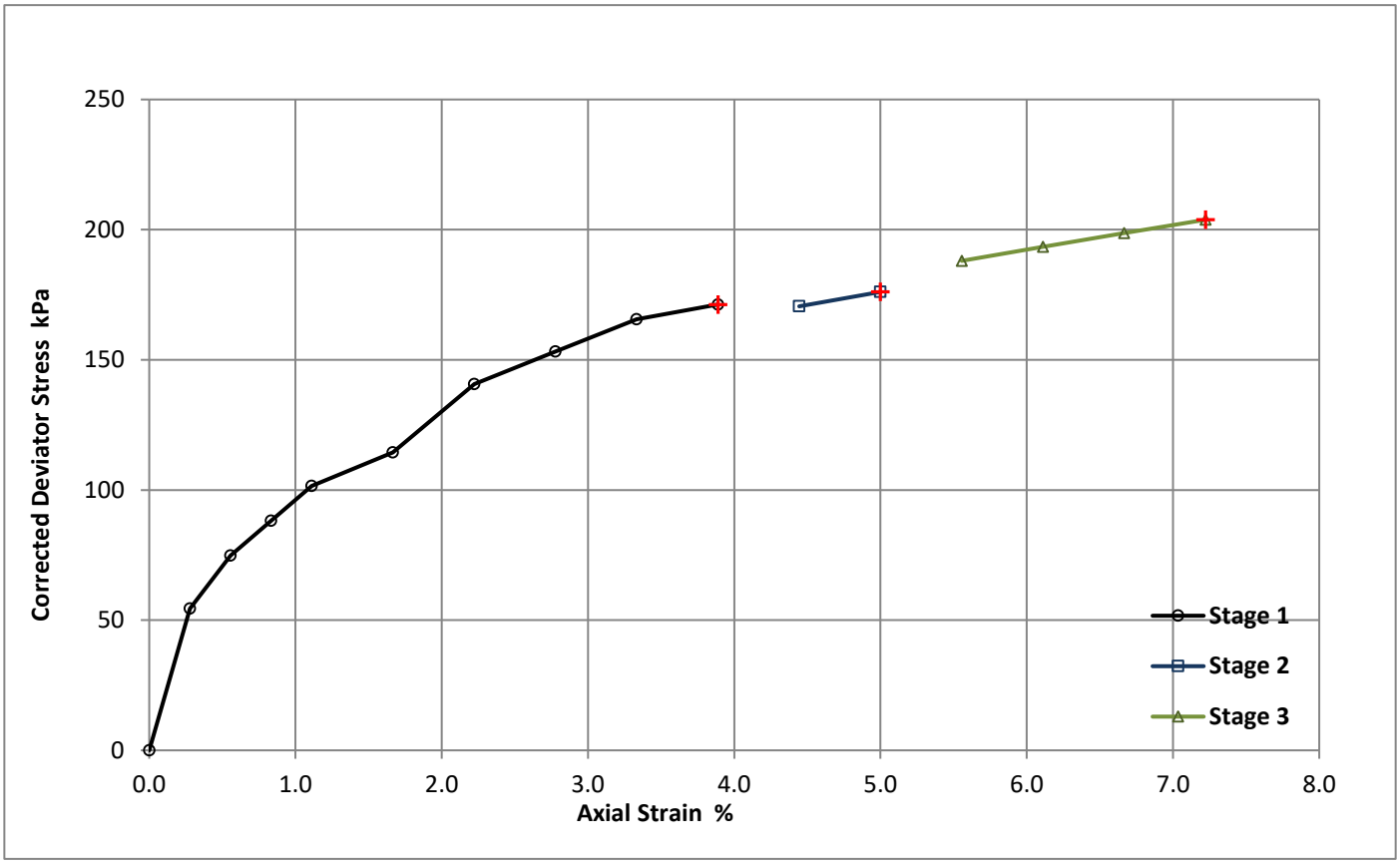
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

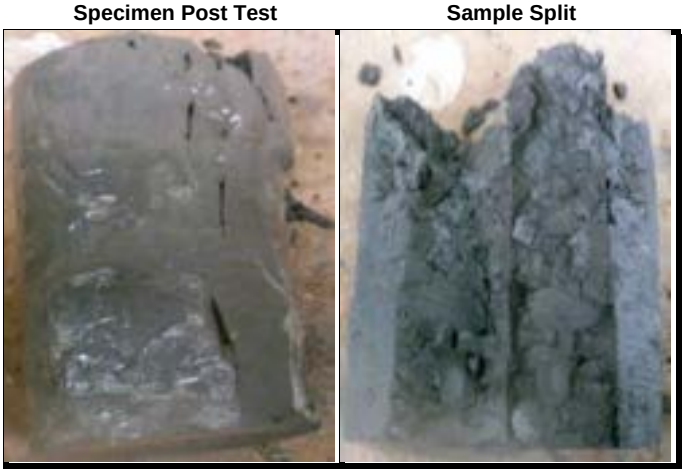
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH31
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	11.25
		Depth Base	11.70
		Sample Type	U



Moisture Content (%)	19		
Bulk Density (Mg/m^3)	2.22		
Dry Density (Mg/m^3)	1.87		
Specimen Length (mm)	180		
Specimen Diamteter (mm)	100		
Cell Pressures (kPa)	120	240	480
Deviator Stress (kPa)	171	176	204
Undrained Shear Strength (kPa)	86	88	102
Failure Strain (%)	3.9	5.0	7.2
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

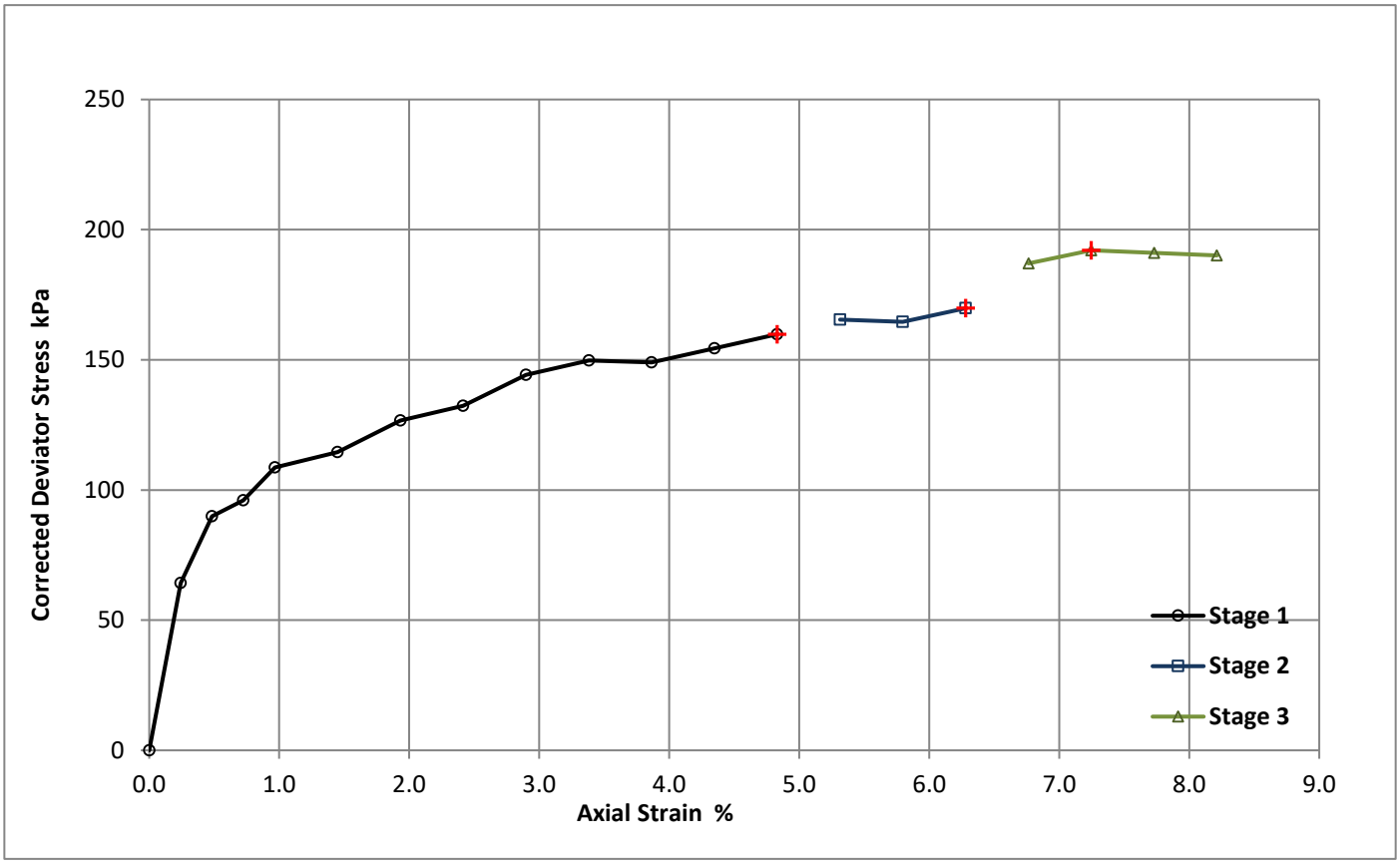
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

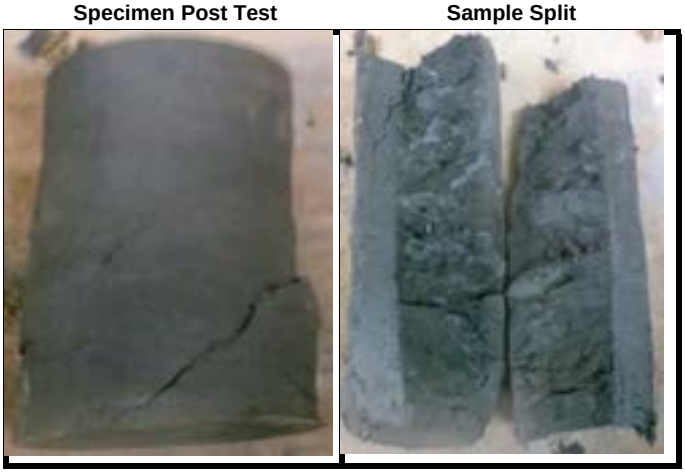
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	42000
		Borehole/Pit No.	BH31
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	12.75
		Depth Base	13.10
		Sample Type	U



Moisture Content (%)	18		
Bulk Density (Mg/m^3)	2.01		
Dry Density (Mg/m^3)	1.70		
Specimen Length (mm)	207		
Specimen Diamteter (mm)	103		
Cell Pressures (kPa)	130	260	520
Deviator Stress (kPa)	160	170	192
Undrained Shear Strength (kPa)	80	85	96
Failure Strain (%)	4.8	6.3	7.2
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	2.50		

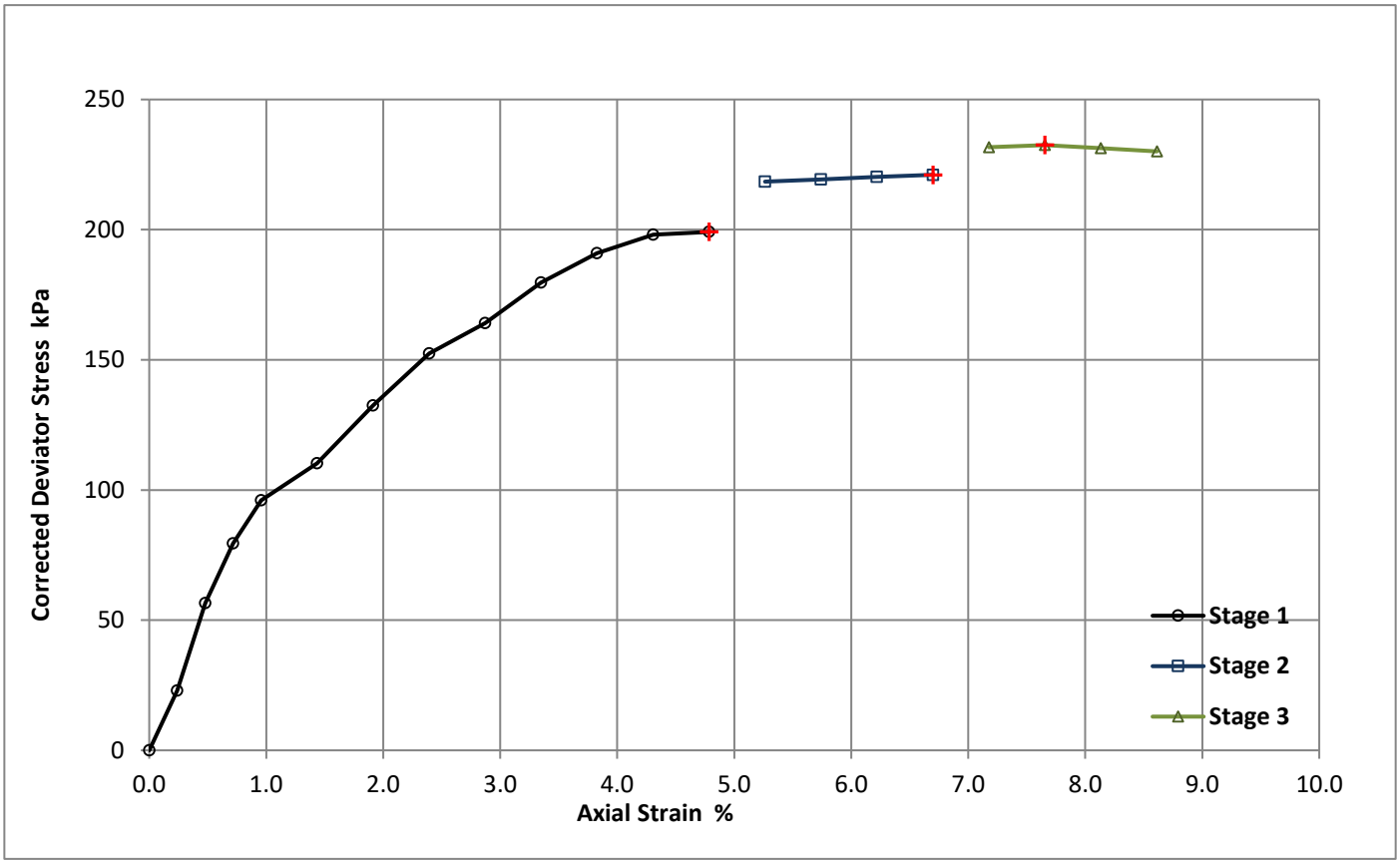
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

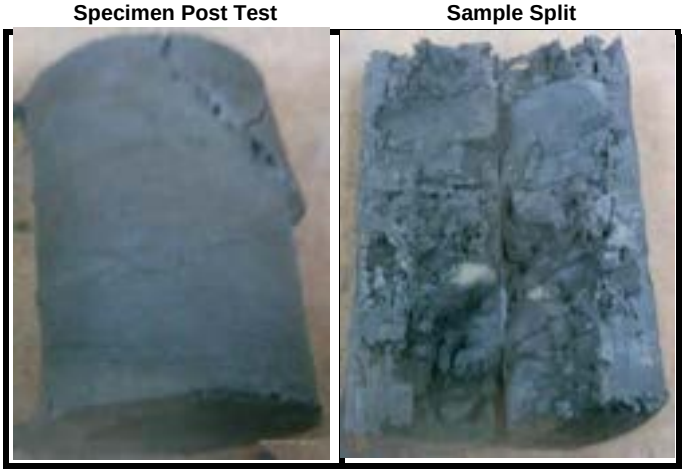
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41665
		Borehole/Pit No.	BH32
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	13.25
		Depth Base	13.55
		Sample Type	U



Moisture Content (%)	17		
Bulk Density (Mg/m^3)	2.19		
Dry Density (Mg/m^3)	1.87		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	100		
Cell Pressures (kPa)	130	260	520
Deviator Stress (kPa)	199	221	232
Undrained Shear Strength (kPa)	100	111	116
Failure Strain (%)	4.8	6.7	7.7
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

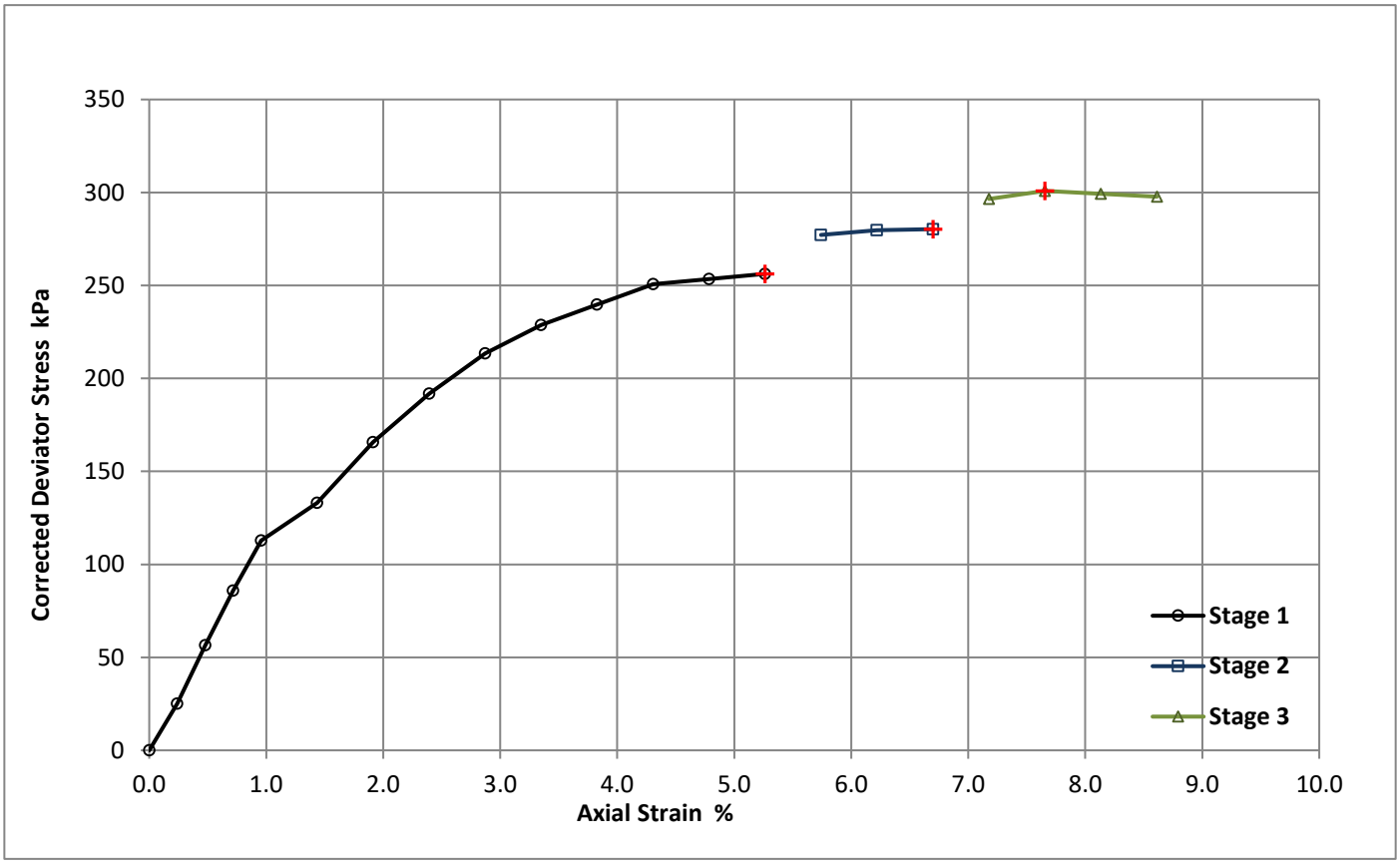
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

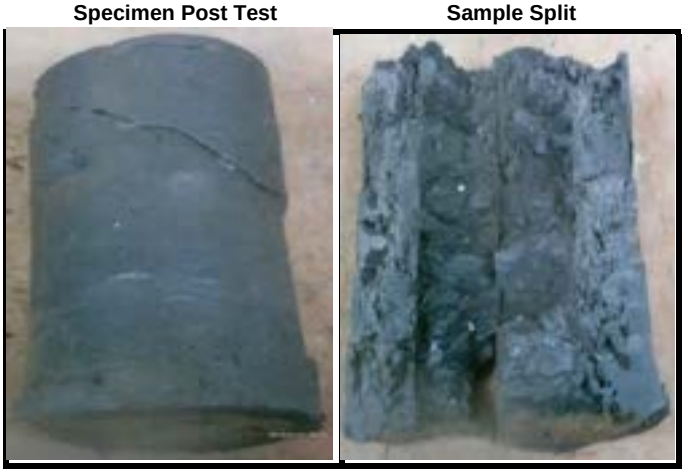
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41665
		Borehole/Pit No.	BH32
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	21.74
		Depth Base	22.04
		Sample Type	U



Moisture Content (%)	20		
Bulk Density (Mg/m^3)	2.13		
Dry Density (Mg/m^3)	1.78		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	100		
Cell Pressures (kPa)	200	400	800
Deviator Stress (kPa)	256	280	301
Undrained Shear Strength (kPa)	128	140	150
Failure Strain (%)	5.3	6.7	7.7
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

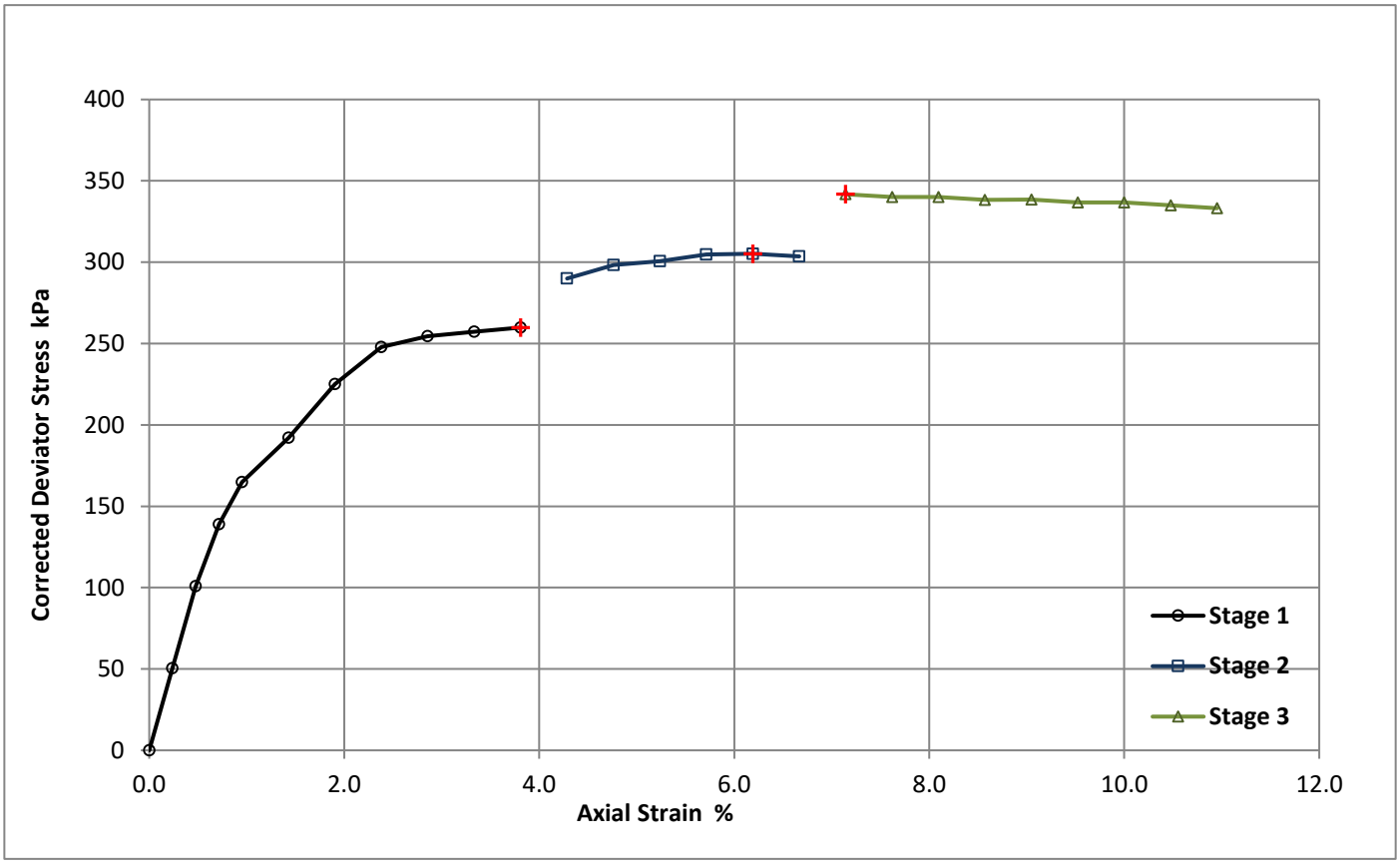
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

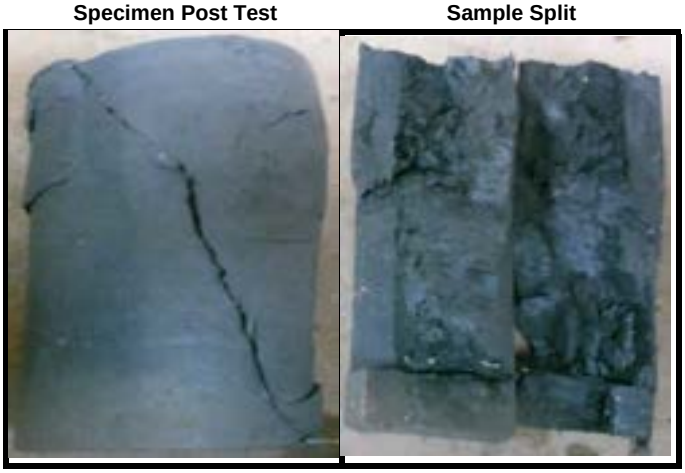
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH33
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	19.15
		Depth Base	19.68
		Sample Type	U



Moisture Content (%)	16		
Bulk Density (Mg/m^3)	2.05		
Dry Density (Mg/m^3)	1.77		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	200	400	800
Deviator Stress (kPa)	260	305	342
Undrained Shear Strength (kPa)	130	153	171
Failure Strain (%)	3.8	6.2	7.1
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

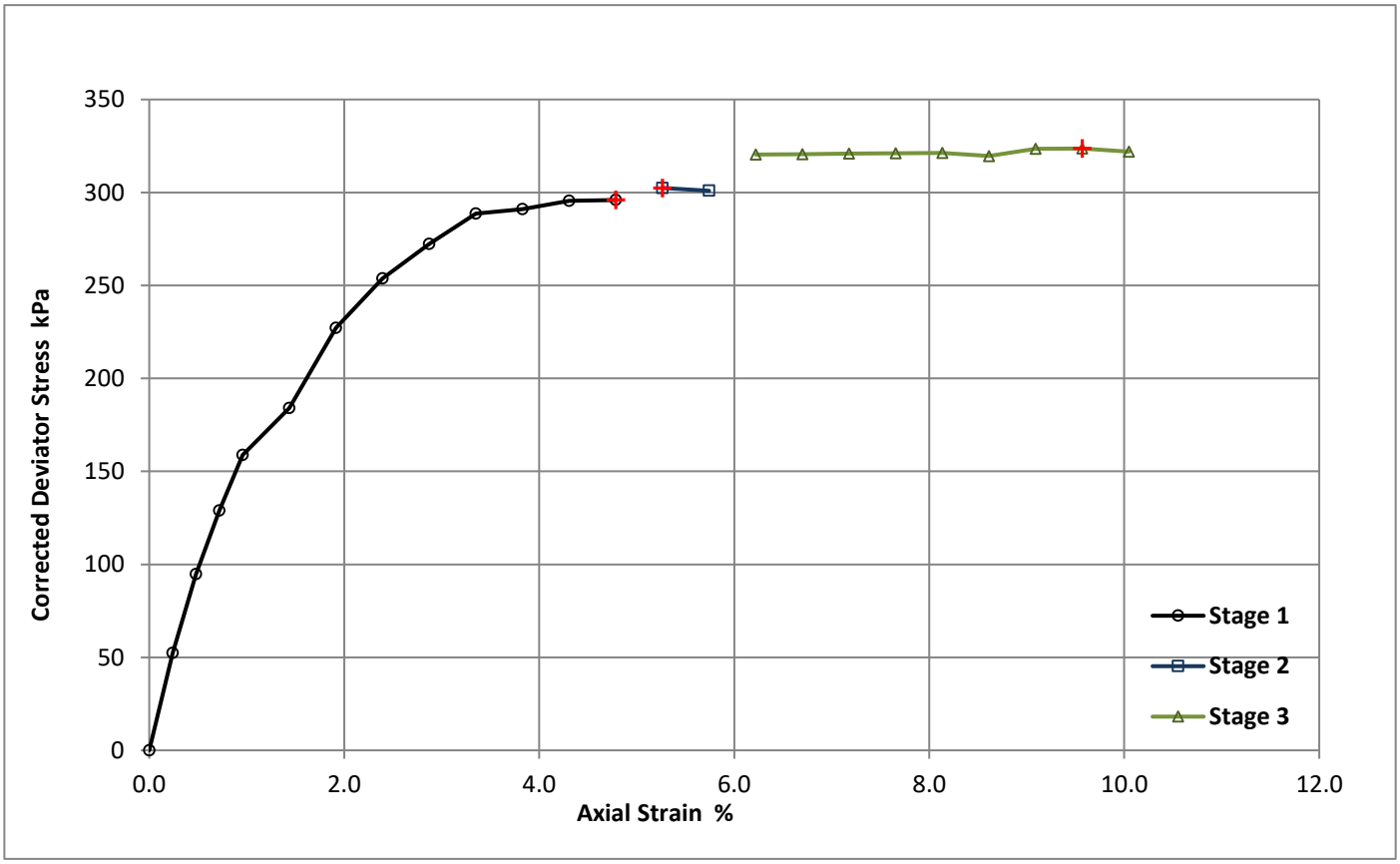
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

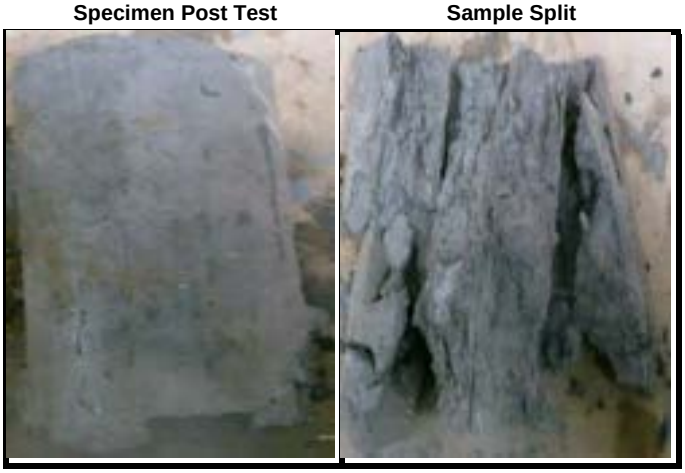
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH34
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top	12.35
		Depth Base	12.70
		Sample Type	U



Moisture Content (%)	9.3		
Bulk Density (Mg/m^3)	2.24		
Dry Density (Mg/m^3)	2.05		
Specimen Length (mm)	209		
Specimen Diamteter (mm)	102		
Cell Pressures (kPa)	120	240	480
Deviator Stress (kPa)	296	302	324
Undrained Shear Strength (kPa)	148	151	162
Failure Strain (%)	4.8	5.3	9.6
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

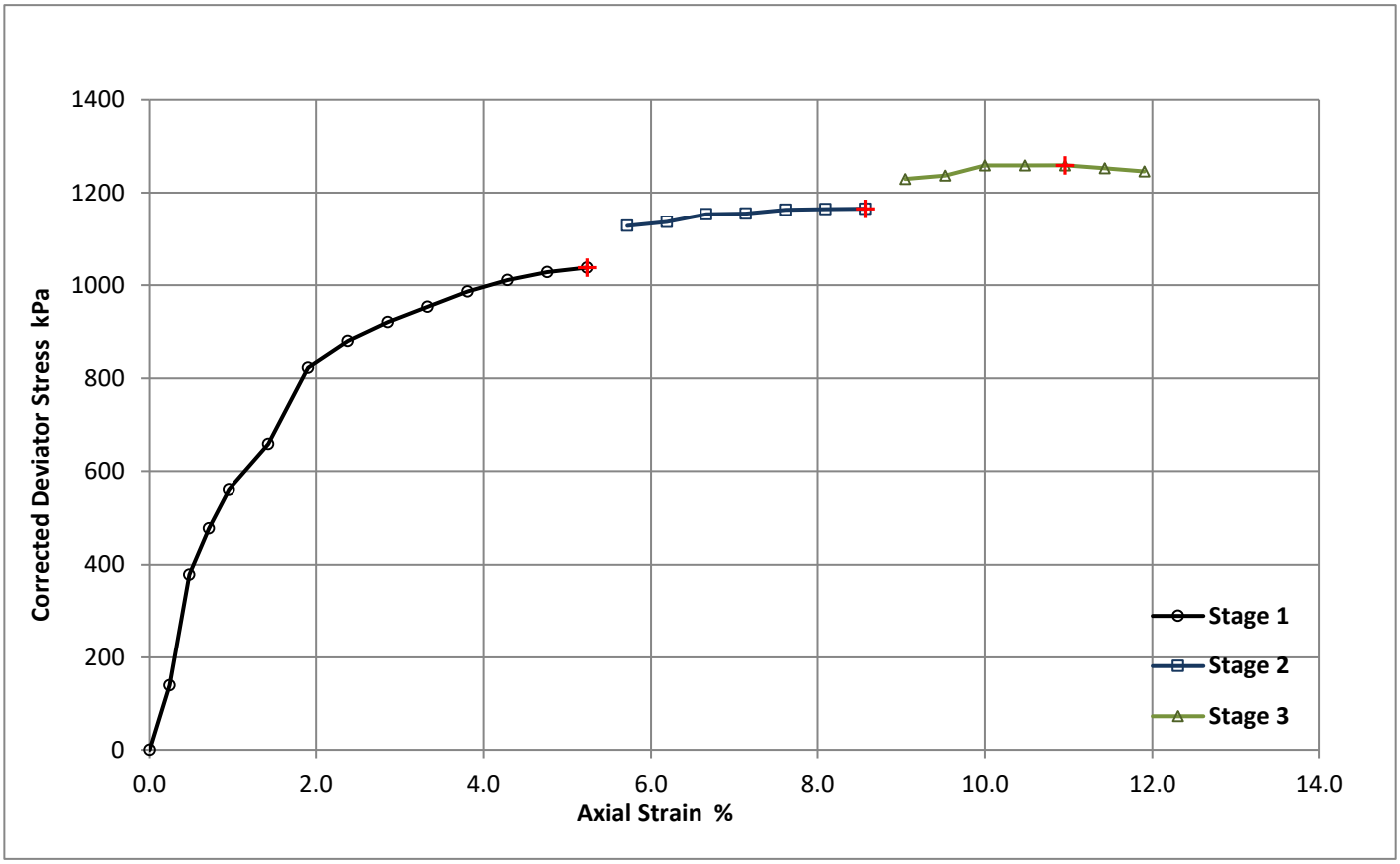
Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

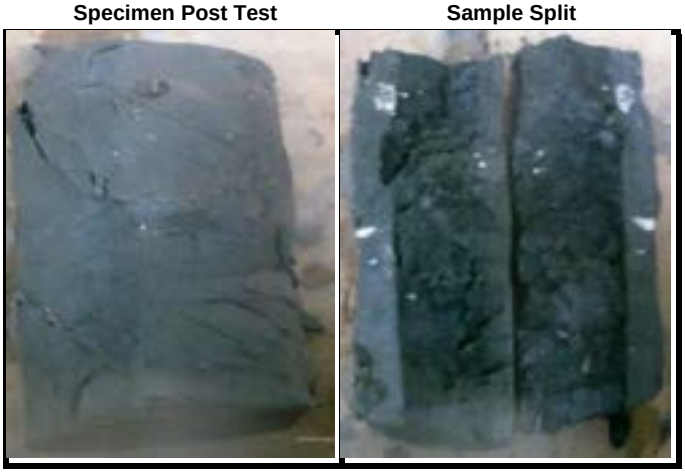
UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	41731
		Borehole/Pit No.	BH34
Site Name	A47 Wansford	Sample No.	
Soil Description	Grey silty CLAY with shell fragments.	Depth Top	23.16
		Depth Base	23.47
		Sample Type	U



Moisture Content (%)	16		
Bulk Density (Mg/m^3)	2.38		
Dry Density (Mg/m^3)	2.04		
Specimen Length (mm)	210		
Specimen Diamteter (mm)	94		
Cell Pressures (kPa)	230	460	920
Deviator Stress (kPa)	1038	1165	1259
Undrained Shear Strength (kPa)	519	582	630
Failure Strain (%)	5.2	8.6	11
Mode Of Failure	Compound		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

Specimen Post Test **Sample Split**



Checked	12-05-19	Ben Sharp	[redacted]
Approved	13-05-19	Paul Evans	[redacted]

UKAS TESTING 2788

Test Report: Quick Shearbox Test

BS1377:Part 7:4.5 :1990.

Borehole:	BH12	Depth (m) from:	3.50
Sample Number :		Depth (m) to:	4.00

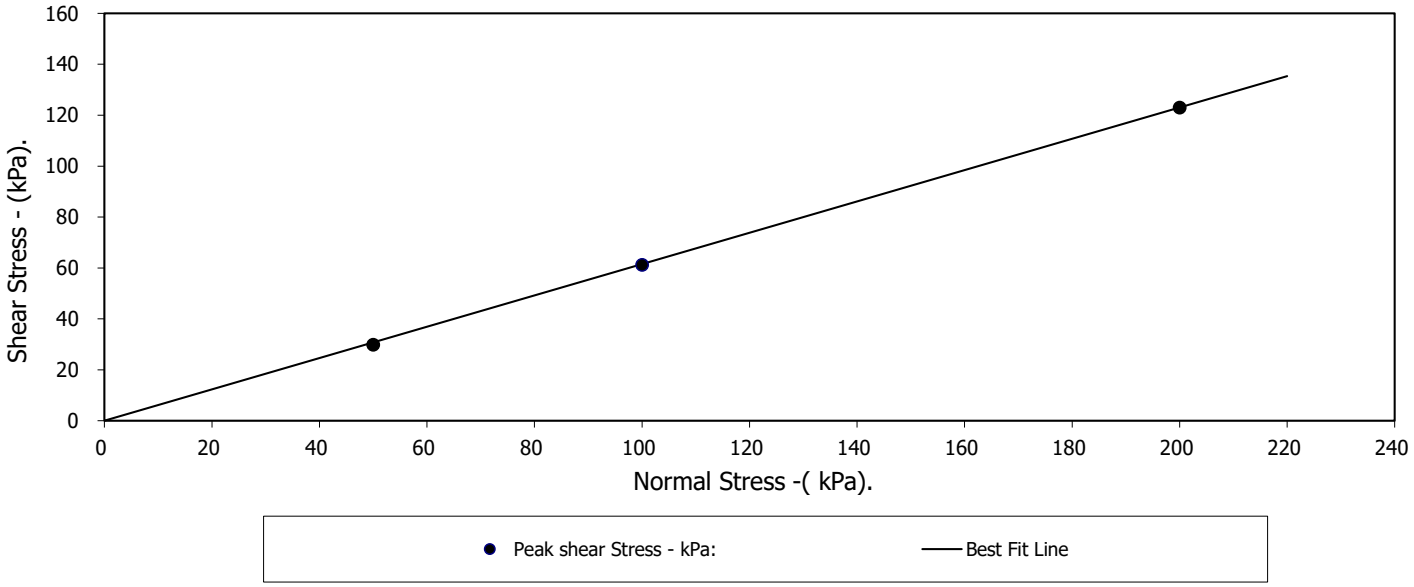
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded material above 2.00mm removed

Sample Description:
Brown fine to coarse gravelly slightly clayey silty fine to coarse SAND

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.98	23.98	23.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	7	7	7
Bulk Density - Mg/m3:	1.70	1.70	1.70
Dry Density - Mg/m3:	1.59	1.59	1.59
Voids Ratio:	0.6687	0.6687	0.6676
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	23.42	23.11	22.81
Shear			
Rate of Strain (mm/min)	0.625	0.625	0.625
Strain at peak shear stress (mm)	4.12	4.34	4.72
Peak shear Stress - kPa:	30	61	123

PEAK	
Angle of Shearing Resistance:(θ)	**31.6**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



[redacted] 15/01/19
Checked Page 1 by: Date

[redacted] 15/01/19
Approved Page 1 by: Date

Contract No.:
42204

Client Ref Number:
17076

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

030704 QSHEARBOX

Test Report: Quick Shearbox Test

BS1377:Part 7:4.5 :1990.

Borehole:	BH17	Depth (m) from:	6.00
Sample Number :		Depth (m) to:	7.17

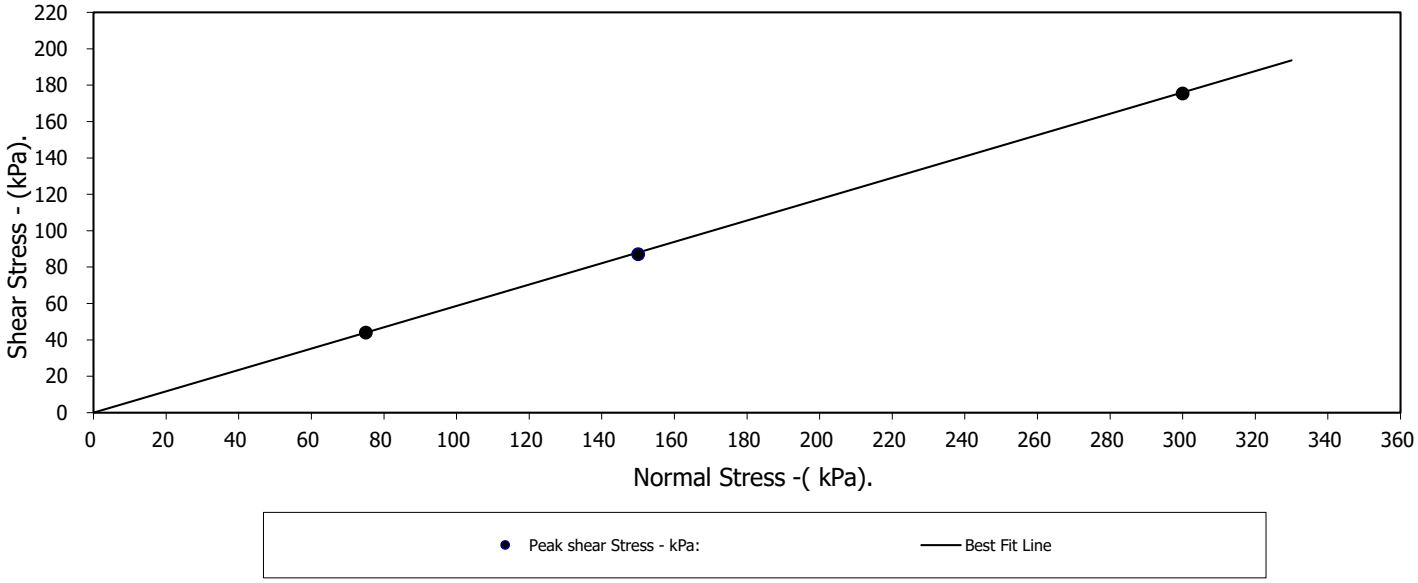
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded material above 2.00mm removed

Sample Description:
Light brown slightly silty fine to coarse SAND

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.98	23.98	23.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	21	21	21
Bulk Density - Mg/m3:	1.80	1.80	1.80
Dry Density - Mg/m3:	1.49	1.49	1.49
Voids Ratio:	0.7745	0.7748	0.7744
Normal Pressure- kPa	75	150	300
Consolidation			
Consolidated Height - mm:	23.84	23.51	23.18
Shear			
Rate of Strain (mm/min)	0.625	0.625	0.625
Strain at peak shear stress (mm)	4.11	3.99	3.93
Peak shear Stress - kPa:	44	87	175

PEAK	
Angle of Shearing Resistance:(θ)	**30.4**
Effective Cohesion - kPa:	**0**

FAILURE CONDITIONS



[redacted] 07/01/19
Checked Page 1 by: Date

[redacted] 07/01/19
Approved Page 1 by: Date

Contract No.:
42000

Client Ref Number:
17076

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Test Report: Quick Shearbox Test

BS1377:Part 7:4.5 :1990.

Borehole:	BH31	Depth (m) from:	6.00
Sample Number :		Depth (m) to:	6.50

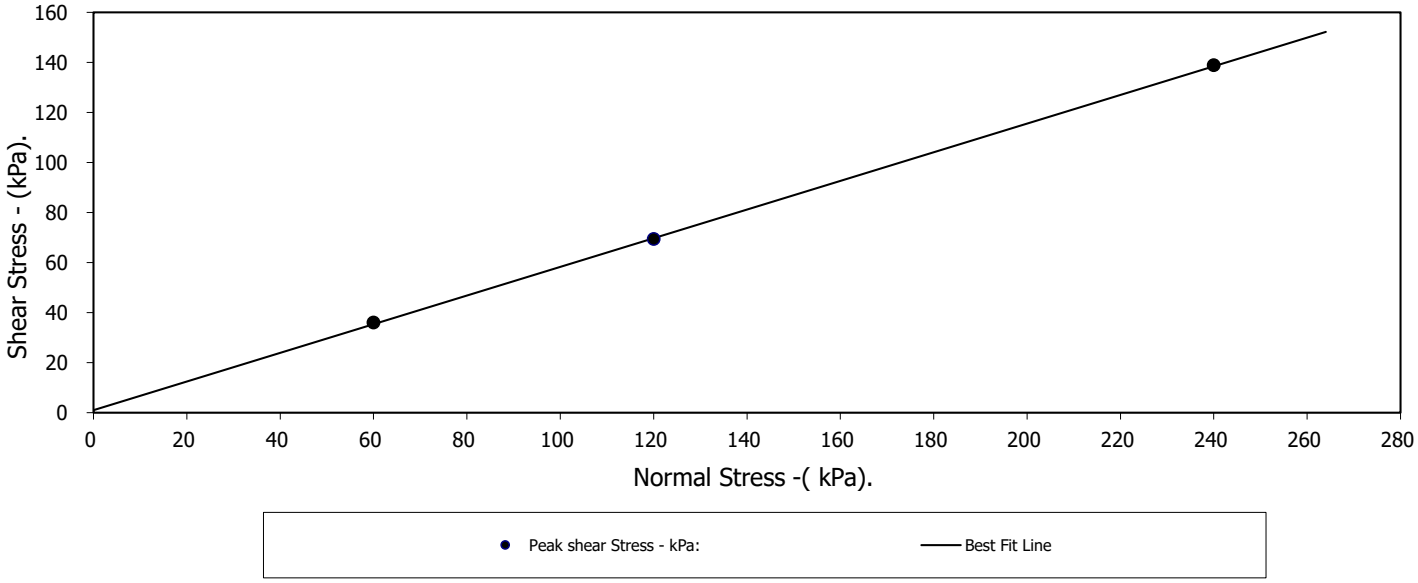
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded material above 2.00mm removed

Sample Description:
Light brown slightly silty fine to coarse SAND

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.98	23.98	23.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	20	20	20
Bulk Density - Mg/m3:	1.75	1.75	1.75
Dry Density - Mg/m3:	1.46	1.46	1.46
Voids Ratio:	0.8181	0.8185	0.8178
Normal Pressure- kPa	60	120	240
Consolidation			
Consolidated Height - mm:	23.87	23.55	23.21
Shear			
Rate of Strain (mm/min)	0.625	0.625	0.625
Strain at peak shear stress (mm)	4.25	4.13	4.09
Peak shear Stress - kPa:	36	69	139

PEAK	
Angle of Shearing Resistance:(θ)	**29.8**
Effective Cohesion - kPa:	**1**

FAILURE CONDITIONS



[redacted] 07/01/19
Checked Page 1 by: Date

[redacted] 07/01/19
Approved Page 1 by: Date

Contract No.:
42000

Client Ref Number:
17076

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50
Date		21/01/2019
Disturbed / Undisturbed		U

Description of Specimen

Grey sandy silty CLAY

Initial Specimen Conditions

Height	mm	210.00
Diameter	mm	102.00
Area	mm^2	8171.28
Volume	cm^3	1715.97
Mass	g	3882.40
Dry Mass	g	3472.90
Density	Mg/m^3	2.26
Dry Density	Mg/m^3	2.02
Moisture Content	%	12
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	12
Density	Mg/m^3	2.38
Dry Density	Mg/m^3	2.12

[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50

Test Setup

Date started	05/01/2019
Date Finished	20/01/2019
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P3
Cell Number	C3

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	500.00
Final Pore Pressure	kPa	493.00
Final B Value		0.98

Consolidation

Effective Pressure	kPa	90.00	180.00	360.00
Cell Pressure	kPa	500.00	500.00	500.00
Back Pressure	kPa	410.00	320.00	140.00
Excess Pore Pressure	kPa	83.00	90.00	180.00
Pore Pressure at End	kPa	410.00	320.00	140.00
Consolidated Volume	cm^3	1682.27	1670.47	1637.87
Consolidated Height	mm	208.63	199.47	189.31
Consolidated Area	mm^2	8064.30	8374.53	8652.40
Vol. Compressibility	m^2/MN	0.04790	0.02192	0.13940
Consolidation Coef.	$m^2/yr.$	0.82411	0.17517	0.16974

[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

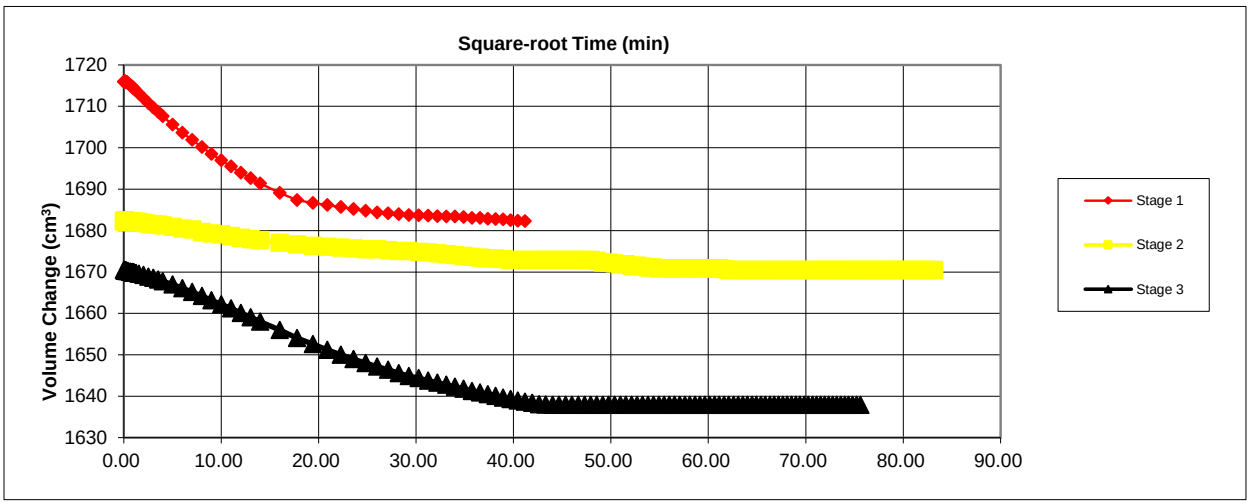
Consolidated Undrained Triaxial Compression Test

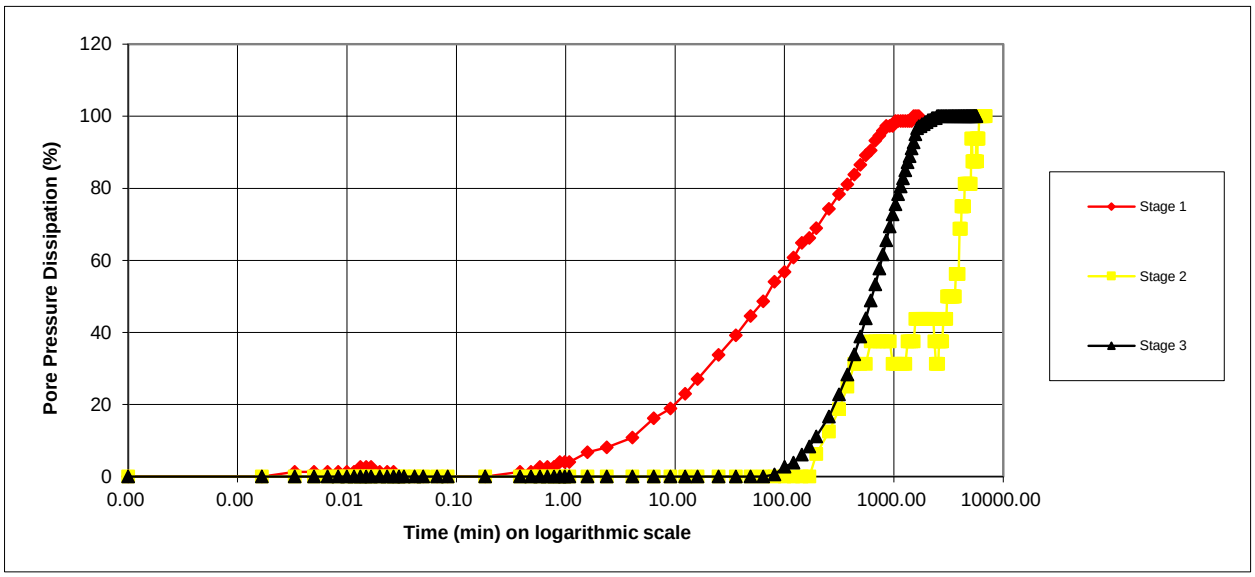
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50

Consolidation Stage





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref
17076.L

Contract No
42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50

Shearing

Initial Cell Pressure	kPa	500	500	500
Initial Pore Pressure	kPa	410	320	140
Rate of Strain	mm/min	0.0174	0.0035	0.0033
Max Deviator Stress				
Axial Strain		5.071	9.053	14.486
Axial Stress	kPa	164.801	320.43	459.99
Cor. Deviator stress	kPa	161.764	305.97	455.30
Effective Major Stress	kPa	232.764	500.97	751.30
Effective Minor Stress	kPa	72.000	195.00	296.00
Effective Stress Ratio		3.233	2.569	2.54
s'	kPa	152.382	347.98	523.65
t'	kPa	80.382	152.98	227.65
Max Effective Priciple Stress Ratio				
Axial Strain		4.999	8.316	11.850
Axial Stress	kPa	163.630	309.066	423.677
Cor. Deviator stress	kPa	159.599	304.683	419.146
Effective Major Stress	kPa	230.599	493.683	700.146
Effective Minor Stress	kPa	71.000	189.000	281.000
Effective Stress Ratio		3.248	2.612	2.492
s'	kPa	150.799	341.342	490.573
t'	kPa	79.799	152.342	209.573
Shear Resistance Angle	degs			22.7
Cohesion c'	kPa			23

[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

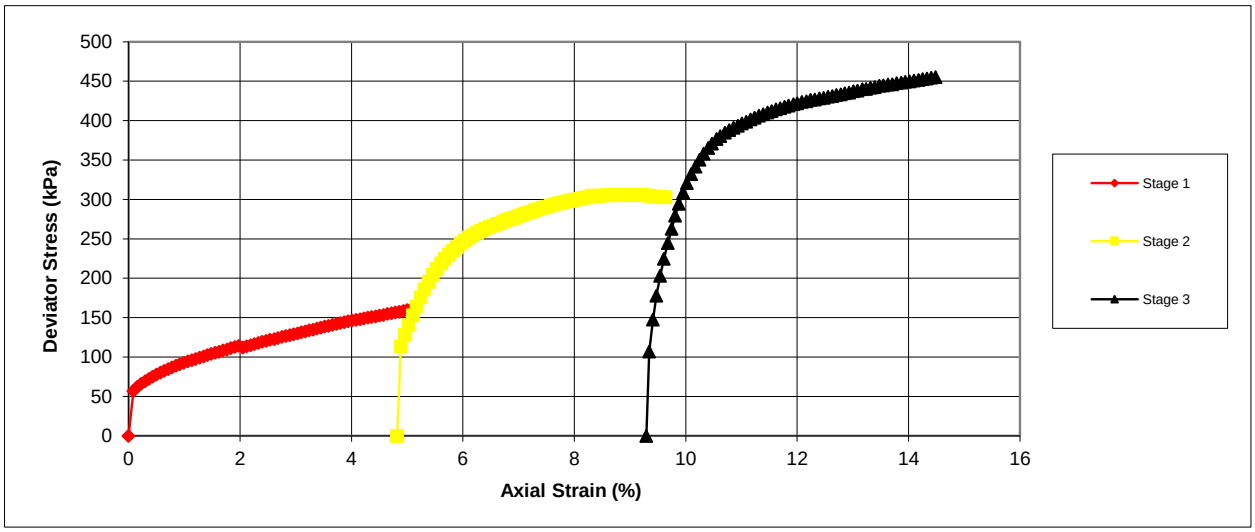
Consolidated Undrained Triaxial Compression Test

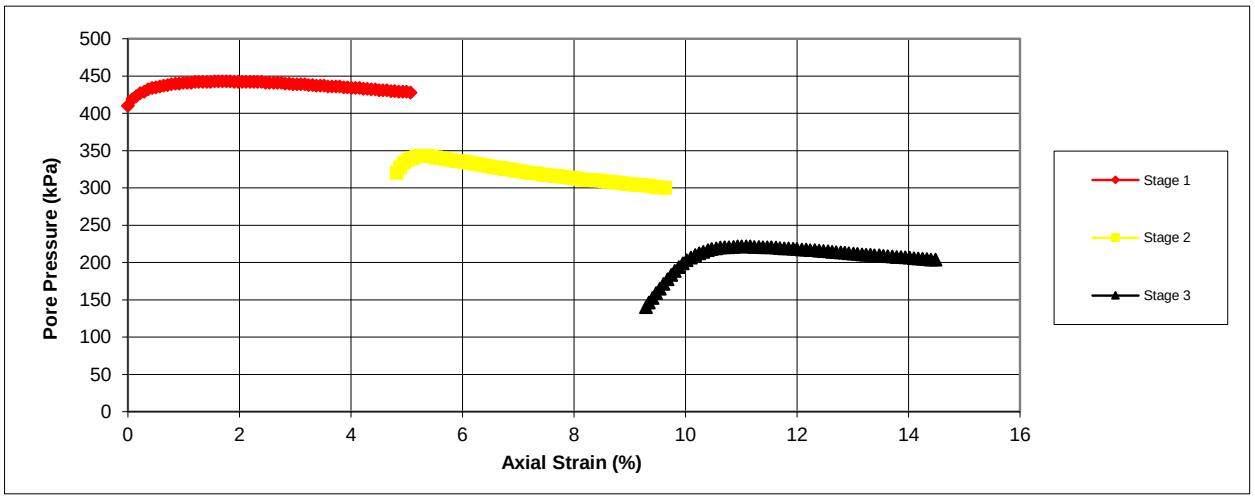
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50

Shearing Stage





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

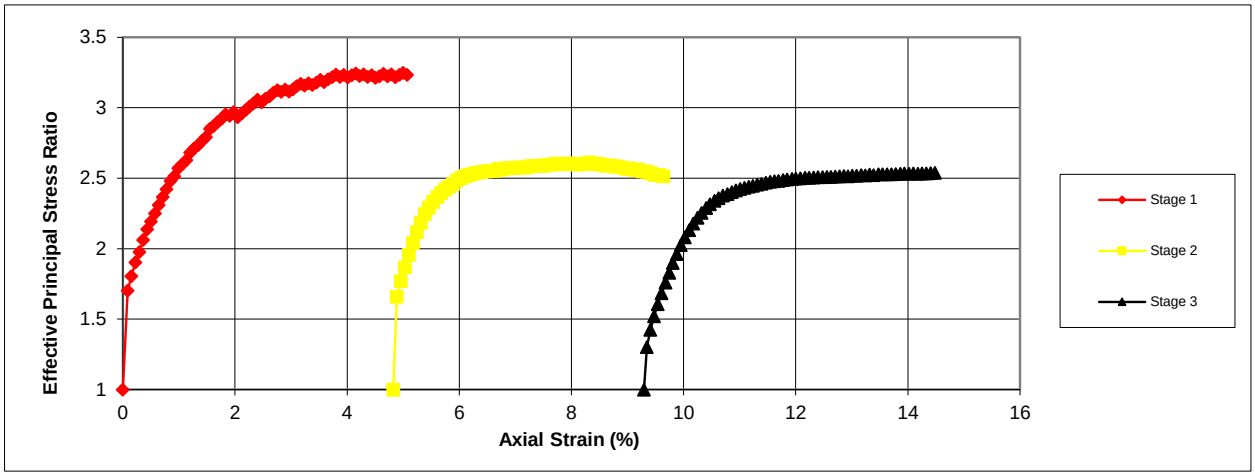
Consolidated Undrained Triaxial Compression Test

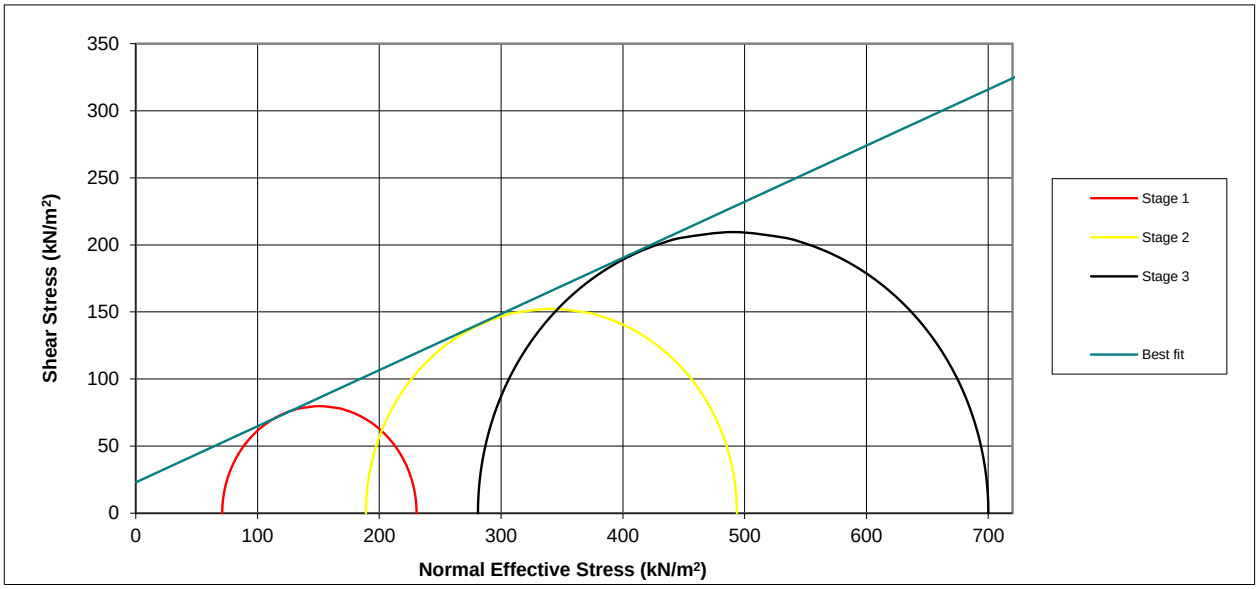
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50

Shearing Stage





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref
17076.L

A47 Wansford

Contract No
42204

GSTL
GEO SITE & TESTING SERVICES LTD

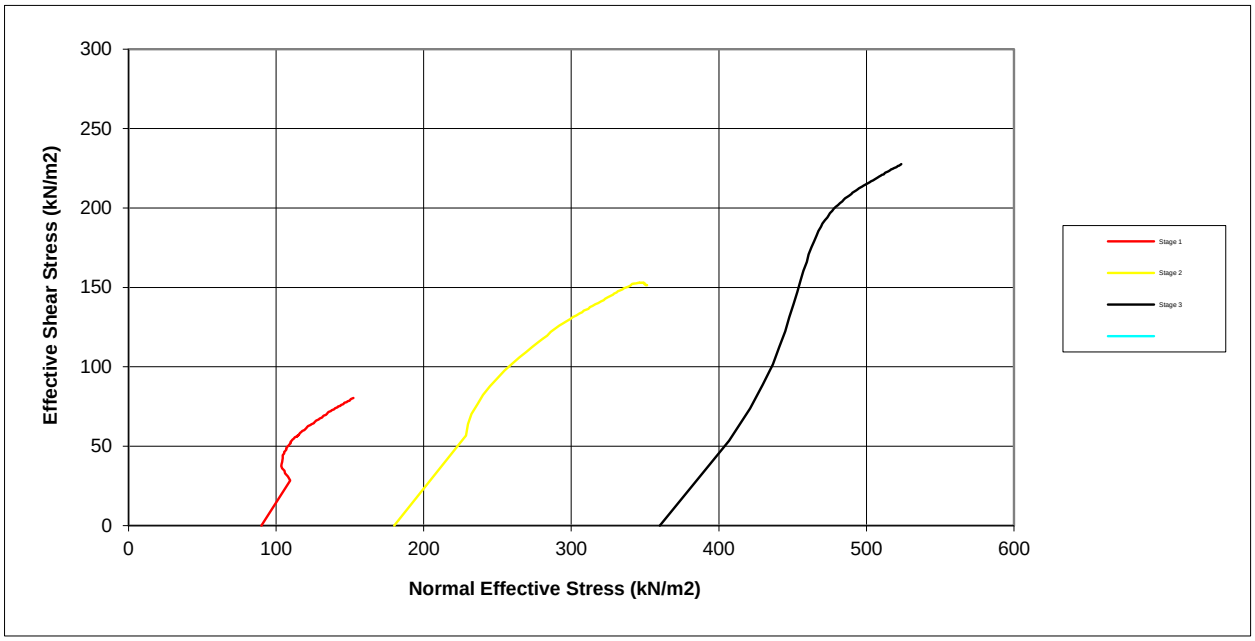
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50

Shearing Stage



[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14A
Sample No.		
Depth	from(m)	9.00
Depth	to(m)	9.50





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

A47 Wansford

Contract No

42204

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20
Date		21/01/2019
Disturbed / Undisturbed		U

Description of Specimen

Grey silty CLAY

Initial Specimen Conditions

Height	mm	210.00
Diameter	mm	102.00
Area	mm^2	8171.28
Volume	cm^3	1715.97
Mass	g	3606.40
Dry Mass	g	3025.30
Density	Mg/m^3	2.10
Dry Density	Mg/m^3	1.76
Moisture Content	%	19
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	22
Density	Mg/m^3	2.36
Dry Density	Mg/m^3	1.93

[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20

Test Setup

Date started	05/01/2019
Date Finished	20/01/2019
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P4
Cell Number	C4

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	600.00
Final Pore Pressure	kPa	596.00
Final B Value		1.01

Consolidation

Effective Pressure	kPa	120.00	240.00	480.00
Cell Pressure	kPa	600.00	600.00	600.00
Back Pressure	kPa	480.00	360.00	120.00
Excess Pore Pressure	kPa	115.00	120.00	240.00
Pore Pressure at End	kPa	480.00	360.00	120.00
Consolidated Volume	cm^3	1632.57	1595.26	1563.80
Consolidated Height	mm	206.60	198.57	188.07
Consolidated Area	mm^2	7906.52	8034.86	8315.66
Vol. Compressibility	m^2/MN	0.10125	0.06348	0.16434
Consolidation Coef.	$m^2/yr.$	0.40457	0.36513	0.77250

[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

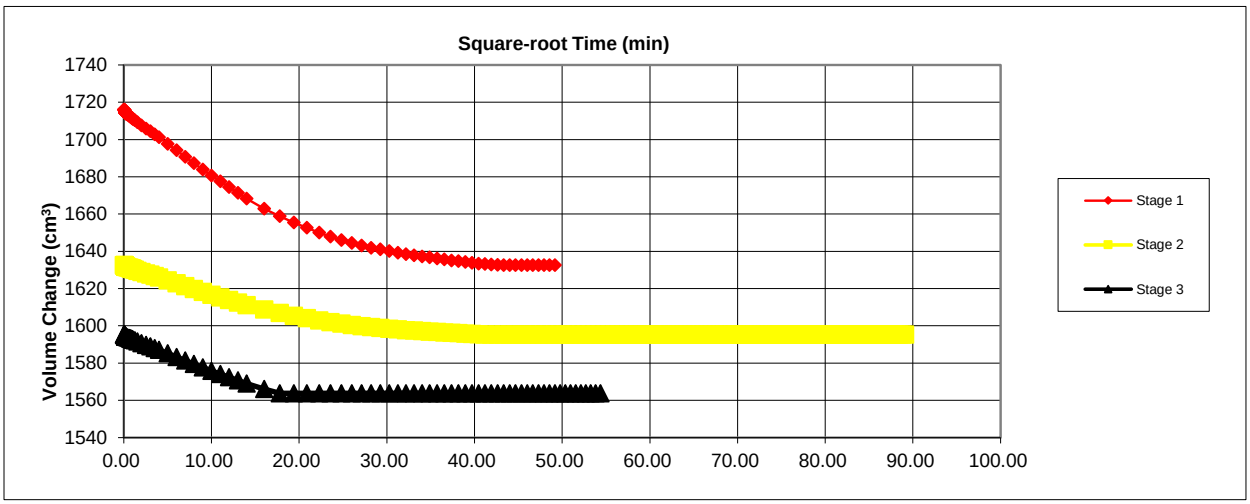
Consolidated Undrained Triaxial Compression Test

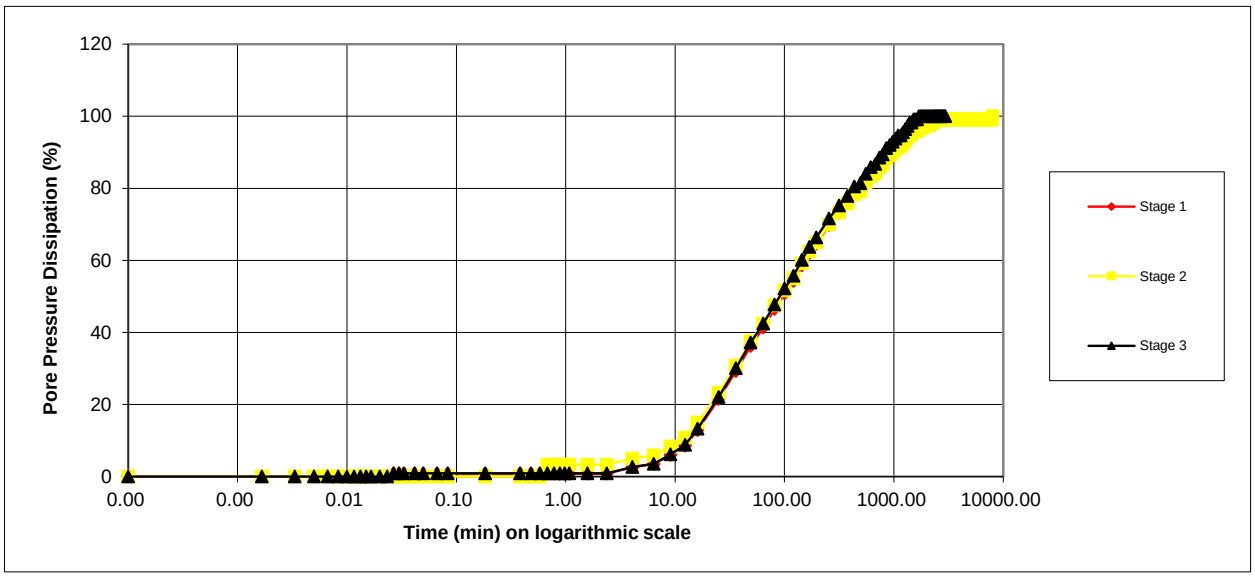
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20

Consolidation Stage





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref
17076.L

A47 Wansford

Contract No
42204

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20

Shearing

Initial Cell Pressure	kPa	600	600	600
Initial Pore Pressure	kPa	480	360	120
Rate of Strain	mm/min	0.0085	0.0073	0.0147
Max Deviator Stress				
Axial Strain		1.951	8.372	14.794
Axial Stress	kPa	186.388	289.89	340.63
Cor. Deviator stress	kPa	187.090	284.50	335.92
Effective Major Stress	kPa	260.090	495.50	619.92
Effective Minor Stress	kPa	74.000	211.00	284.00
Effective Stress Ratio		3.515	2.348	2.18
s'	kPa	167.045	353.25	451.96
t'	kPa	93.045	142.25	167.96
Max Effective Priciple Stress Ratio				
Axial Strain		1.462	7.209	14.794
Axial Stress	kPa	180.712	286.574	340.629
Cor. Deviator stress	kPa	180.451	282.308	335.922
Effective Major Stress	kPa	251.451	489.308	619.922
Effective Minor Stress	kPa	71.000	207.000	284.000
Effective Stress Ratio		3.542	2.364	2.183
s'	kPa	161.225	348.154	451.961
t'	kPa	90.225	141.154	167.961
Shear Resistance Angle	degs			15.5
Cohesion c'	kPa			49

[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

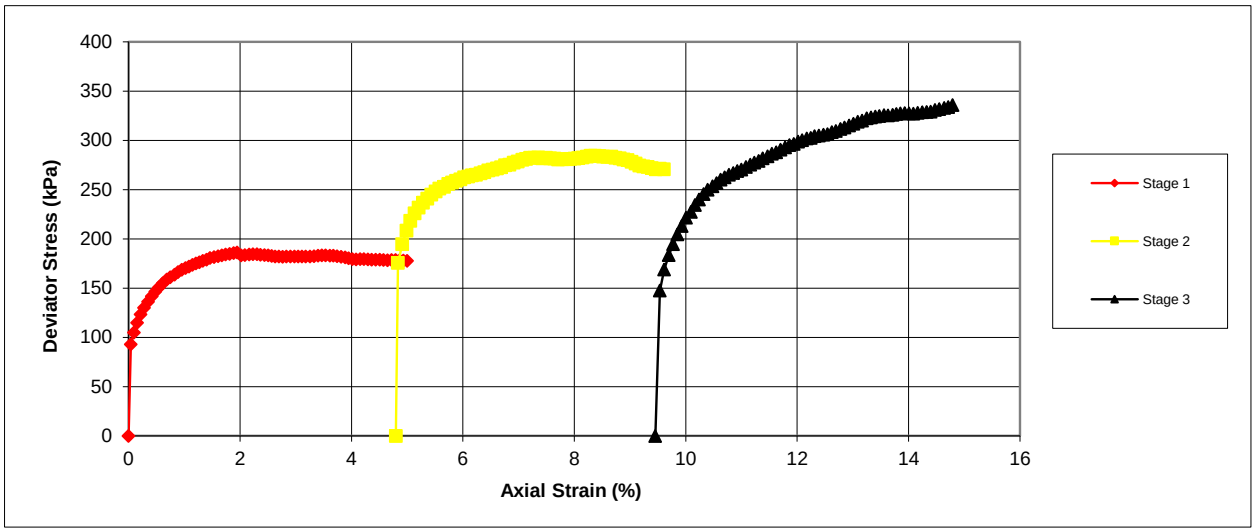
Consolidated Undrained Triaxial Compression Test

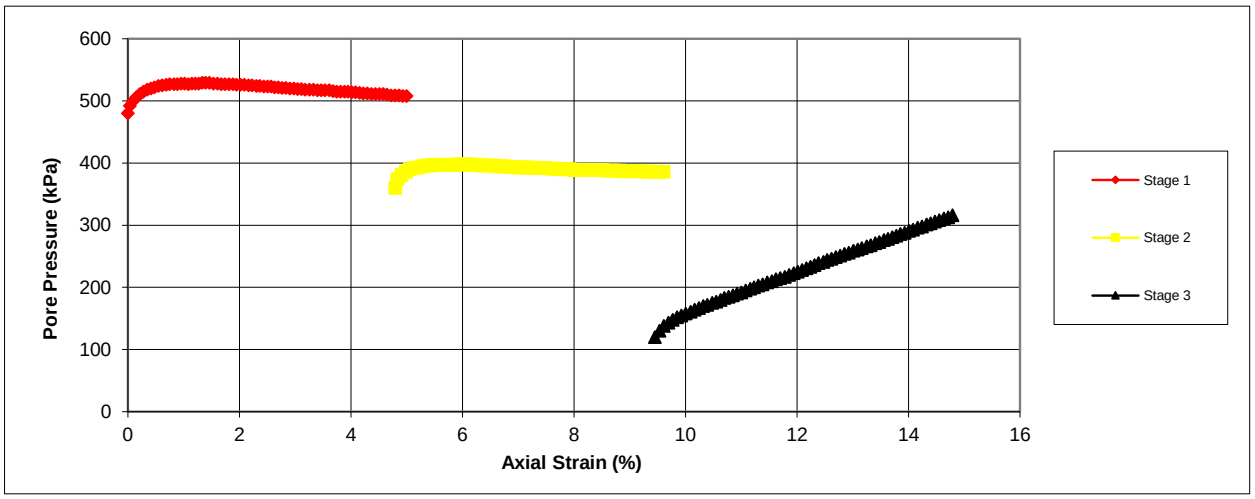
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20

Shearing Stage





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

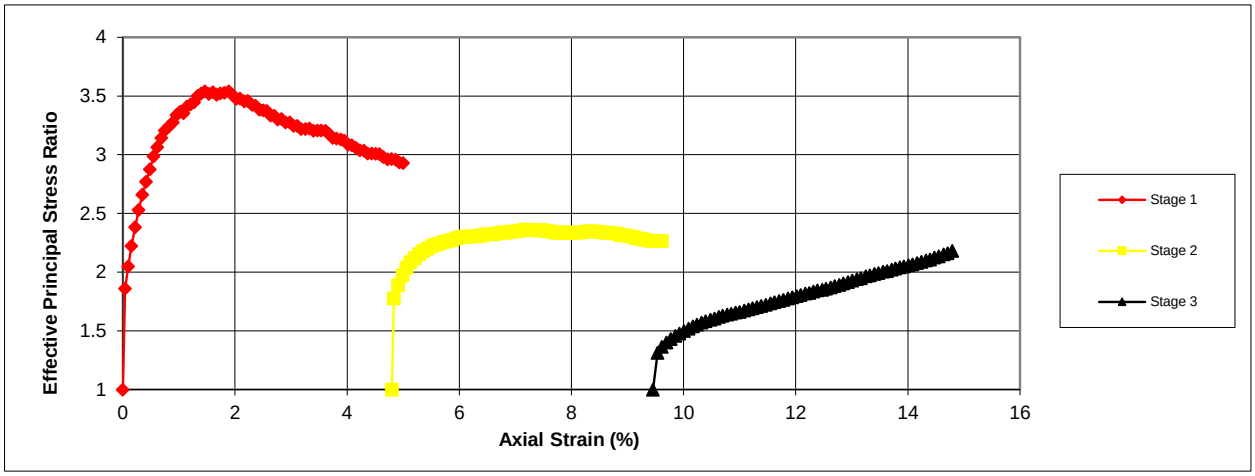
Consolidated Undrained Triaxial Compression Test

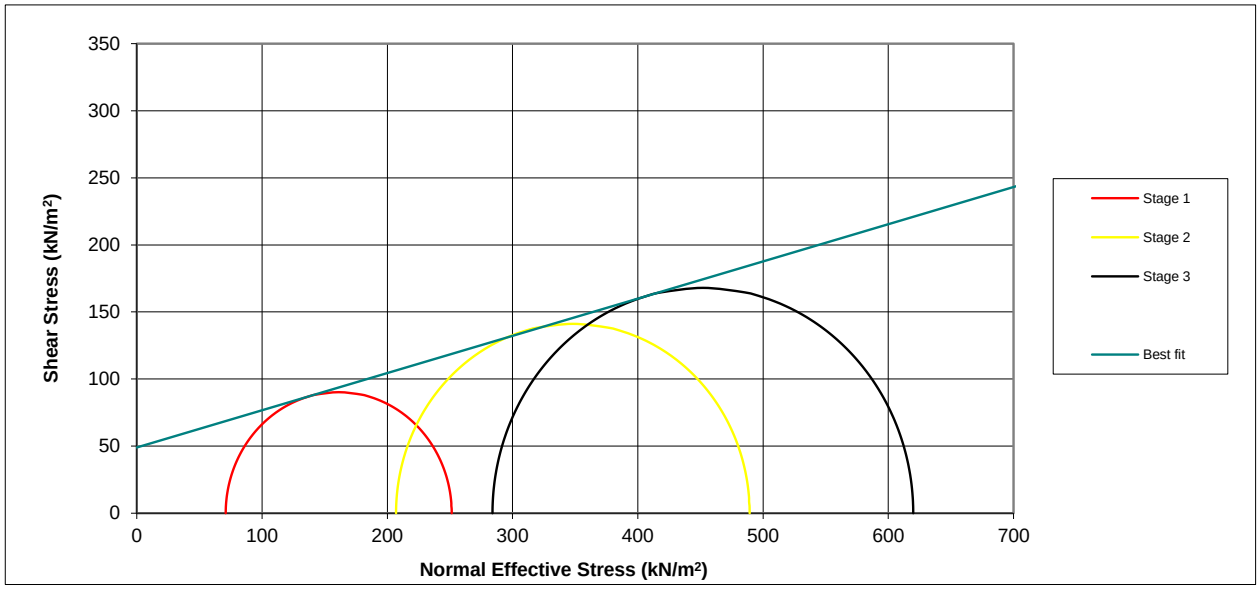
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20

Shearing Stage





[redacted]

Checked and Approved By

29/01/19
Date

Client Ref
17076.L

A47 Wansford

Contract No
42204

GSTL
GEO SITE & TESTING SERVICES LTD

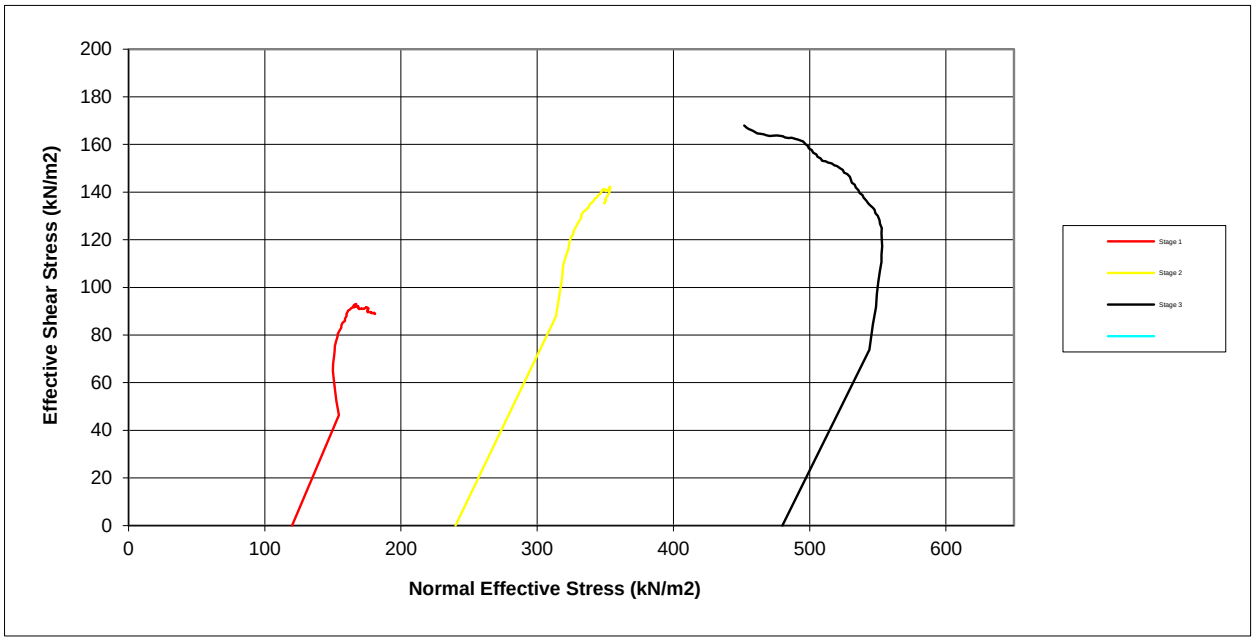
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20

Shearing Stage



[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

Contract No

42204

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH18
Sample No.		
Depth	from(m)	12.70
Depth	to(m)	13.20



[redacted]

Checked and Approved By

29/01/19
Date

Client Ref

17076.L

A47 Wansford

Contract No

42204

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	
Date		26/12/2019
Disturbed / Undisturbed		U

Description of Specimen

Grey slightly silty CLAY

Initial Specimen Conditions

Height	mm	210.00
Diameter	mm	103.00
Area	mm^2	8332.29
Volume	cm^3	1749.78
Mass	g	3590.10
Dry Mass	g	2974.90
Density	Mg/m^3	2.05
Dry Density	Mg/m^3	1.70
Moisture Content	%	21
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	19
Density	Mg/m^3	2.18
Dry Density	Mg/m^3	1.84

[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

Contract No

42000

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	

Test Setup

Date started	17/12/2019
Date Finished	25/12/2019
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P6
Cell Number	C6

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	600.00
Final Pore Pressure	kPa	595.00
Final B Value		0.98

Consolidation

Effective Pressure	kPa	120.00	240.00	480.00
Cell Pressure	kPa	600.00	600.00	600.00
Back Pressure	kPa	480.00	360.00	120.00
Excess Pore Pressure	kPa	115.00	16.00	240.00
Pore Pressure at End	kPa	480.00	360.00	120.00
Consolidated Volume	cm^3	1680.58	1651.56	1619.64
Consolidated Height	mm	207.23	198.95	186.35
Consolidated Area	mm^2	8112.61	8302.02	8692.13
Vol. Compressibility	m^2/MN	0.08239	0.04797	0.16106
Consolidation Coef.	$m^2/yr.$	0.10047	0.04777	0.22031

[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

Contract No

42000

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

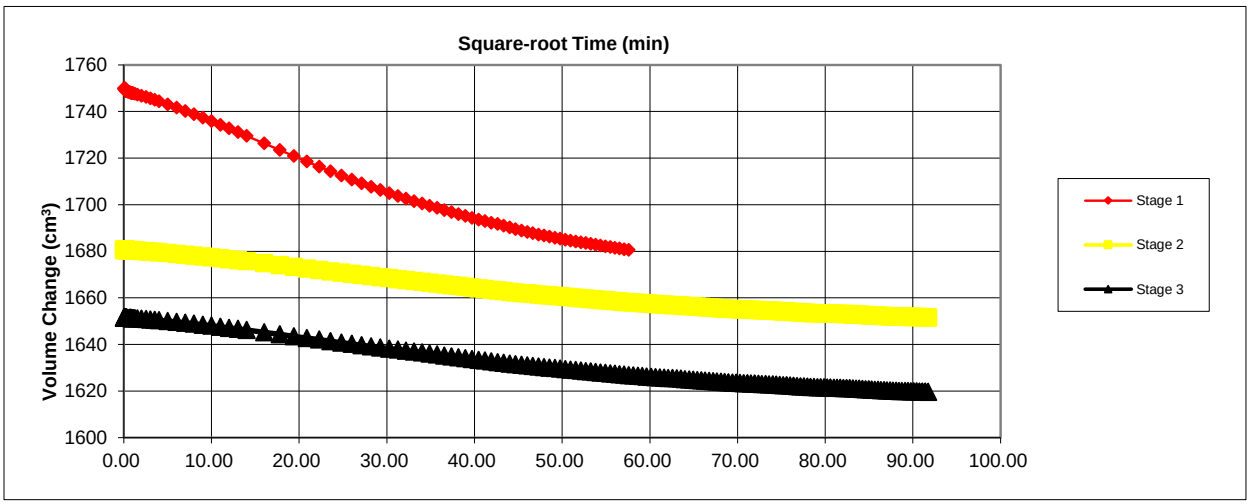
Consolidated Undrained Triaxial Compression Test

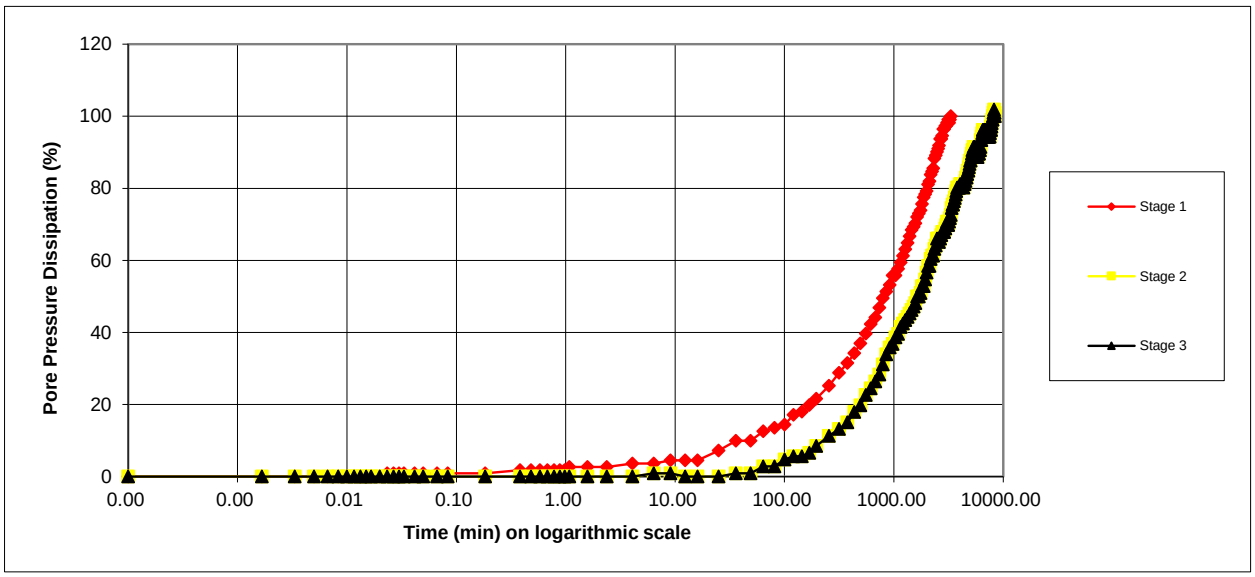
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	

Consolidation Stage





[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

Contract No

42000

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	600	600	600
Initial Pore Pressure	kPa	480	360	120
Rate of Strain	mm/min	0.0021	0.0029	0.0041
Max Deviator Stress				
Axial Strain		3.590	6.466	12.305
Axial Stress	kPa	184.302	320.63	611.77
Cor. Deviator stress	kPa	181.383	316.45	607.22
Effective Major Stress	kPa	238.383	460.45	991.22
Effective Minor Stress	kPa	58.000	144.00	384.00
Effective Stress Ratio		4.110	3.198	2.58
s'	kPa	148.191	302.22	687.61
t'	kPa	90.191	158.22	303.61
Max Effective Priciple Stress Ratio				
Axial Strain		1.756	6.255	12.230
Axial Stress	kPa	177.254	319.657	611.286
Cor. Deviator stress	kPa	176.973	315.499	606.742
Effective Major Stress	kPa	224.973	457.499	989.742
Effective Minor Stress	kPa	48.000	142.000	383.000
Effective Stress Ratio		4.687	3.222	2.584
s'	kPa	136.486	299.749	686.371
t'	kPa	88.486	157.749	303.371
Shear Resistance Angle	degs			23.0
Cohesion c'	kPa			41

[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

Contract No

42000

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

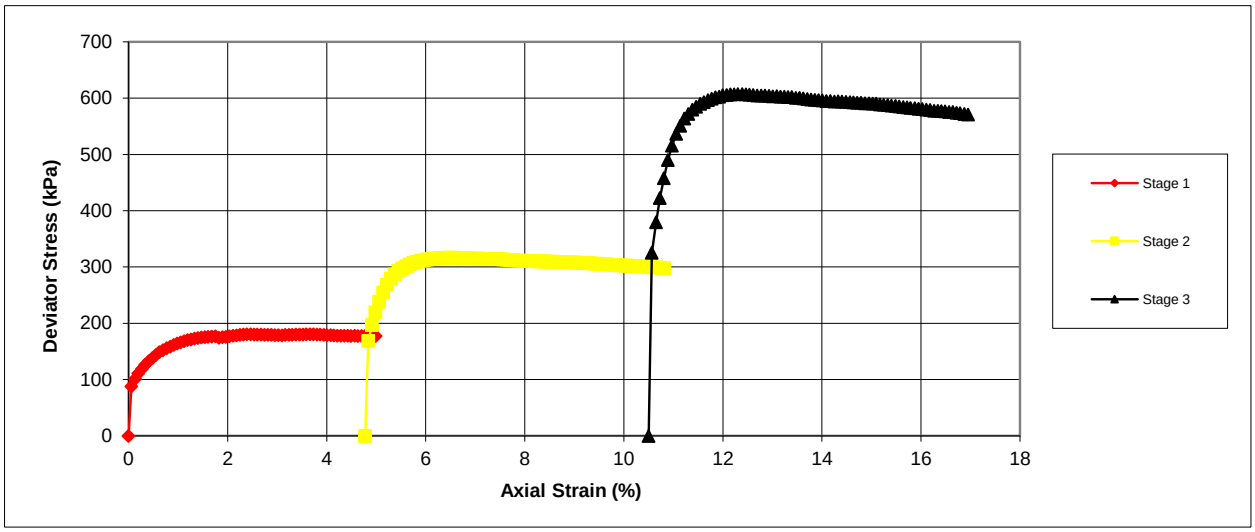
Consolidated Undrained Triaxial Compression Test

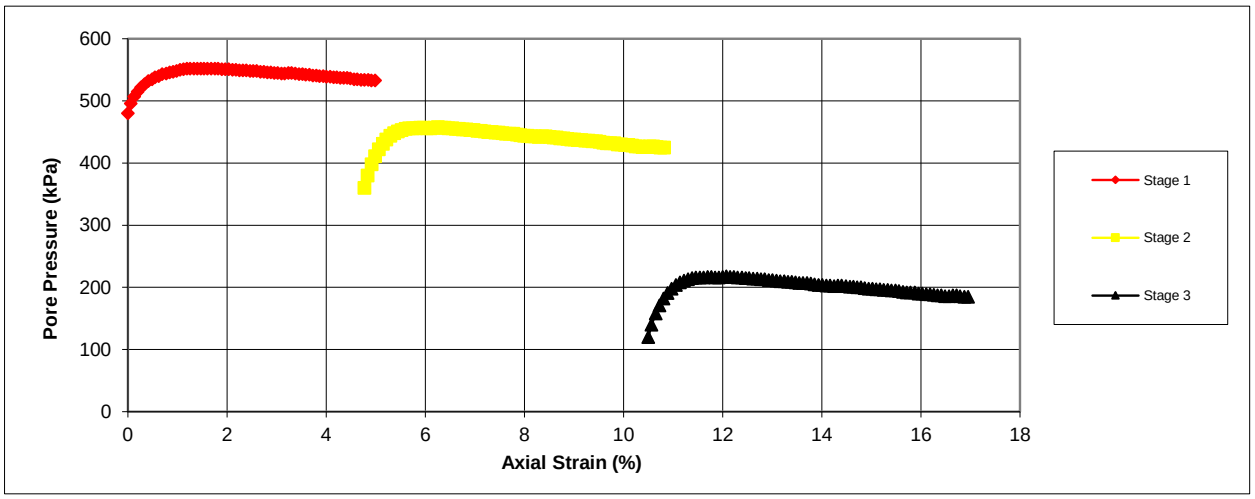
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	

Shearing Stage





[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

Contract No

42000

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

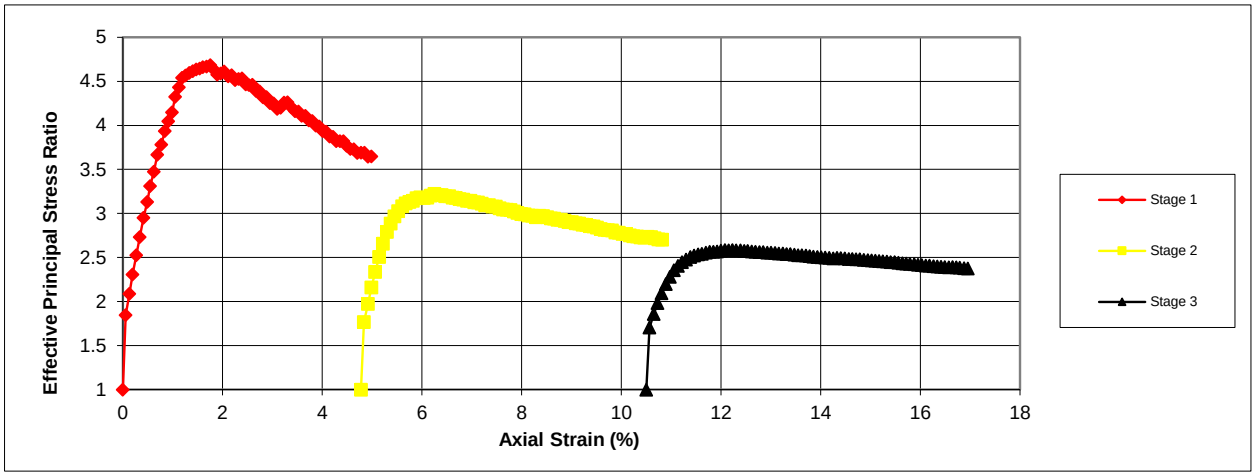
Consolidated Undrained Triaxial Compression Test

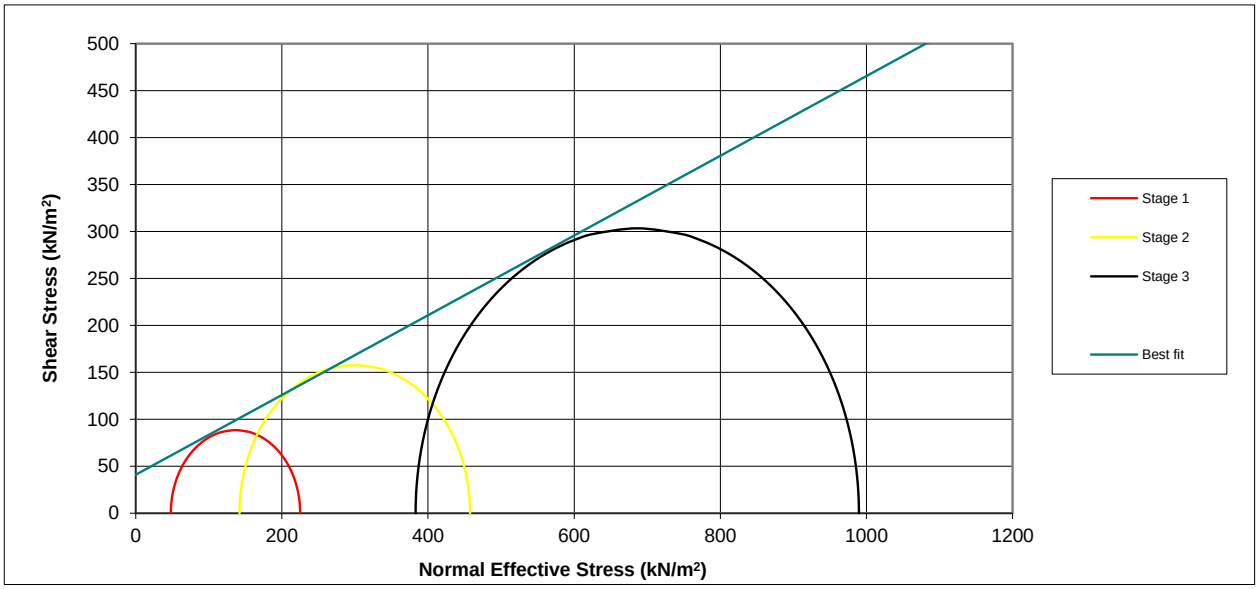
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	

Shearing Stage





[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

A47 Wansford

Contract No

42000

GSTL
GEO SITE & TESTING SERVICES LTD

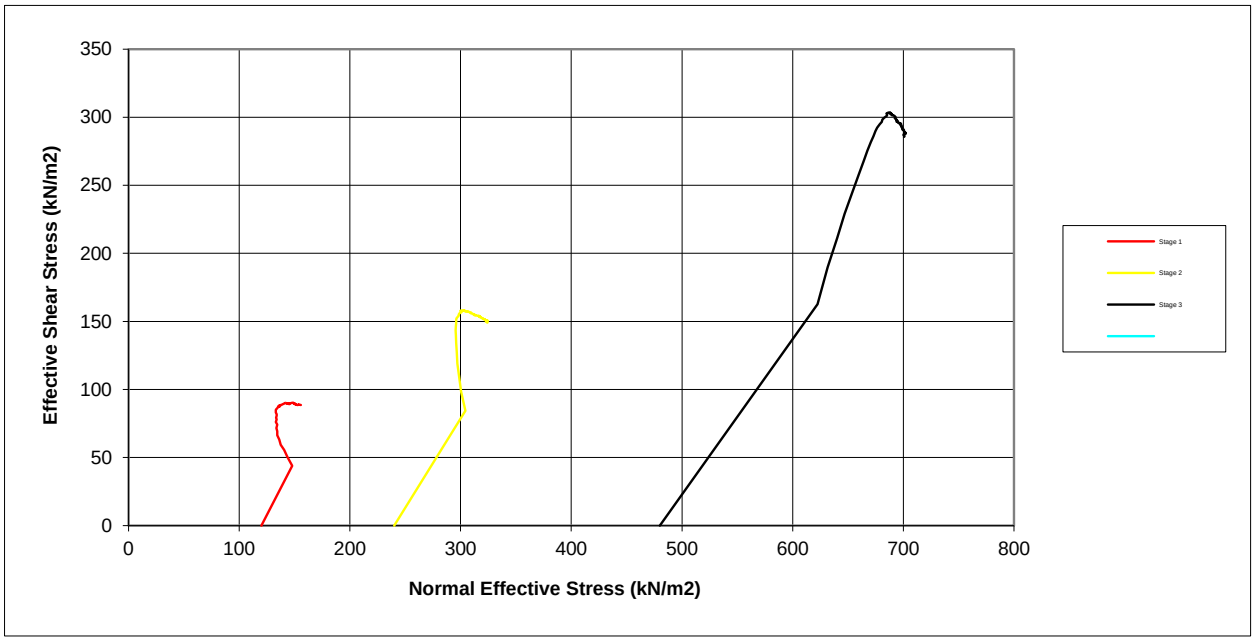
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	

Shearing Stage



[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

A47 Wansford

Contract No

42000

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH22
Sample No.		
Depth	from(m)	12.60
Depth	to(m)	



[redacted]

Checked and Approved By

30/01/19
Date

Client Ref

17076.F

A47 Wansford

Contract No

42000

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	
Date		20/12/2018
Disturbed / Undisturbed		U

Description of Specimen

Grey silty CLAY

Initial Specimen Conditions

Height	mm	210.00
Diameter	mm	104.00
Area	mm^2	8494.87
Volume	cm^3	1783.92
Mass	g	3716.40
Dry Mass	g	3071.20
Density	Mg/m^3	2.08
Dry Density	Mg/m^3	1.72
Moisture Content	%	21
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	18
Density	Mg/m^3	2.16
Dry Density	Mg/m^3	1.83

[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

A47 Wansford

Contract No

41731

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	

Test Setup

Date started	03/12/2018
Date Finished	19/12/2018
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P1
Cell Number	C1

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	600.00
Final Pore Pressure	kPa	600.00
Final B Value		1.00

Consolidation

Effective Pressure	kPa	130.00	260.00	520.00
Cell Pressure	kPa	600.00	600.00	600.00
Back Pressure	kPa	470.00	340.00	80.00
Excess Pore Pressure	kPa	130.00	150.00	260.00
Pore Pressure at End	kPa	470.00	340.00	80.00
Consolidated Volume	cm^3	1701.72	1695.42	1679.72
Consolidated Height	mm	206.77	200.75	191.46
Consolidated Area	mm^2	8233.91	8445.38	8773.43
Vol. Compressibility	m^2/MN	0.09804	0.01089	0.11575
Consolidation Coef.	$m^2/yr.$	0.05509	0.09106	0.09650

[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

A47 Wansford

Contract No

41731

GSTL
GEO SITE & TESTING SERVICES LTD

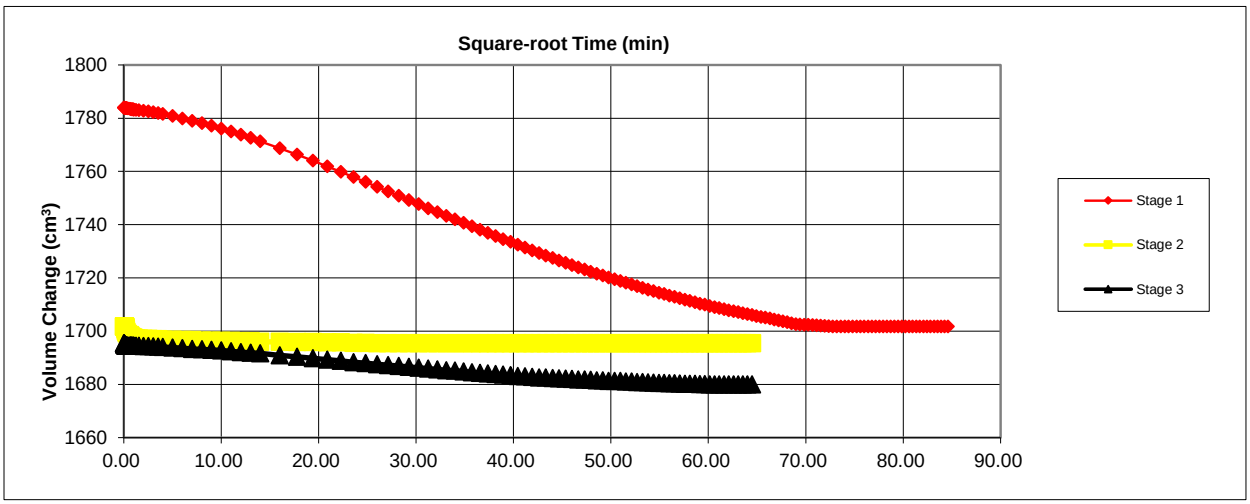
Consolidated Undrained Triaxial Compression Test

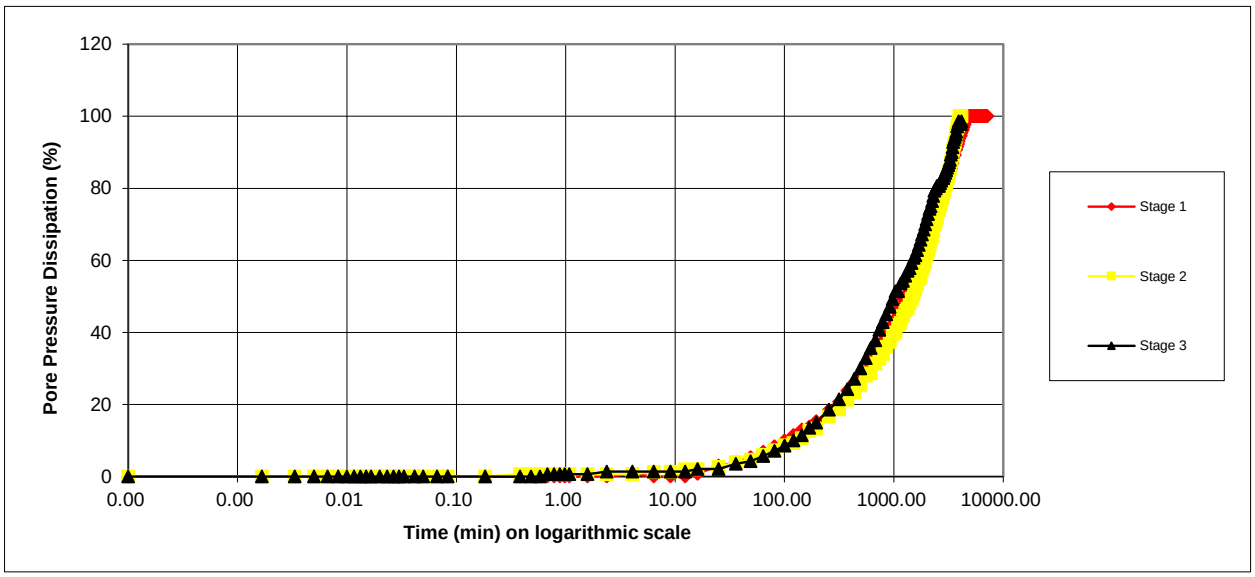
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	

Consolidation Stage





[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

Contract No

41731

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	600	600	600
Initial Pore Pressure	kPa	470	340	80
Rate of Strain	mm/min	0.0011	0.0018	0.0018
Max Deviator Stress				
Axial Strain		2.442	9.125	14.212
Axial Stress	kPa	154.146	237.20	433.71
Cor. Deviator stress	kPa	151.317	232.75	429.06
Effective Major Stress	kPa	214.317	388.75	815.06
Effective Minor Stress	kPa	64.000	156.00	386.00
Effective Stress Ratio		3.349	2.492	2.11
s'	kPa	139.158	272.37	600.53
t'	kPa	75.158	116.37	214.53
Max Effective Priciple Stress Ratio				
Axial Strain		2.442	9.125	14.129
Axial Stress	kPa	154.146	237.196	433.219
Cor. Deviator stress	kPa	150.317	232.746	428.574
Effective Major Stress	kPa	214.317	388.746	813.574
Effective Minor Stress	kPa	64.000	156.000	385.000
Effective Stress Ratio		3.349	2.492	2.113
s'	kPa	139.158	272.373	599.287
t'	kPa	75.158	116.373	214.287
Shear Resistance Angle	degs			17.5
Cohesion c'	kPa			36

[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

A47 Wansford

Contract No

41731

GSTL
GEO SITE & TESTING SERVICES LTD

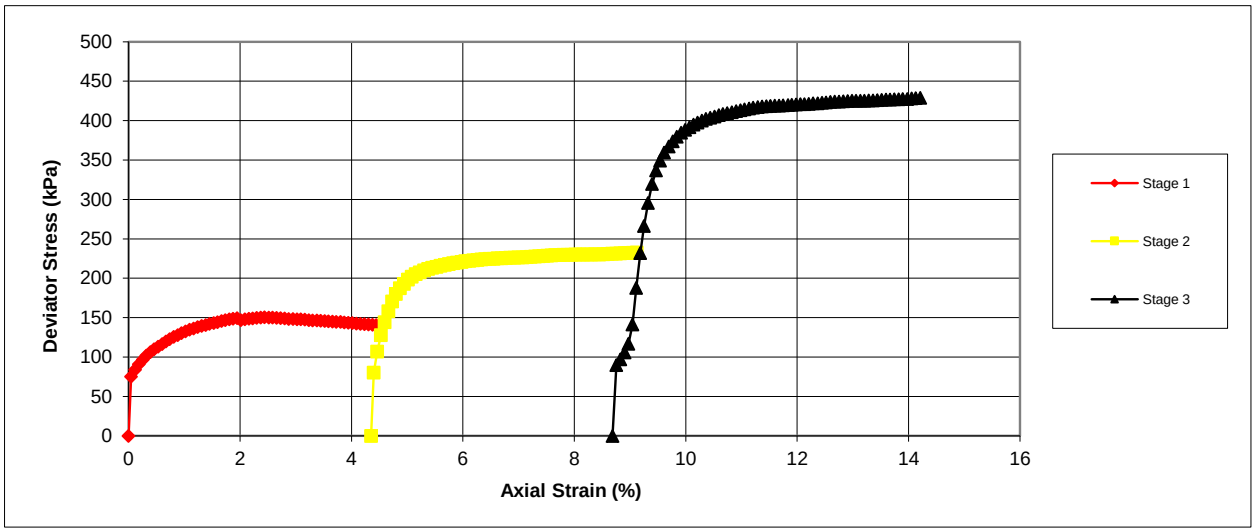
Consolidated Undrained Triaxial Compression Test

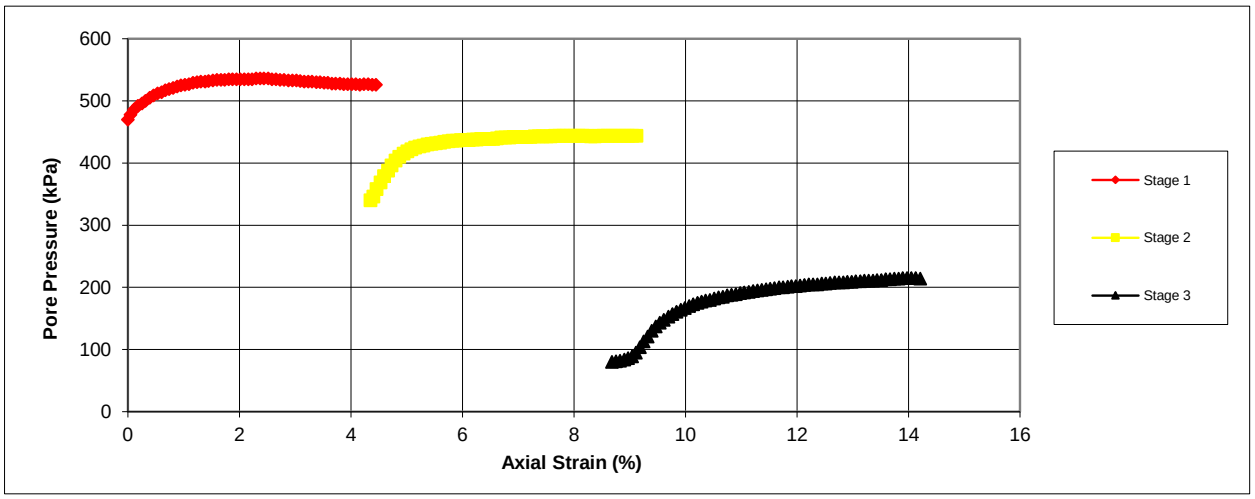
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	

Shearing Stage





[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

Contract No

41731

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

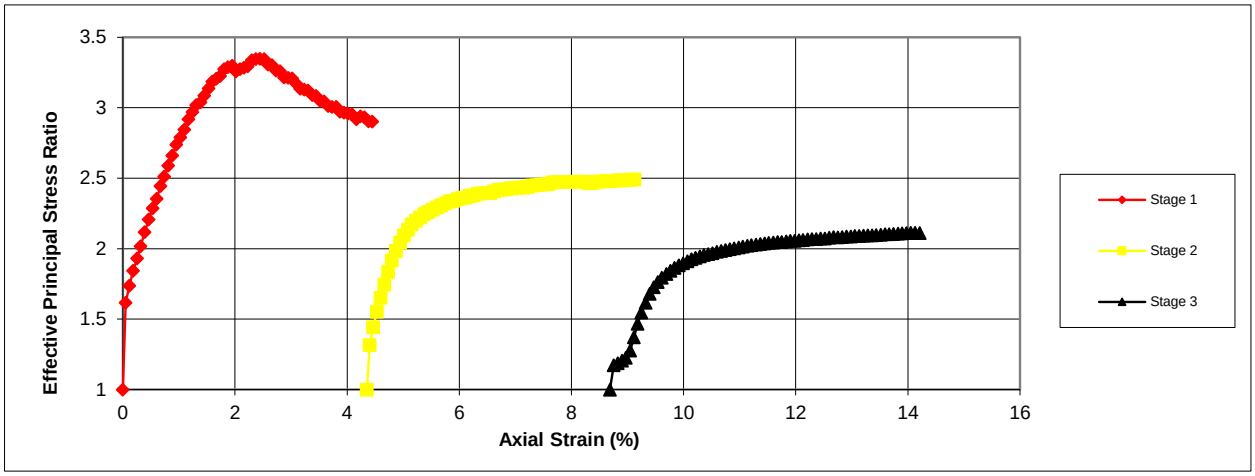
Consolidated Undrained Triaxial Compression Test

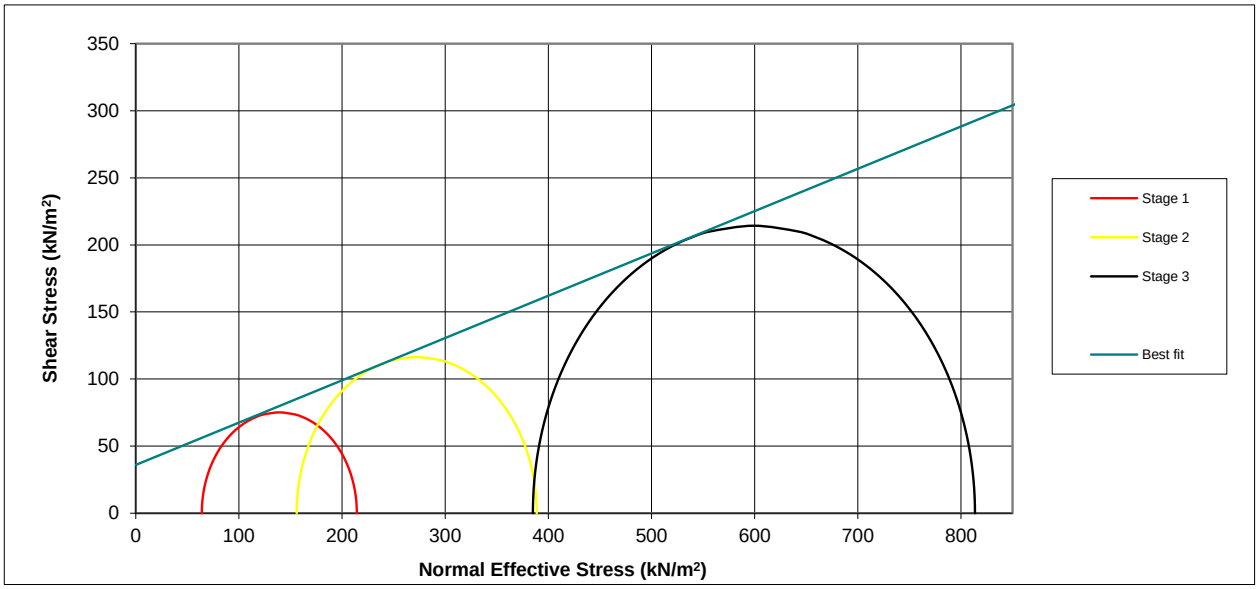
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	

Shearing Stage





[redacted]

Checked and Approved By

20/12/18
Date

Client Ref
17076

A47 Wansford

Contract No
41731

GSTL
GEO SITE & TESTING SERVICES LTD

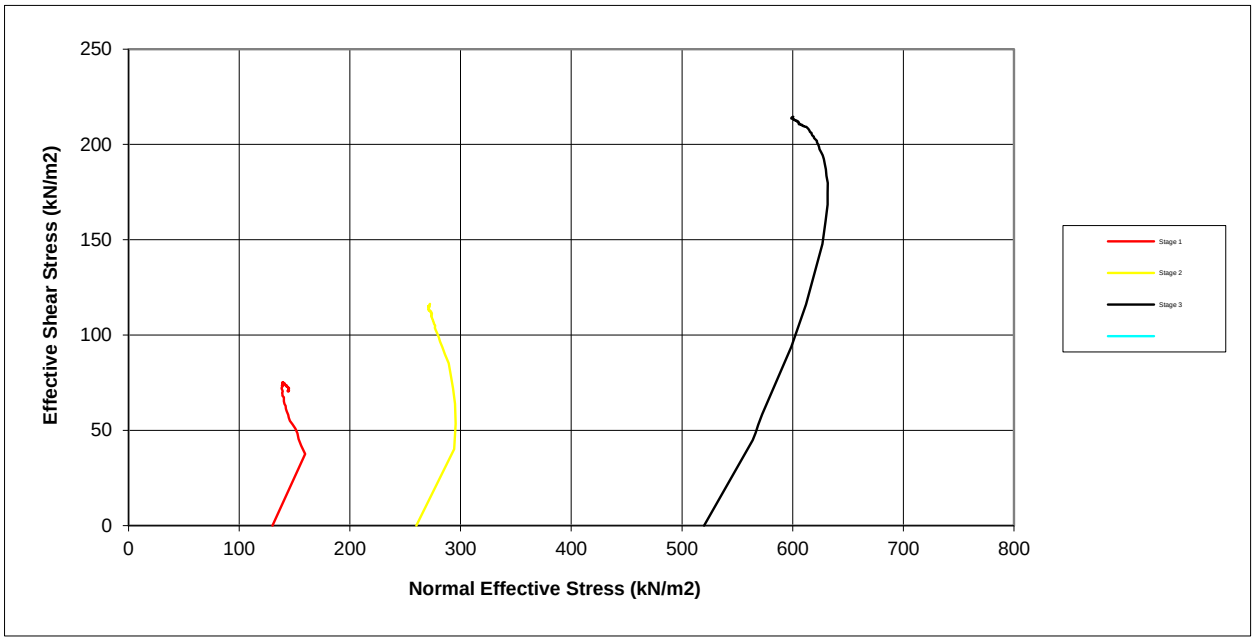
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	

Shearing Stage



[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

A47 Wansford

Contract No

41731

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH15
Sample No.		
Depth	from(m)	1.50
Depth	to(m)	





[redacted]

Checked and Approved By

20/12/18
Date

Client Ref

17076

A47 Wansford

Contract No

41731

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60
Date		09/11/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey slightly sandy slightly fine gravely silty CLAY

Initial Specimen Conditions

Height	mm	210.00
Diameter	mm	103.00
Area	mm^2	8332.29
Volume	cm^3	1749.78
Mass	g	3411.40
Dry Mass	g	2888.00
Density	Mg/m^3	1.95
Dry Density	Mg/m^3	1.65
Moisture Content	%	18
Specific Gravity	kN/m^3	2.65
(assumed/measured)		assumed

Final Specimen Conditions

Moisture Content	%	28
Density	Mg/m^3	2.45
Dry Density	Mg/m^3	1.90

[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

A47 Wansford

Contract No

41210

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60

Test Setup

Date started	23/10/2018
Date Finished	08/11/2018
Top Drain Used	y
Base Drain Used	y
Side Drains Used	y
Pressure System Number	P4
Cell Number	C4

Saturation

Cell Pressure Incr.	kPa	100.00
Back Pressure Incr.	kPa	95.00
Differential Pressure	kPa	5.00
Final Cell Pressure	kPa	600.00
Final Pore Pressure	kPa	600.00
Final B Value		0.98

Consolidation

Effective Pressure	kPa	120.00	240.00	480.00
Cell Pressure	kPa	600.00	600.00	600.00
Back Pressure	kPa	480.00	360.00	120.00
Excess Pore Pressure	kPa	120.00	133.00	288.00
Pore Pressure at End	kPa	480.00	360.00	120.00
Consolidated Volume	cm^3	1636.68	1563.98	1516.78
Consolidated Height	mm	205.48	199.25	188.24
Consolidated Area	mm^2	7973.24	7853.12	8059.27
Vol. Compressibility	m^2/MN	0.13466	0.12339	0.25150
Consolidation Coef.	$m^2/yr.$	0.92822	0.07577	0.06203

[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

A47 Wansford

Contract No

41210

GSTL
GEO SITE & TESTING SERVICES LTD

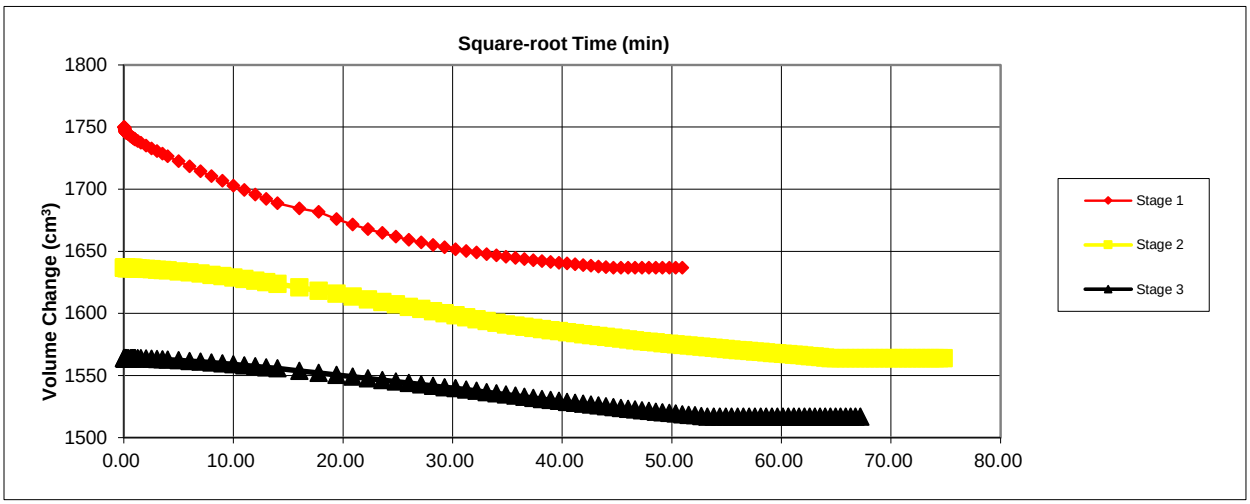
Consolidated Undrained Triaxial Compression Test

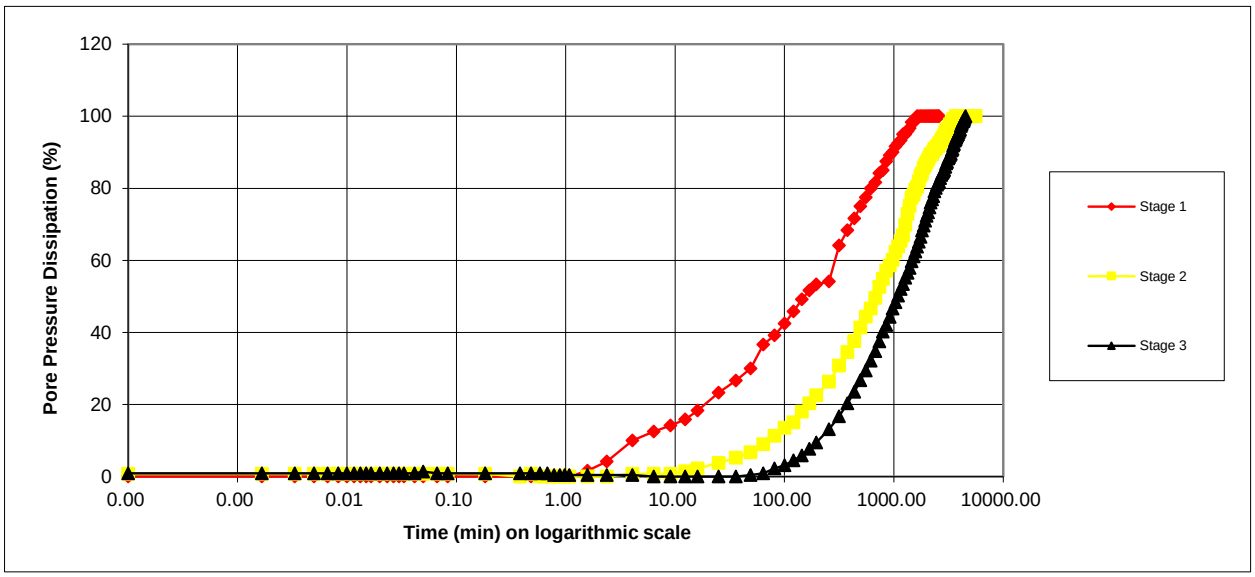
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60

Consolidation Stage





[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

Contract No

41210

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60

Shearing

Initial Cell Pressure	kPa	600	600	600
Initial Pore Pressure	kPa	480	360	120
Rate of Strain	mm/min	0.0189	0.0015	0.0012
Max Deviator Stress				
Axial Strain		3.679	5.849	9.757
Axial Stress	kPa	119.839	186.67	323.98
Cor. Deviator stress	kPa	116.912	182.56	319.59
Effective Major Stress	kPa	175.912	306.56	579.79
Effective Minor Stress	kPa	60.000	124.00	260.20
Effective Stress Ratio		2.932	2.472	2.23
s'	kPa	117.956	215.28	419.99
t'	kPa	57.956	91.28	159.79
Max Effective Priciple Stress Ratio				
Axial Strain		2.969	5.769	10.065
Axial Stress	kPa	117.558	186.328	323.425
Cor. Deviator stress	kPa	113.686	182.221	319.009
Effective Major Stress	kPa	169.686	305.221	573.609
Effective Minor Stress	kPa	56.000	123.000	254.600
Effective Stress Ratio		3.030	2.481	2.253
s'	kPa	112.843	214.110	414.105
t'	kPa	56.843	91.110	159.505
Shear Resistance Angle	degs			20.0
Cohesion c'	kPa			20

[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

A47 Wansford

Contract No

41210

GSTL
GEO SITE & TESTING SERVICES LTD

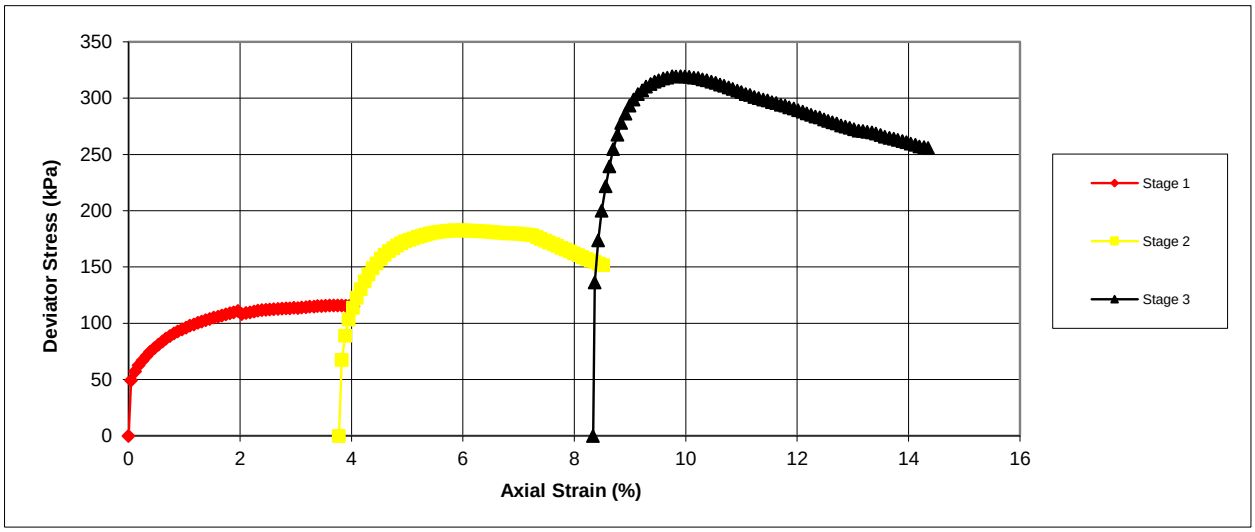
Consolidated Undrained Triaxial Compression Test

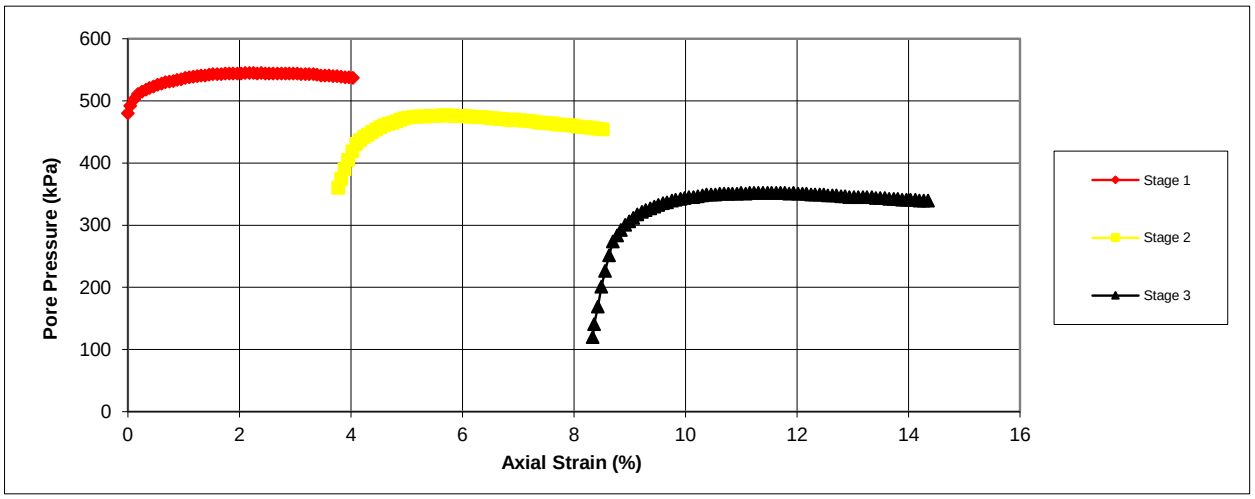
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60

Shearing Stage





[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

Contract No

41210

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

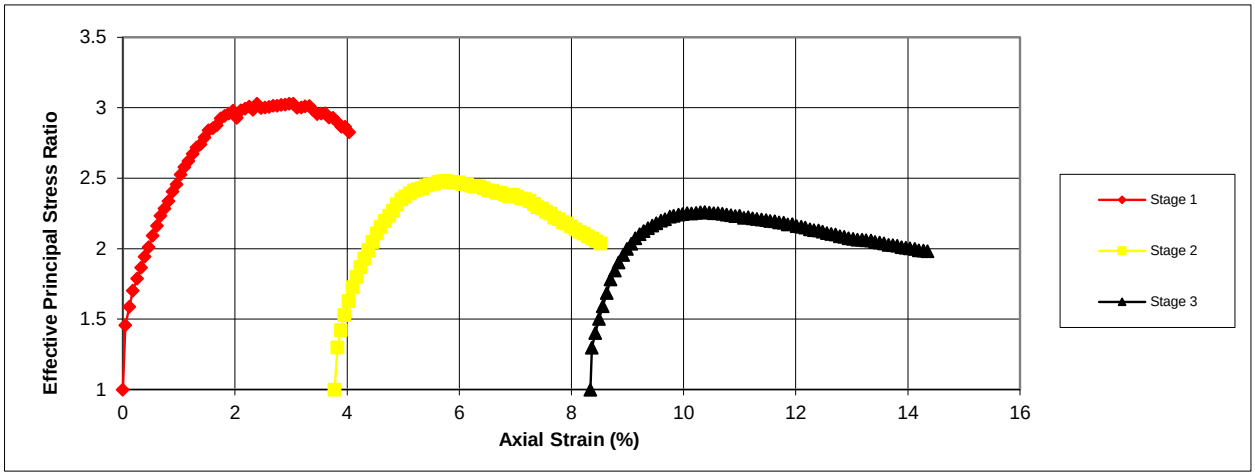
Consolidated Undrained Triaxial Compression Test

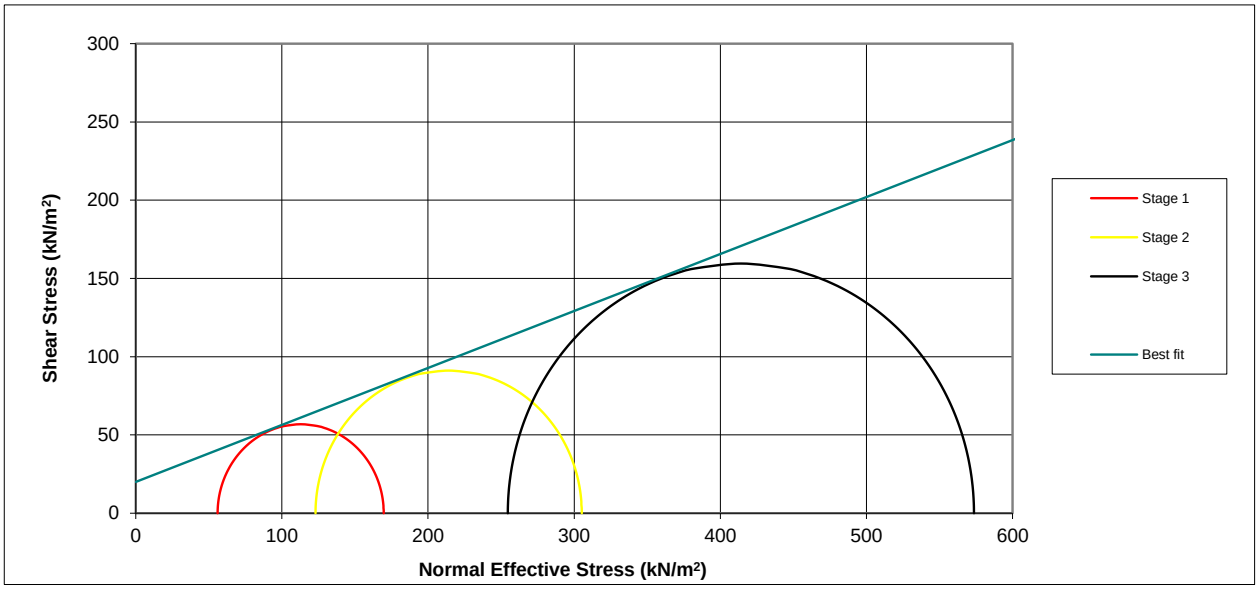
BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60

Shearing Stage





[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

Contract No

41210

A47 Wansford

GSTL
GEO SITE & TESTING SERVICES LTD

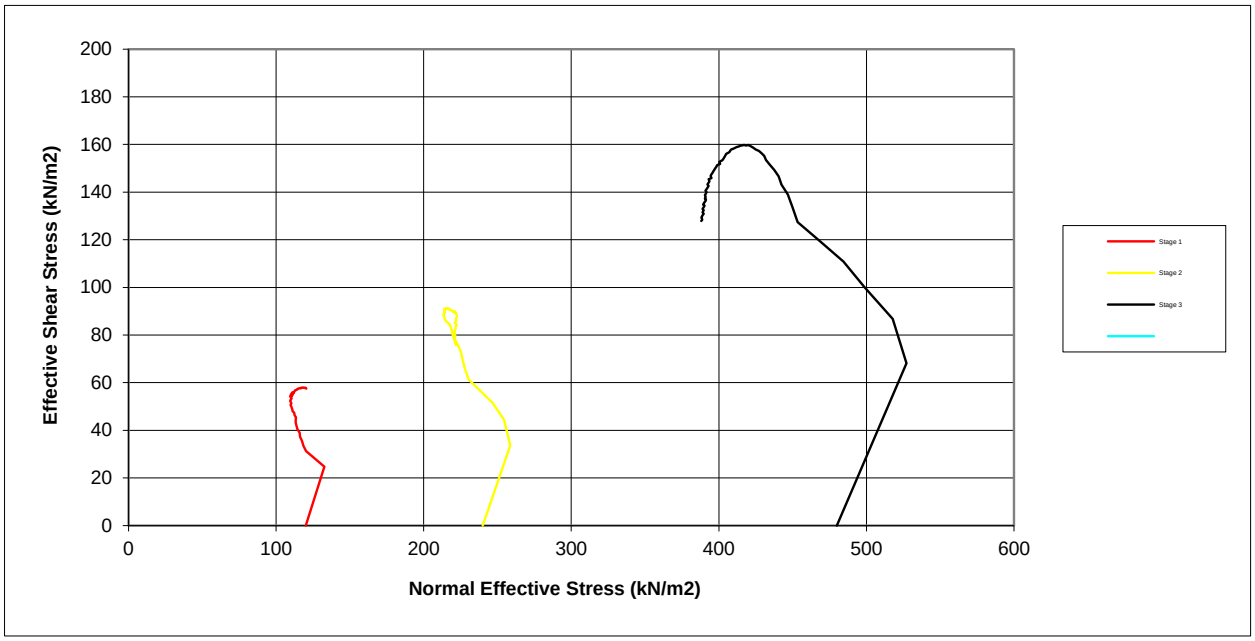
Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60

Shearing Stage



[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

A47 Wansford

Contract No

41210

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test

BS 1377 : Part 8 : 1990

Specimen Details

Borehole		BH14
Sample No.		
Depth	from(m)	12.20
Depth	to(m)	12.60





[redacted]

Checked and Approved By

12/11/18
Date

Client Ref

17076

A47 Wansford

Contract No

41210

GSTL
GEO SITE & TESTING SERVICES LTD

GSTL	**Point Load Test** **Int. J. Rock Mech. Sci. & Geomech. Abstr. Vol. 22, No. 2, pp. 51 - 60, 1985.**	
Contract Number	42609	
Site Name	A47 Wansford	
Sample Type	Core	
Date Tested	24/01/2019	

Hole Reference	Depth (m)			Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
				d / a / b / i	I //											
BH03	2.70	-	2.75	a		101	58	1.17	86.36	0.16	1.28	0.20	6.8	SANDY LIMESTONE		
BH03	4.40	-	4.50	d			89	7.55		0.95	1.30	1.24	5.8	SANDY LIMESTONE		
BH03A	2.00	-	2.05	i		86	41	3.72	67.00	0.83	1.14	0.94	5.0	SANDY LIMESTONE		
BH03A	2.70	-	2.77	i		81	35	4.69	60.08	1.30	1.09	1.41	7.3	SANDY LIMESTONE		
BH03A	5.00	-	5.05	d			71	3.97		0.79	1.17	0.92	0.4	SANDY LIMESTONE		
BH03A	5.90	-	5.95	i		97	66	2.79	90.28	0.34	1.30	0.45	6.2	SANDY LIMESTONE		
BH04	3.60	-	3.70	d			91	6.60		0.80	1.31	1.04	5.2	SANDY LIMESTONE		
BH04	3.90	-	4.00	d			99	2.79		0.28	1.36	0.39	5.7	SANDY LIMESTONE		
BH06	2.20	-	2.25	d			89	15.19		1.92	1.30	2.49	4.0	SANDY LIMESTONE		
BH06	2.80	-	2.90	d			97	18.58		1.98	1.35	2.66	3.7	SANDY LIMESTONE		
BH07	1.00	-	1.05	i		87	21	4.26	48.23	1.83	0.98	1.80	5.2	SANDY LIMESTONE		
BH07	1.30	-	1.35	i		94	42	8.12	70.90	1.61	1.17	1.89	4.2	SANDY LIMESTONE		
BH07	2.65	-	2.75	d			90	0.91		0.11	1.30	0.15	8.6	SANDY LIMESTONE		
BH11	1.90	-	1.95	d			90	7.69		0.95	1.30	1.24	3.7	SANDY LIMESTONE		
BH13	0.90	-	0.95	i		91	38	3.50	66.35	0.79	1.14	0.90	4.1	SANDY LIMESTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operators	Checked	27/01/2019	Ben Sharp	[redacted]
JD	Approved	28/01/2019	Paul Evans	[redacted]

GSTL	**Point Load Test** **Int. J. Rock Mech. Sci. & Geomech. Abstr. Vol. 22, No. 2, pp. 51 - 60, 1985.**	
Contract Number	41210	
Site Name	A47 Wansford	
Sample Type	Core	
Date Tested	02/11/2018	

Hole Reference	Depth (m)			Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
				d / a / b / i	I //											
BH03	6.17	-	6.34	a		101	80	15.53	101.43	1.51	1.37	2.08	5.7	SANDSTONE		
BH6	3.57	-	3.71	d			102	4.32		0.42	1.38	0.57	6.6	SANDSTONE		
BH7	9.41	-		d			102	8.11		0.78	1.38	1.07	5.4	SANDSTONE		
BH13	2.66	-	2.77	d			101	1.34		0.13	1.37	0.18	5.7	SANDSTONE		
BH19	2.34	-	2.47	d			102	14.95		1.44	1.38	1.98	6.4	SANDSTONE		
BH19	3.16	-	3.35	d			101	11.69		1.15	1.37	1.57	6.0	SANDSTONE		
		-														
		-														
		-											

GSTL	**Point Load Test** **Int. J. Rock Mech. Sci. & Geomech. Abstr. Vol. 22, No. 2, pp. 51 - 60, 1985.**	
Contract Number	41731	
Site Name	A47 Wansford	
Sample Type	Core	
Date Tested	04/12/2018	

Hole Reference	Depth (m)			Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
				d / a / b / i	I //											
TP25	1.50	-		i		39	37	1.94	42.86	1.06	0.93	0.99	10.6	LIMESTONE		
TP26	1.60	-		i		32	30	0.69	34.96	0.56	0.85	0.48	6.1	LIMESTONE		
TP27	0.50	-		i		74	22	0.35	45.53	0.17	0.96	0.16	4.2	MUDSTONE		
BH05	4.78	-	4.89	d			100	1.20		0.12	1.37	0.16	7.2	SANDSTONE		
BH05	4.89	-	4.97	a		101	78	5.65	100.15	0.56	1.37	0.77	7.5	SANDSTONE		
BH05	6.26	-	6.37	d			100	4.79		0.48	1.37	0.65	6.1	SANDSTONE		
BH15	2.48	-	2.59	d			100	0.20		0.02	1.37	0.03	5.8	SANDSTONE		
BH15	2.59	-	2.72	d			99	6.04		0.62	1.36	0.84	3.7	SANDSTONE		
BH33	5.01	-	5.10	d			100	11.31		1.13	1.37	1.54	7.1	SANDSTONE		
BH34	13.41	-	14.00	a		101	74	1.20	97.55	0.13	1.35	0.17	6.2	SILTSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operators	Checked	05/12/2018	Ben Sharp	[redacted]
JD	Approved	06/12/2018	Paul Evans	[redacted]

GSTL	**Point Load Test** **Int. J. Rock Mech. Sci. & Geomech. Abstr. Vol. 22, No. 2, pp. 51 - 60, 1985.**	
Contract Number	42204	
Site Name	A47 Wansford	
Sample Type	Core	
Date Tested	29/01/2019	

Hole Reference	Depth (m)			Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
				d / a / b / i	I //											
BH12	2.56	-	2.66	d			100	0.14		0.01	1.37	0.02	7.5	SANDSTONE		
BH18	2.55	-	2.63	a		100	88	3.62	105.85	0.32	1.40	0.45	7.4	SANDSTONE		
BH18	5.10	-	5.20	d			101	7.82		0.77	1.37	1.05	4.8	SANDSTONE		
TP2	1.00	-		i		82	48	2.54	70.79	0.51	1.17	0.59	10.8	SANDSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operators	Checked	31/01/2019	Ben Sharp	[redacted]
JD	Approved	01/02/2019	Paul Evans	[redacted]

GSTL	**Point Load Test** **Int. J. Rock Mech. Sci. & Geomech. Abstr. Vol. 22, No. 2, pp. 51 - 60, 1985.**	
Contract Number	42000	
Site Name	A47 Wansford	
Sample Type	Core	
Date Tested	10/01/2019	

Hole Reference	Depth (m)			Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
				d / a / b / i	I //											
TP3	1.20	-		i		61	20	4.25	39.41	2.74	0.90	2.46	2.7	SANDSTONE		
TP4	2.00	-	2.10	i		108	54	1.38	86.17	0.19	1.28	0.24	4.5	SANDSTONE		
TP5	2.00	-		i		62	45	1.73	59.60	0.49	1.08	0.53	2.5	SANDSTONE		
BH03	4.50	-	4.77	d			101	8.60		0.84	1.37	1.16	6.9	SANDSTONE		
BH03	6.00	-	6.22	a		101	76	34.01	98.86	3.48	1.36	4.73	7.2	SANDSTONE		
BH17	3.44	-	3.61	d			98	2.17		0.23	1.35	0.31	7.0	SANDSTONE		
BH17	3.61	-	3.81	d			101	10.42		1.02	1.37	1.40	4.3	SANDSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operators	Checked	10/01/2019	Ben Sharp	[redacted]
JD	Approved	11/01/2019	Paul Evans	[redacted]

GSTL	Determination of Unconfined Compressive Strength ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979	
Contract Number	41210	
Site Name	A47 Wansford	
Sample Preperation	Sawing and Grinding	
Date Tested	02/11/2018	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
BH6	3.71		3.94	101.8	209.6	4362.9	4.40	2.56	2.45	67.5	8.3	Multiple Fracture
BH16	10.40		10.92	101.5	254.8	5440.6	2.90	2.64	2.56	79.9	9.9	Axial Splitting

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	mpa

Operators	Checked	01/11/2018	Ben Sharp	[redacted]
JD	Approved	02/11/2018	Paul Evans	[redacted]

GSTL	Determination of Unconfined Compressive Strength ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979	
Contract Number	42000	
Site Name	A47 Wansford	
Sample Preperation	Sawing and Grinding	
Date Tested	10/01/2019	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
BH17	3.61		3.81	101.6	168.1	3447.1	4.90	2.53	2.41	41.4	5.1	Axial Splitting

GSTL	Determination of Unconfined Compressive Strength ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979	
Contract Number	41731	
Site Name	A47 Wansford	
Sample Preperation	Sawing and Grinding	
Date Tested	04/12/2018	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
BH15	11.66		12.00	99.79	191.58	4007.0	4.90	2.67	2.55	60.3	7.7	Axial Splitting
BH33	5.46		5.67	102.17	195.1	3760.0	5.90	2.35	2.22	81.3	9.9	Axial Splitting
BH34	13.41		14.00	100.9	251.3	5374.3	6.20	2.67	2.52	58.4	7.3	Axial Splitting

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	mpa

Operators	Checked	05/12/2018	Ben Sharp	[redacted]
JD	Approved	06/12/2018	Paul Evans	[redacted]

GSTL	Determination of Thermal Weathering Properties of Aggregates Magnesium Sulfate Test BS EN 1367-2:1998	
Contract Number	38143	
Site Name	A9 Berriedale Braes improvement Supplementary Ground Investigation	
Sample Preperation	Crushed rock core	
Date Tested	20/02/2018	

Hole Reference	Depth (m)			Size Fraction (Max)	Size Fraction (Min)	Mass of test portions	Magnesium Sulfate Value					Target Specification
TP04	2.00		2.50	14	10	420-430	32					N/A
TP05	1.60			14	10	420-430	44					N/A

Key	Reported As
Size Fraction Max	mm
Size Fraction Min	mm
Mass of test portions	g
Magnesium Sulfate Value	%

Method of Sampling in accordance with BS932-1 General Requirements and Sample Preparation

Operators	Checked	10/01/2019	Wayne Honey	[redacted]
JD	Approved	11/01/2019	Ben Sharp	[redacted]

UKAS TESTING 2788

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org

Certificate No : **18/1702 - 01**

To : **Paul Evans**

Client : **Geo Site & Testing Services Limited**
Unit 4
Heol Aur Dafen Industrial Estate
Dafen
Carmarthenshire
SA14 8QN

Dear Sirs,

AGGREGATE ABRASION VALUE (AAV)
BS EN 1097 - 8 : 2009 ANNEX A

Introduction

We refer to a bulk sample taken from A47 Wansford and delivered to our laboratory on 17th December 2018.

Material & Source

Sample Reference	:	TP03, B, 0.50-1.00m
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	TP03, B, 0.50-1.00m
Designation (d/D)	:	Not Supplied
Description	:	Crushed rock
Date Sampled	:	Not Supplied
Date Tested	:	17th December 2018 Onwards
Source	:	A47 Wansford

Test Results;

Aggregate Abrasion Value (Test 1)	**24.94**
Aggregate Abrasion Value (Test 2)	**25.54**
Mean Aggregate Abrasion Value	**25.2**

Remarks

Approved for Issue

Date 08/01/2019

T McLelland (Director)

2643

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org

Certificate No : **18/1702 - 02**

To : **Paul Evans**

Client : **Geo Site & Testing Services Limited**
Unit 4
Heol Aur Dafen Industrial Estate
Dafen
Carmarthenshire
SA14 8QN

Dear Sirs,

AGGREGATE ABRASION VALUE (AAV)
BS EN 1097 - 8 : 2009 ANNEX A

Introduction

We refer to a bulk sample taken from A47 Wansford and delivered to our laboratory on 17th December 2018.

Material & Source

Sample Reference	:	TP04, B, 0.50-0.70m
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	TP04, B, 0.50-0.70m
Designation (d/D)	:	Not Supplied
Description	:	Crushed rock
Date Sampled	:	Not Supplied
Date Tested	:	17th December 2018 Onwards
Source	:	A47 Wansford

Test Results;

Aggregate Abrasion Value (Test 1)	**45.81**
Aggregate Abrasion Value (Test 2)	**45.12**
Mean Aggregate Abrasion Value	**45.5**

Remarks

Approved for Issue

Date 08/01/2019

T McLelland (Director)

UKAS TESTING 2643

LABORATORY TEST CERTIFICATE

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org

Certificate No : **18/1702 - 03**

To : **Paul Evans**

Client : **Geo Site & Testing Services Limited**
Unit 4
Heol Aur Dafen Industrial Estate
Dafen
Carmarthenshire
SA14 8QN

Dear Sirs,

AGGREGATE ABRASION VALUE (AAV)
BS EN 1097 - 8 : 2009 ANNEX A

Introduction

We refer to a bulk sample taken from A47 Wansford and delivered to our laboratory on 17th December 2018.

Material & Source

Sample Reference	:	TP05, B, 1.00m
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	TP05, B, 1.00m
Designation (d/D)	:	Not Supplied
Description	:	Crushed rock
Date Sampled	:	Not Supplied
Date Tested	:	17th December 2018 Onwards
Source	:	A47 Wansford

Test Results;

Aggregate Abrasion Value (Test 1)	**33.86**
Aggregate Abrasion Value (Test 2)	**33.41**
Mean Aggregate Abrasion Value	**33.6**

Remarks

Approved for Issue

Date 08/01/2019

T McLelland (Director)

2643

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: [redacted]

DETS Report No: 18-85630

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.BRE.2
Sample Receipt Date:	23/11/2018
Sample Scheduled Date:	23/11/2018
Report Issue Number:	1
Reporting Date:	29/11/2018

Authorised by:

[redacted]

Dave Ashworth
Deputy Quality Manager

Authorised by:

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-85630	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH15	BH24	BH24	BH30	BH30
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.BRE.2	**Depth (m)**	15.50	3.00	6.50 - 6.90	4.40	12.10 - 12.40
Reporting Date: 29/11/2018	**DETS Sample No**	374466	374467	374468	374469	374470

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	7.6	7.9	7.0	7.3	7.7
Total Sulphate as SO_4	mg/kg	< 200	NONE	2868	1153	1998	2088	1322
Total Sulphate as SO_4	%	< 0.02	NONE	0.29	0.12	0.20	0.21	0.13
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	1290	170	927	982	462
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	1.29	0.17	0.93	0.98	0.46
Total Sulphur	%	< 0.02	NONE	2.80	0.12	3.03	2.10	1.35

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-85630	**Date Sampled**	None Supplied					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH41					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.BRE.2	**Depth (m)**	2.90					
Reporting Date: 29/11/2018	**DETS Sample No**	374471					

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	8.0				
Total Sulphate as SO_4	mg/kg	< 200	NONE	238				
Total Sulphate as SO_4	%	< 0.02	NONE	0.02				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	29				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.03				
Total Sulphur	%	< 0.02	NONE	0.03				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than $30^{O}C$
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-85630	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.BRE.2	
Reporting Date: 29/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 374466	BH15	None Supplied	15.50	16	Black sandy clay
^ 374467	BH24	None Supplied	3.00	24.8	Brown sandy clay
^ 374468	BH24	None Supplied	6.50 - 6.90	18.2	Black sandy clay
^ 374469	BH30	None Supplied	4.40	18.1	Black clayey sand
^ 374470	BH30	None Supplied	12.10 - 12.40	4.8	Black sandy clay with stones
^ 374471	BH41	None Supplied	2.90	21.7	Orange sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-85630
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.BRE.2
Reporting Date: 29/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: [redacted]

DETS Report No: 18-85479

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.BRE.1
Sample Receipt Date:	21/11/2018
Sample Scheduled Date:	21/11/2018
Report Issue Number:	1
Reporting Date:	27/11/2018

Authorised by:

[redacted]

Dave Ashworth
Deputy Quality Manager

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-85479	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH21	BH32	BH33	BH34	BH34
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.BRE.1	**Depth (m)**	8.50	4.50	13.50	6.00 - 7.50	16.60
Reporting Date: 27/11/2018	**DETS Sample No**	373736	373737	373738	373739	373740

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	7.3	7.3	6.3	7.4	6.2
Total Sulphate as SO_4	mg/kg	< 200	NONE	14330	349	544	1119	3555
Total Sulphate as SO_4	%	< 0.02	NONE	1.43	0.03	0.05	0.11	0.36
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	63	26	188	14	1620
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.06	0.03	0.19	0.01	1.62
Total Sulphur	%	< 0.02	NONE	0.58	< 0.02	1.15	0.04	3.36

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate							
DETS Report No: 18-85479	**Date Sampled**	None Supplied					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH36					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.BRE.1	**Depth (m)**	3.00					
Reporting Date: 27/11/2018	**DETS Sample No**	373741					

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	7.4				
Total Sulphate as SO_4	mg/kg	< 200	NONE	273				
Total Sulphate as SO_4	%	< 0.02	NONE	0.03				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	26				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.03				
Total Sulphur	%	< 0.02	NONE	0.06				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than $30^{O}C$
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-85479	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.BRE.1	
Reporting Date: 27/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 373736	BH21	None Supplied	8.50	20.1	Black clay
^ 373737	BH32	None Supplied	4.50	17.3	Light brown sandy clay
^ 373738	BH33	None Supplied	13.50	20.8	Black sandy clay
^ 373739	BH34	None Supplied	6.00 - 7.50	15	Brown sandy clay
^ 373740	BH34	None Supplied	16.60	12.3	Black sandy clay
^ 373741	BH36	None Supplied	3.00	8.3	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-85479
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.BRE.1
Reporting Date: 27/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

UKAS TESTING
4480

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: [redacted]

DETS Report No: 18-86529

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.BRE.4
Sample Receipt Date:	13/12/2018
Sample Scheduled Date:	13/12/2018
Report Issue Number:	1
Reporting Date:	19/12/2018

Authorised by:

[redacted]

Kevin Old
Technical & Operations Director

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-86529	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH22	BH22	BH22	BH26	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.BRE.4	**Depth (m)**	6.61 - 6.67	7.80 - 7.90	8.20 - 8.30	8.60 - 8.70	13.40 - 13.50
Reporting Date: 19/12/2018	**DETS Sample No**	378197	378198	378199	378200	378201

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	7.5	7.2	6.5	5.8	7.0
Total Sulphate as SO_4	mg/kg	< 200	NONE	< 200	314	1347	4009	6165
Total Sulphate as SO_4	%	< 0.02	NONE	< 0.02	0.03	0.13	0.40	0.62
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	14	122	668	2090	2460
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.01	0.12	0.67	2.09	2.46
Total Sulphur	%	< 0.02	NONE	0.04	0.10	0.13	2.96	3.05
Ammonium as NH_4	mg/kg	< 0.5	NONE	3.4	6.8	4.8	23.4	32.7
Ammonium as NH_4	mg/l	< 0.05	NONE	0.34	0.68	0.48	2.34	3.27
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**	20	13	9	13	21
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**	10	6.6	4.3	6.4	10.6
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	**MCERTS**	6	< 3	< 3	< 3	< 3
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	**MCERTS**	2.8	< 1.5	< 1.5	< 1.5	< 1.5
W/S Magnesium	mg/l	< 0.1	NONE	1	1.6	3.8	53	75

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-86529	**Date Sampled**	None Supplied	None Supplied	None Supplied		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH27	BH27		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.BRE.4	**Depth (m)**	2.50	8.00	12.60		
Reporting Date: 19/12/2018	**DETS Sample No**	378202	378203	378204		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.8	5.3	6.9		
Total Sulphate as SO_4	mg/kg	< 200	NONE	422	3459	2171		
Total Sulphate as SO_4	%	< 0.02	NONE	0.04	0.35	0.22		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	110	1970	1330		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.11	1.97	1.33		
Total Sulphur	%	< 0.02	NONE	0.12	3.42	1.66		
Ammonium as NH_4	mg/kg	< 0.5	NONE	5.7	14.2	4.9		
Ammonium as NH_4	mg/l	< 0.05	NONE	0.57	1.42	0.49		
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	182	19	11		
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	91	9.5	5.6		
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS	58	< 3	< 3		
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS	28.9	< 1.5	< 1.5		
W/S Magnesium	mg/l	< 0.1	NONE	1.8	34	26		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-86529	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.BRE.4	
Reporting Date: 19/12/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 378197	BH22	None Supplied	6.61 - 6.67	23.6	Black sandy clay
^ 378198	BH22	None Supplied	7.80 - 7.90	14.9	Black clayey sand
^ 378199	BH22	None Supplied	8.20 - 8.30	10.1	Brown sandy clay
^ 378200	BH26	None Supplied	8.60 - 8.70	13.6	Black sandy clay
^ 378201	BH26	None Supplied	13.40 - 13.50	11.5	Black sandy clay
^ 378202	BH27	None Supplied	2.50	12	Brown sandy clay
^ 378203	BH27	None Supplied	8.00	13.8	Black sandy clay
^ 378204	BH27	None Supplied	12.60	3.8	Black sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample $^{I/S}$

Unsuitable Sample $^{U/S}$

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-86529
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.BRE.4
Reporting Date: 19/12/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: [redacted]

DETS Report No: 18-86587

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.BRE.3
Sample Receipt Date:	06/12/2018
Sample Scheduled Date:	14/12/2018
Report Issue Number:	1
Reporting Date:	20/12/2018

Authorised by:

[redacted]

Kevin Old
Technical & Operations Director

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-86587	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP15	BH17	BH17	BH31	BH31
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.BRE.3	**Depth (m)**	1.50	10.90	13.70	6.90	12.00
Reporting Date: 20/12/2018	**DETS Sample No**	378354	378355	378356	378357	378358

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	4.6	6.1	6.5	6.9	6.8
Total Sulphate as SO_4	mg/kg	< 200	NONE	39610	821	2922	271	3406
Total Sulphate as SO_4	%	< 0.02	NONE	3.96	0.08	0.29	0.03	0.34
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	1510	265	1180	63	1720
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	1.51	0.27	1.18	0.06	1.72
Total Sulphur	%	< 0.02	NONE	1.38	0.05	2.90	0.06	2.57
Ammonium as NH_4	mg/kg	< 0.5	NONE	< 0.5	< 0.5	3.4	1	6.9
Ammonium as NH_4	mg/l	< 0.05	NONE	< 0.05	< 0.05	0.34	0.10	0.69
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	48	9	11	8	10
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	24	4.7	5.6	4	5.2
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS	16	< 3	< 3	< 3	< 3
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS	7.9	< 1.5	< 1.5	< 1.5	< 1.5
W/S Magnesium	mg/l	< 0.1	NONE	9.5	2.2	15	1.1	23

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-86587	**Date Sampled**	None Supplied					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH31					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.BRE.3	**Depth (m)**	18.50					
Reporting Date: 20/12/2018	**DETS Sample No**	378359					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	6.8				
Total Sulphate as SO_4	mg/kg	< 200	NONE	5016				
Total Sulphate as SO_4	%	< 0.02	NONE	0.50				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	2130				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	2.13				
Total Sulphur	%	< 0.02	NONE	3.39				
Ammonium as NH_4	mg/kg	< 0.5	NONE	10.4				
Ammonium as NH_4	mg/l	< 0.05	NONE	1.04				
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	19				
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	9.6				
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS	< 3				
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS	< 1.5				
W/S Magnesium	mg/l	< 0.1	NONE	45				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-86587	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.BRE.3	
Reporting Date: 20/12/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 378354	TP15	None Supplied	1.50	17.4	Brown sandy clay
^ 378355	BH17	None Supplied	10.90	6	Brown sandy clay
^ 378356	BH17	None Supplied	13.70	16.5	Black sandy clay
^ 378357	BH31	None Supplied	6.90	21	Brown sandy clay
^ 378358	BH31	None Supplied	12.00	14.3	Black sandy clay
^ 378359	BH31	None Supplied	18.50	12.1	Black sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-86587
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.BRE.3
Reporting Date: 20/12/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: [redacted]

DETS Report No: 19-00045

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.BRE.3
Sample Receipt Date:	29/11/2018
Sample Scheduled Date:	03/01/2019
Report Issue Number:	1
Reporting Date:	09/01/2019

Authorised by:

[redacted]

Kevin Old
Technical & Operations Director

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 19-00045	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH15	BH21	BH33	BH34	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.BRE.3	**Depth (m)**	4.80 - 4.90	14.50	7.10	18.60	
Reporting Date: 09/01/2019	**DETS Sample No**	380467	380468	380469	380470	

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	8.0	5.4	7.2	7.0	
Total Sulphate as SO_4	mg/kg	< 200	NONE	< 200	6549	< 200	3827	
Total Sulphate as SO_4	%	< 0.02	NONE	< 0.02	0.65	< 0.02	0.38	
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	11	1940	45	2080	
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.01	1.94	0.04	2.07	
Total Sulphur	%	< 0.02	NONE	< 0.02	2.66	0.02	3.28	
Ammonium as NH_4	mg/kg	< 0.5	NONE	1.1	24.9	2.3	16.1	
Ammonium as NH_4	mg/l	< 0.05	NONE	0.11	2.49	0.23	1.61	
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	14	13	102	20	
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	7	6.4	51	10	
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS	< 3	< 3	23	< 3	
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS	< 1.5	< 1.5	11.4	< 1.5	
W/S Magnesium	mg/l	< 0.1	NONE	1.1	70	2.5	55	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-00045	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.BRE.3	
Reporting Date: 09/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 380467	BH15	None Supplied	4.80 - 4.90	12.5	Brown sandy clay with stones
^ 380468	BH21	None Supplied	14.50	14.6	Black sandy clay
^ 380469	BH33	None Supplied	7.10	16.3	Brown sandy clay
^ 380470	BH34	None Supplied	18.60	12.7	Black sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-00045
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.BRE.3
Reporting Date: 09/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: [redacted]

DETS Report No: 19-00150

Site Reference: A47 Wansford

Project / Job Ref: 17076

Order No: None Supplied

Sample Receipt Date: 09/01/2019

Sample Scheduled Date: 09/01/2019

Report Issue Number: 1

Reporting Date: 15/01/2019

Authorised by:

[redacted]

Kevin Old
Technical & Operations Director

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate							
DETS Report No: 19-00150	**Date Sampled**	07/01/19					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH38					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	4.00 - 4.50					
Reporting Date: 15/01/2019	**DETS Sample No**	380884					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.7				
Total Sulphate as SO_4	mg/kg	< 200	NONE	339				
Total Sulphate as SO_4	%	< 0.02	NONE	0.03				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	156				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.16				
Total Sulphur	%	< 0.02	NONE	< 0.02				
Ammonium as NH_4	mg/kg	< 0.5	NONE	0.8				
Ammonium as NH_4	mg/l	< 0.05	NONE	0.08				
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	5				
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	2.4				
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS	< 3				
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS	< 1.5				
W/S Magnesium	mg/l	< 0.1	NONE	1.1				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-00150	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: None Supplied	
Reporting Date: 15/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
380884	BH38	None Supplied	4.00 - 4.50	4.5	Grey sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-00150
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: None Supplied
Reporting Date: 15/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-02048

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.AT.Rev.02
Sample Receipt Date:	14/02/2019
Sample Scheduled Date:	14/02/2019
Report Issue Number:	1
Reporting Date:	20/02/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 19-02048	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH13	BH20	BH20	BH33	TP09A
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.AT.Rev.02	**Depth (m)**	13.70	6.60	9.00	18.80	1.00
Reporting Date: 20/02/2019	**DETS Sample No**	389943	389944	389945	389946	389947

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	3.3	6.7	5.7	6.1	6.9
Total Sulphate as SO_4	mg/kg	< 200	NONE	23440	2726	16310	8535	534
Total Sulphate as SO_4	%	< 0.02	NONE	2.34	0.27	1.63	0.85	0.05
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	1730	652	1670	1860	78
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	1.73	0.65	1.67	1.86	0.08
Total Sulphur	%	< 0.02	NONE	4.51	1.72	4.46	3.79	0.05
Organic Matter	%	< 0.1	**MCERTS**					
Ammonium as NH_4	mg/kg	< 0.5	NONE	25.6	11.7	9.3	13.8	3.8
Ammonium as NH_4	mg/l	< 0.05	NONE	2.56	1.17	0.93	1.38	0.38
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**	20	17	13	19	3
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**	9.8	8.4	6.7	9.6	1.7
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	**MCERTS**	3	< 3	< 3	< 3	18
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	**MCERTS**	1.5	< 1.5	< 1.5	< 1.5	9.2
W/S Magnesium	mg/l	< 0.1	NONE	27	5.9	38	40	1.4

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 19-02048	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH17	BH17	BH17	BH22	BH18
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.AT.Rev.02	**Depth (m)**	7.50	9.30	11.70	6.50	8.00
Reporting Date: 20/02/2019	**DETS Sample No**	389948	389949	389950	389951	389952

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**					
Total Sulphate as SO_4	mg/kg	< 200	NONE					
Total Sulphate as SO_4	%	< 0.02	NONE					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**					
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**					
Total Sulphur	%	< 0.02	NONE					
Organic Matter	%	< 0.1	**MCERTS**	0.2	2.5	0.9	0.1	2
Ammonium as NH_4	mg/kg	< 0.5	NONE					
Ammonium as NH_4	mg/l	< 0.05	NONE					
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**					
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**					
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	**MCERTS**					
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	**MCERTS**					
W/S Magnesium	mg/l	< 0.1	NONE					

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 19-02048	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH20	BH14A			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.AT.Rev.02	**Depth (m)**	4.70	7.30			
Reporting Date: 20/02/2019	**DETS Sample No**	389953	389954			

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS					
Total Sulphate as SO_4	mg/kg	< 200	NONE					
Total Sulphate as SO_4	%	< 0.02	NONE					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS					
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS					
Total Sulphur	%	< 0.02	NONE					
Organic Matter	%	< 0.1	MCERTS	1.9	0.3			
Ammonium as NH_4	mg/kg	< 0.5	NONE					
Ammonium as NH_4	mg/l	< 0.05	NONE					
W/S Chloride (2:1)	mg/kg	< 1	MCERTS					
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS					
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	MCERTS					
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	MCERTS					
W/S Magnesium	mg/l	< 0.1	NONE					

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-02048	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.AT.Rev.02	
Reporting Date: 20/02/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 389943	BH13	None Supplied	13.70	14.7	Black loamy clay
^ 389944	BH20	None Supplied	6.60	15.2	Brown loamy clay
^ 389945	BH20	None Supplied	9.00	15.8	Black loamy sand
^ 389946	BH33	None Supplied	18.80	14.4	Black loamy sand
^ 389947	TP09A	None Supplied	1.00	4.2	Brown gravelly sand with stones
^ 389948	BH17	None Supplied	7.50	19.6	Orange sand
^ 389949	BH17	None Supplied	9.30	18.5	Black loamy clay
^ 389950	BH17	None Supplied	11.70	5.5	Brown clayey sand
^ 389951	BH22	None Supplied	6.50	18.2	Orange sand
^ 389952	BH18	None Supplied	8.00	15.1	Black loamy clay
^ 389953	BH20	None Supplied	4.70	13.5	Black loamy clay
^ 389954	BH14A	None Supplied	7.30	16.6	Orange sand

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-02048
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.AT.Rev.02
Reporting Date: 20/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

Appendix C Chemical Laboratory Results

Appendix C.1 Soils Chemical Laboratory Results

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-82302

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076/1 - JH
Sample Receipt Date:	17/09/2018
Sample Scheduled Date:	17/09/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-82302, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-82302	**Date Sampled**	29/08/18	29/08/18	29/08/18	01/09/18	01/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH13	BH16	BH16	BH19	BH19
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.10	0.10	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	360598	360600	360601	360602	360603

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.2	8.0	8.2	8.0	8.2
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	832	732	740	685	661
Total Sulphate as SO_4	%	< 0.02	NONE	0.08	0.07	0.07	0.07	0.07
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.021	0.015	0.010	0.015	0.006
Antimony (Sb)	mg/kg	< 1	NONE	2.5	2.1	1.8	2	1.6
Arsenic (As)	mg/kg	< 2	MCERTS	10	9	7	9	6
Barium (Ba)	mg/kg	< 5	NONE	32	25	23	22	12
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7	0.6	0.5	0.6	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.3	< 0.2	0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	12	10	8	10	6
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	14	11	10	10	7
Iron (Fe)	mg/kg	< 50	NONE	28910	23490	17780	20430	14830
Lead (Pb)	mg/kg	< 3	MCERTS	22	16	10	12	5
Manganese (Mn)	mg/kg	< 5	NONE	491	545	416	327	223
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	10	8	8	9	5
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	25	21	19	21	14
Zinc (Zn)	mg/kg	< 3	MCERTS	49	39	29	33	14
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-82302	**Date Sampled**	10/09/18	10/09/18	30/08/18	30/08/18	29/08/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH20	BH20	BH38	BH38	BH39
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.50	1.00	0.50	1.00	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	360604	360605	360606	360607	360608

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	8.0	8.2	7.7	8.1	7.4
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	508	292	353	516	333
Total Sulphate as SO_4	%	< 0.02	NONE	0.05	0.03	0.04	0.05	0.03
Fraction Organic Carbon (FOC)	Units	< 0.001	**MCERTS**	0.012	0.005	0.013	0.004	0.008
Antimony (Sb)	mg/kg	< 1	NONE	2	1.5	3.9	3.2	4.1
Arsenic (As)	mg/kg	< 2	**MCERTS**	8	4	18	14	19
Barium (Ba)	mg/kg	< 5	NONE	24	11	51	37	55
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	< 0.5	1	0.7	0.9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	< 0.2	< 0.2	0.3
Chromium (Cr)	mg/kg	< 2	**MCERTS**	10	5	21	17	21
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	8	< 4	14	10	15
Iron (Fe)	mg/kg	< 50	NONE	21690	10680	54580	53490	46850
Lead (Pb)	mg/kg	< 3	**MCERTS**	12	4	19	8	23
Manganese (Mn)	mg/kg	< 5	NONE	349	67.3	761	673	833
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	1.3	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	10	8	21	17	20
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	20	12	42	32	42
Zinc (Zn)	mg/kg	< 3	**MCERTS**	31	15	64	40	77
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-82302	**Date Sampled**	29/08/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH39					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076/1 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	360609					

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected				
pH	pH Units	N/a	**MCERTS**	7.6				
Total Cyanide	mg/kg	< 2	NONE	< 2				
Free Cyanide	mg/kg	< 2	NONE	< 2				
Total Sulphate as SO_4	mg/kg	< 200	NONE	269				
Total Sulphate as SO_4	%	< 0.02	NONE	0.03				
Fraction Organic Carbon (FOC)	Units	< 0.001	**MCERTS**	0.006				
Antimony (Sb)	mg/kg	< 1	NONE	5.3				
Arsenic (As)	mg/kg	< 2	**MCERTS**	32				
Barium (Ba)	mg/kg	< 5	NONE	60				
Beryllium (Be)	mg/kg	< 0.5	NONE	1.2				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	0.3				
Chromium (Cr)	mg/kg	< 2	**MCERTS**	27				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	**MCERTS**	18				
Iron (Fe)	mg/kg	< 50	NONE	81200				
Lead (Pb)	mg/kg	< 3	**MCERTS**	17				
Manganese (Mn)	mg/kg	< 5	NONE	907				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				
Molybdenum (Mo)	mg/kg	< 1	NONE	1				
Nickel (Ni)	mg/kg	< 3	**MCERTS**	31				
Selenium (Se)	mg/kg	< 3	NONE	< 3				
Vanadium (V)	mg/kg	< 2	NONE	57				
Zinc (Zn)	mg/kg	< 3	**MCERTS**	80				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-82302	**Date Sampled**	29/08/18	29/08/18	29/08/18	01/09/18	01/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH13	BH16	BH16	BH19	BH19
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.10	0.10	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	360598	360600	360601	360602	360603

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.18	0.17	0.17	0.20	0.18
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.28	0.27	0.26	0.33	0.30
Pyrene	mg/kg	< 0.1	MCERTS	0.27	0.27	0.26	0.31	0.29
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.57	0.57	0.54	0.59	0.56
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.50	0.50	0.47	0.53	0.51
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.13	0.13	0.12	0.14	0.14
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.25	0.25	0.23	0.28	0.26
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.39
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.39
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.22
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.2	2.2	2	2.4	3.2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-82302	**Date Sampled**	10/09/18	10/09/18	30/08/18	30/08/18	29/08/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH20	BH20	BH38	BH38	BH39
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.50	1.00	0.50	1.00	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	360604	360605	360606	360607	360608

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.12
Fluorene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	0.24	< 0.1	0.26
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.26	< 0.1	0.26
Fluoranthene	mg/kg	< 0.1	MCERTS	0.30	< 0.1	0.43	< 0.1	0.47
Pyrene	mg/kg	< 0.1	MCERTS	0.29	< 0.1	0.39	< 0.1	0.43
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.55	< 0.1	0.64	< 0.1	0.66
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.15	< 0.1	0.18
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.50	< 0.1	0.59	< 0.1	0.63
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	0.16	< 0.1	0.18
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	0.30	< 0.1	0.34
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.45
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.43
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.26
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.4	< 1.6	3.1	< 1.6	4.7

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-82302	**Date Sampled**	29/08/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH39					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076/1 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	360609					

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-82302	**Date Sampled**	29/08/18	29/08/18	29/08/18	01/09/18	01/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH13	BH16	BH16	BH19	BH19
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.10	0.10	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	360598	360600	360601	360602	360603

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-82302	**Date Sampled**	10/09/18	10/09/18	30/08/18	30/08/18	29/08/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH20	BH20	BH38	BH38	BH39
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.50	1.00	0.50	1.00	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	360604	360605	360606	360607	360608

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-82302	**Date Sampled**	29/08/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH39					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076/1 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	360609					

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21				
Total >C5 - C35	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-82302	**Date Sampled**	29/08/18	29/08/18	29/08/18	01/09/18	01/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH13	BH16	BH16	BH19	BH19
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.10	0.10	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	360598	360600	360601	360602	360603

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-82302	**Date Sampled**	10/09/18	10/09/18	30/08/18	30/08/18	29/08/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH20	BH20	BH38	BH38	BH39
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.50	1.00	0.50	1.00	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	360604	360605	360606	360607	360608

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-82302	**Date Sampled**	29/08/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH39					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076/1 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	360609					

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2				
Toluene	ug/kg	< 5	**MCERTS**	< 5				
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2				
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2				
o-xylene	ug/kg	< 2	**MCERTS**	< 2				
MTBE	ug/kg	< 5	**MCERTS**	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-82302	**Date Sampled**	29/08/18	29/08/18	01/09/18	10/09/18	30/08/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH13	BH16	BH19	BH20	BH38
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076/1 - JH	**Depth (m)**	0.20	0.20	0.20	0.10	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	360610	360611	360612	360613	360614

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.7	7.7	7.8	7.8	7.6
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Sulphate as SO_4	mg/l	< 1	ISO17025	5	14	2	4	17
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50	< 50	< 50	< 50	86
Chloride	mg/l	< 1	ISO17025	6	13	2	5	7
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	14.7	20.2	19	20.8	19.4
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Barium	ug/l	< 5	ISO17025	19	26	15	22	23
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3	< 3	< 3
Boron	ug/l	< 5	ISO17025	27	32	23	33	47
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	< 20
Copper	ug/l	< 5	ISO17025	< 5	6	< 5	6	< 5
Iron	ug/l	< 5	ISO17025	< 5	6	< 5	6	< 5
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Zinc	ug/l	< 2	ISO17025	3	5	3	3	4
Calcium	mg/l	< 0.2	ISO17025	60.7	75.9	53.9	67.9	58.3
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-82302	**Date Sampled**	29/08/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH39					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076/1 - JH	**Depth (m)**	0.50					
Reporting Date: 31/01/2019	**DETS Sample No**	360615					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.8				
Total Cyanide	ug/l	< 5	NONE	< 5				
Free Cyanide	ug/l	< 5	NONE	< 5				
Sulphate as SO_4	mg/l	< 1	ISO17025	7				
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50				
Chloride	mg/l	< 1	ISO17025	1				
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	18.4				
Antimony	ug/l	< 5	ISO17025	< 5				
Arsenic	ug/l	< 5	ISO17025	< 5				
Barium	ug/l	< 5	ISO17025	33				
Beryllium	ug/l	< 3	ISO17025	< 3				
Boron	ug/l	< 5	ISO17025	46				
Cadmium	ug/l	< 0.4	ISO17025	< 0.4				
Chromium	ug/l	< 5	ISO17025	< 5				
Chromium (hexavalent)	ug/l	< 20	NONE	< 20				
Copper	ug/l	< 5	ISO17025	< 5				
Iron	ug/l	< 5	ISO17025	< 5				
Lead	ug/l	< 5	ISO17025	< 5				
Mercury	ug/l	< 0.05	ISO17025	< 0.05				
Molybdenum	ug/l	< 5	ISO17025	< 5				
Nickel	ug/l	< 5	ISO17025	< 5				
Selenium	ug/l	< 5	ISO17025	< 5				
Zinc	ug/l	< 2	ISO17025	3				
Calcium	mg/l	< 0.2	ISO17025	36.3				
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10				

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-82302	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076/1 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 360598	BH13	None Supplied	0.10	9.5	Brown sandy clay with stones
$ 360600	BH16	None Supplied	0.10	8.1	Brown sandy clay with stones
$ 360601	BH16	None Supplied	0.50	6.2	Brown sandy clay with stones
$ 360602	BH19	None Supplied	0.10	7.8	Brown sandy clay with stones
$ 360603	BH19	None Supplied	0.50	4.1	Brown sandy clay with stones
360604	BH20	None Supplied	0.50	4.4	Brown sandy clay with stones and chalk
360605	BH20	None Supplied	1.00	3.4	Brown sandy clay with stones
$ 360606	BH38	None Supplied	0.50	10.8	Brown sandy clay with stones and vegetation
$ 360607	BH38	None Supplied	1.00	8.7	Brown sandy clay with stones
$ 360608	BH39	None Supplied	0.10	11.1	Brown sandy clay with stones and vegetation
$ 360609	BH39	None Supplied	1.00	6	Brown sandy clay with stones
$ 360610	BH13	None Supplied	0.20	6.7	Brown sandy clay with stones
$ 360611	BH16	None Supplied	0.20	9.8	Brown sandy clay
$ 360612	BH19	None Supplied	0.20	5.8	Brown sandy clay with stones and chalk
360613	BH20	None Supplied	0.10	7.1	Brown sandy clay with stones
$ 360614	BH38	None Supplied	0.20	10.9	Brown sandy clay with stones
$ 360615	BH39	None Supplied	0.50	5.8	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-82302
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076/1 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-82302
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076/1 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-82627

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.02 - JH
Sample Receipt Date:	24/09/2018
Sample Scheduled Date:	24/09/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-82627, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-82627	**Date Sampled**	06/09/18	06/09/18	07/09/18	06/09/18	06/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH1	BH1	BH07	BH8	BH8
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.02 - JH	**Depth (m)**	0.10	1.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	361919	361920	361921	361922	361923

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.6	7.3	8.2	8.0	8.4
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	850	2083	800	433	567
Total Sulphate as SO_4	%	< 0.02	NONE	0.08	0.21	0.08	0.04	0.06
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.021	0.024	0.006	0.008	0.004
Antimony (Sb)	mg/kg	< 1	NONE	3.8	3.5	2.7	1.8	2.2
Arsenic (As)	mg/kg	< 2	MCERTS	11	10	9	6	6
Barium (Ba)	mg/kg	< 5	NONE	40	43	17	19	10
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7	0.7	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	< 0.2	0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	16	16	9	7	5
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	13	9	7	6	5
Iron (Fe)	mg/kg	< 50	NONE	24640	29320	15640	11790	8483
Lead (Pb)	mg/kg	< 3	MCERTS	24	13	6	14	3
Manganese (Mn)	mg/kg	< 5	NONE	340	238	261	240	149
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	13	11	7	5	3
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	28	28	19	14	11
Zinc (Zn)	mg/kg	< 3	MCERTS	57	32	16	20	12
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-82627	**Date Sampled**	12/09/18	12/09/18	04/09/18	04/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH36	BH36	BH37	BH37		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.02 - JH	**Depth (m)**	0.20	1.00	0.10	1.00		
Reporting Date: 31/01/2019	**DETS Sample No**	361924	361925	361926	361927		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.4	8.1	7.7	7.7	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	320	255	315	< 200	
Total Sulphate as SO_4	%	< 0.02	NONE	0.03	0.03	0.03	< 0.02	
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.010	0.002	0.013	0.004	
Antimony (Sb)	mg/kg	< 1	NONE	5.2	5.1	5.9	7.4	
Arsenic (As)	mg/kg	< 2	MCERTS	21	26	24	36	
Barium (Ba)	mg/kg	< 5	NONE	54	24	54	51	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	0.7	1	1.3	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	23	20	25	29	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	12	7	15	13	
Iron (Fe)	mg/kg	< 50	NONE	63040	79810	69690	118000	
Lead (Pb)	mg/kg	< 3	MCERTS	19	9	22	15	
Manganese (Mn)	mg/kg	< 5	NONE	886	484	824	1200	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	1.1	
Nickel (Ni)	mg/kg	< 3	MCERTS	20	19	25	30	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	48	50	53	72	
Zinc (Zn)	mg/kg	< 3	MCERTS	58	54	66	78	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-82627	**Date Sampled**	06/09/18	06/09/18	07/09/18	06/09/18	06/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH1	BH1	BH07	BH8	BH8
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.02 - JH	**Depth (m)**	0.10	1.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	361919	361920	361921	361922	361923

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.22	< 0.1	< 0.1	0.13	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.20	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.54	< 0.1	< 0.1	0.28	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	0.49	< 0.1	< 0.1	0.25	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.78	< 0.1	< 0.1	0.61	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.81	< 0.1	< 0.1	0.62	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.23	< 0.1	< 0.1	0.16	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.49	< 0.1	< 0.1	0.36	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.59	< 0.1	< 0.1	0.48	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.41	< 0.1	< 0.1	0.32	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	5	< 1.6	< 1.6	3.2	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-82627	**Date Sampled**	12/09/18	12/09/18	04/09/18	04/09/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH36	BH36	BH37	BH37	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.02 - JH	**Depth (m)**	0.20	1.00	0.10	1.00	
Reporting Date: 31/01/2019	**DETS Sample No**	361924	361925	361926	361927	

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	0.12	0.12	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.29	< 0.1	0.29	0.24	
Pyrene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	0.26	0.22	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.59	< 0.1	0.61	0.60	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.59	< 0.1	0.61	0.56	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.17	< 0.1	0.17	0.15	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	0.37	0.34	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.4	< 1.6	2.4	2.2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 18-82627	**Date Sampled**	06/09/18	06/09/18	07/09/18	06/09/18	06/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH1	BH1	BH07	BH8	BH8
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.02 - JH	**Depth (m)**	0.10	1.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	361919	361920	361921	361922	361923

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-82627	**Date Sampled**	12/09/18	12/09/18	04/09/18	04/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH36	BH36	BH37	BH37		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.02 - JH	**Depth (m)**	0.20	1.00	0.10	1.00		
Reporting Date: 31/01/2019	**DETS Sample No**	361924	361925	361926	361927		

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-82627	**Date Sampled**	06/09/18	06/09/18	07/09/18	06/09/18	06/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH1	BH1	BH07	BH8	BH8
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.02 - JH	**Depth (m)**	0.10	1.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	361919	361920	361921	361922	361923

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-82627	**Date Sampled**	12/09/18	12/09/18	04/09/18	04/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH36	BH36	BH37	BH37		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.02 - JH	**Depth (m)**	0.20	1.00	0.10	1.00		
Reporting Date: 31/01/2019	**DETS Sample No**	361924	361925	361926	361927		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)						
DETS Report No: 18-82627	**Date Sampled**	06/09/18	07/09/18	06/09/18	12/09/18	04/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH1	BH07	BH8	BH36	BH37
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.02 - JH	**Depth (m)**	0.50	0.20	0.50	0.50	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	361928	361929	361930	361931	361932

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	8.1	8.0	7.9	7.8	7.7
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Sulphate as SO_4	mg/l	< 1	ISO17025	14	5	5	7	11
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50	102	54	< 50	< 50
Chloride	mg/l	< 1	ISO17025	43	3	3	2	5
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	29.3	15.6	9.4	19.1	11.1
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Barium	ug/l	< 5	ISO17025	9	6	10	6	6
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3	< 3	< 3
Boron	ug/l	< 5	ISO17025	50	24	17	33	32
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	< 20
Copper	ug/l	< 5	ISO17025	7	< 5	< 5	< 5	< 5
Iron	ug/l	< 5	ISO17025	214	37	11	33	< 5
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Zinc	ug/l	< 2	ISO17025	6	< 2	2	3	4
Calcium	mg/l	< 0.2	ISO17025	31.8	35.3	28	16.6	15.9
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-82627	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.02 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 361919	BH1	None Supplied	0.10	18.8	Brown sandy clay with vegetation
$ 361920	BH1	None Supplied	1.00	26.8	Brown sandy clay
$ 361921	BH07	None Supplied	0.50	7.1	Brown sandy clay with stones and chalk
$ 361922	BH8	None Supplied	0.10	7.5	Brown sandy clay
$ 361923	BH8	None Supplied	1.00	8.6	Orange sandy clay with stones
$ 361924	BH36	None Supplied	0.20	6.8	Brown sandy clay with stones
$ 361925	BH36	None Supplied	1.00	4.7	Brown sandy clay
$ 361926	BH37	None Supplied	0.10	9.9	Brown sandy clay with stones
$ 361927	BH37	None Supplied	1.00	9.4	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-82627
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.02 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-82627
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.02 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83312

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.03 - JH
Sample Receipt Date:	26/09/2018
Sample Scheduled Date:	08/10/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83312, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83312	Date Sampled	12/09/18	11/09/18	12/09/18	12/09/18	12/09/18
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	TP / BH No	BH09	BH09	BH12	BH25	BH25
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.03 - JH	Depth (m)	1.00 - 1.20	3.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	DETS Sample No	364797	364799	364803	364806	364808

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.1	8.0	8.1	7.8	7.9
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	297	497	656	485	409
Total Sulphate as SO_4	%	< 0.02	NONE	0.03	0.05	0.07	0.05	0.04
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.003	0.003	0.004	0.016	< 0.001
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Arsenic (As)	mg/kg	< 2	MCERTS	6	7	7	16	29
Barium (Ba)	mg/kg	< 5	NONE	18	23	16	45	16
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	< 0.5	< 0.5	0.9	0.7
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.2	0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	6	11	8	22	16
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	6	7	8	15	8
Iron (Fe)	mg/kg	< 50	NONE	14250	20130	18470	48230	67720
Lead (Pb)	mg/kg	< 3	MCERTS	17	7	6	20	9
Manganese (Mn)	mg/kg	< 5	NONE	182	374	286	808	430
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	5	7	7	19	16
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	13	21	16	40	42
Zinc (Zn)	mg/kg	< 3	MCERTS	19	18	17	54	44
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83312	**Date Sampled**	12/09/18	11/09/18	12/09/18	12/09/18	12/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH09	BH09	BH12	BH25	BH25
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.03 - JH	**Depth (m)**	1.00 - 1.20	3.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	364797	364799	364803	364806	364808

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.13	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	1.45	< 0.1	< 0.1	0.11	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.53	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	3.11	0.19	< 0.1	0.29	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	2.76	0.19	< 0.1	0.28	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.62	< 0.1	< 0.1	0.49	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	1.09	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.70	< 0.1	< 0.1	0.37	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.59	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.34	< 0.1	< 0.1	0.21	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.04	< 0.1	< 0.1	0.37	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.44	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.80	< 0.1	< 0.1	0.20	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	17	< 1.6	< 1.6	2.3	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 18-83312	**Date Sampled**	12/09/18	11/09/18	12/09/18	12/09/18	12/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH09	BH09	BH12	BH25	BH25
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.03 - JH	**Depth (m)**	1.00 - 1.20	3.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	364797	364799	364803	364806	364808

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	8	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	15	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	23	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83312	**Date Sampled**	12/09/18	11/09/18	12/09/18	12/09/18	12/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH09	BH09	BH12	BH25	BH25
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.03 - JH	**Depth (m)**	1.00 - 1.20	3.00	0.50	0.10	1.00
Reporting Date: 31/01/2019	**DETS Sample No**	364797	364799	364803	364806	364808

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83312	**Date Sampled**	11/09/18	12/09/18	12/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH09	BH12	BH25		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	2.00	0.20	0.50		
Reporting Date: 31/01/2019	**DETS Sample No**	364798	364802	364807		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.9	8.0	8.0		
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO_4	mg/l	< 1	ISO17025	120	7	2		
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50	99	99		
Chloride	mg/l	< 1	ISO17025	3	2	< 1		
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	35.2	25.1	22.5		
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Barium	ug/l	< 5	ISO17025	40	22	15		
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3		
Boron	ug/l	< 5	ISO17025	151	36	31		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper	ug/l	< 5	ISO17025	9	8	10		
Iron	ug/l	< 5	ISO17025	70	50	148		
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		
Molybdenum	ug/l	< 5	ISO17025	6	< 5	< 5		
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Zinc	ug/l	< 2	ISO17025	6	7	5		
Calcium	mg/l	< 0.2	ISO17025	82.8	59	54.1		
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10		

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83312	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.03 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 364797	BH09	None Supplied	1.00 - 1.20	6.8	Brown sandy clay with stones and concrete
$ 364799	BH09	None Supplied	3.00	9.7	Brown sandy clay with stones and concrete
$ 364803	BH12	None Supplied	0.50	6	Brown sandy clay with stones
$ 364806	BH25	None Supplied	0.10	7.9	Brown sandy clay with stones and vegetation
$ 364808	BH25	None Supplied	1.00	5	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83312
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.03 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83312
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.03 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83313

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.04 - JH
Sample Receipt Date:	01/10/2018
Sample Scheduled Date:	08/10/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83313, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83313	**Date Sampled**	18/09/18	18/09/18	19/09/18	21/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH03A	BH03A	BH04	BH06		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.04 - JH	**Depth (m)**	0.10	0.50	0.10	0.10		
Reporting Date: 31/01/2019	**DETS Sample No**	364813	364815	364816	364818		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.7	7.9	7.8	7.7	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	737	582	660	773	
Total Sulphate as SO_4	%	< 0.02	NONE	0.07	0.06	0.07	0.08	
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.020	0.009	0.014	0.024	
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Arsenic (As)	mg/kg	< 2	MCERTS	11	7	10	10	
Barium (Ba)	mg/kg	< 5	NONE	49	31	50	38	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	0.6	0.9	0.8	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.2	0.3	0.3	
Chromium (Cr)	mg/kg	< 2	MCERTS	20	14	20	16	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	13	9	12	14	
Iron (Fe)	mg/kg	< 50	NONE	39860	29050	40600	34820	
Lead (Pb)	mg/kg	< 3	MCERTS	26	11	24	25	
Manganese (Mn)	mg/kg	< 5	NONE	872	668	851	719	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	1	
Nickel (Ni)	mg/kg	< 3	MCERTS	16	13	16	14	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	32	23	33	28	
Zinc (Zn)	mg/kg	< 3	MCERTS	60	37	57	51	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83313	**Date Sampled**	18/09/18	18/09/18	19/09/18	21/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH03A	BH03A	BH04	BH06		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.04 - JH	**Depth (m)**	0.10	0.50	0.10	0.10		
Reporting Date: 31/01/2019	**DETS Sample No**	364813	364815	364816	364818		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.12	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.12	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.17	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.25	0.18	0.21	0.28	
Pyrene	mg/kg	< 0.1	MCERTS	0.24	0.18	0.21	0.26	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.46	< 0.1	0.44	0.48	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.32	< 0.1	0.28	0.32	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	0.13	0.18	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	< 0.1	0.36	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	< 0.1	0.19	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2	< 1.6	< 1.6	2.5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83313	**Date Sampled**	18/09/18	18/09/18	19/09/18	21/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH03A	BH03A	BH04	BH06		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.04 - JH	**Depth (m)**	0.10	0.50	0.10	0.10		
Reporting Date: 31/01/2019	**DETS Sample No**	364813	364815	364816	364818		

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83313	**Date Sampled**	18/09/18	18/09/18	19/09/18	21/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH03A	BH03A	BH04	BH06		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.04 - JH	**Depth (m)**	0.10	0.50	0.10	0.10		
Reporting Date: 31/01/2019	**DETS Sample No**	364813	364815	364816	364818		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83313	**Date Sampled**	18/09/18	19/09/18			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH03A	BH04			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.04 - JH	**Depth (m)**	0.20	0.50			
Reporting Date: 31/01/2019	**DETS Sample No**	364814	364817			

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.7	8.0			
Total Cyanide	ug/l	< 5	NONE	< 5	< 5			
Free Cyanide	ug/l	< 5	NONE	< 5	< 5			
Sulphate as SO_4	mg/l	< 1	ISO17025	3	5			
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50	< 50			
Chloride	mg/l	< 1	ISO17025	6	1			
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	29.4	11.5			
Antimony	ug/l	< 5	ISO17025	< 5	< 5			
Arsenic	ug/l	< 5	ISO17025	< 5	< 5			
Barium	ug/l	< 5	ISO17025	35	11			
Beryllium	ug/l	< 3	ISO17025	< 3	< 3			
Boron	ug/l	< 5	ISO17025	53	40			
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4			
Chromium	ug/l	< 5	ISO17025	< 5	< 5			
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20			
Copper	ug/l	< 5	ISO17025	8	< 5			
Iron	ug/l	< 5	ISO17025	54	83			
Lead	ug/l	< 5	ISO17025	< 5	< 5			
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05			
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5			
Nickel	ug/l	< 5	ISO17025	< 5	< 5			
Selenium	ug/l	< 5	ISO17025	< 5	< 5			
Zinc	ug/l	< 2	ISO17025	9	3			
Calcium	mg/l	< 0.2	ISO17025	78.6	45.1			
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10			

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83313	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.04 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 364813	BH03A	None Supplied	0.10	7.4	Brown sandy clay with stones and vegetation
$ 364815	BH03A	None Supplied	0.50	4	Brown sandy clay with stones and concrete
$ 364816	BH04	None Supplied	0.10	5	Brown sandy clay with stones and vegetation
$ 364818	BH06	None Supplied	0.10	6.4	Brown sandy clay with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83313
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.04 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83313
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.04 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83430

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.03 - JH
Sample Receipt Date:	10/10/2018
Sample Scheduled Date:	10/10/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83430, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83430	**Date Sampled**	12/09/18	10/09/18	03/09/18	03/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH2	BH11	BH15	BH15		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	1.00	0.50	0.10	0.50		
Reporting Date: 31/01/2019	**DETS Sample No**	365325	365327	365328	365329		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.4	7.7	7.7	8.0	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	681	738	923	573	
Total Sulphate as SO_4	%	< 0.02	NONE	0.07	0.07	0.09	0.06	
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.019	0.010	0.020	0.006	
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Arsenic (As)	mg/kg	< 2	MCERTS	5	7	10	8	
Barium (Ba)	mg/kg	< 5	NONE	24	22	34	15	
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	< 0.5	0.7	< 0.5	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	10	9	13	8	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	7	10	13	7	
Iron (Fe)	mg/kg	< 50	NONE	12050	22860	33640	23170	
Lead (Pb)	mg/kg	< 3	MCERTS	6	12	23	5	
Manganese (Mn)	mg/kg	< 5	NONE	124	359	701	414	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	9	8	11	7	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	15	19	27	18	
Zinc (Zn)	mg/kg	< 3	MCERTS	23	26	48	18	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83430	**Date Sampled**	12/09/18	10/09/18	03/09/18	03/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH2	BH11	BH15	BH15		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	1.00	0.50	0.10	0.50		
Reporting Date: 31/01/2019	**DETS Sample No**	365325	365327	365328	365329		

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.30	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.11	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83430	**Date Sampled**	12/09/18	10/09/18	03/09/18	03/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH2	BH11	BH15	BH15		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	1.00	0.50	0.10	0.50		
Reporting Date: 31/01/2019	**DETS Sample No**	365325	365327	365328	365329		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83430	**Date Sampled**	12/09/18	10/09/18	03/09/18	03/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH2	BH11	BH15	BH15		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	1.00	0.50	0.10	0.50		
Reporting Date: 31/01/2019	**DETS Sample No**	365325	365327	365328	365329		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83430	**Date Sampled**	12/09/18	10/09/18			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH2	BH11			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.03 - JH	**Depth (m)**	0.50	0.10			
Reporting Date: 31/01/2019	**DETS Sample No**	365324	365326			

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	8.6	8.2			
Total Cyanide	ug/l	< 5	NONE	< 5	< 5			
Free Cyanide	ug/l	< 5	NONE	< 5	< 5			
Sulphate as SO_4	mg/l	< 1	ISO17025	16	6			
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	202	526			
Chloride	mg/l	< 1	ISO17025	72	2			
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	41.6	33.2			
Antimony	ug/l	< 5	ISO17025	< 5	< 5			
Arsenic	ug/l	< 5	ISO17025	< 5	< 5			
Barium	ug/l	< 5	ISO17025	12	12			
Beryllium	ug/l	< 3	ISO17025	< 3	< 3			
Boron	ug/l	< 5	ISO17025	< 5	< 5			
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4			
Chromium	ug/l	< 5	ISO17025	< 5	< 5			
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20			
Copper	ug/l	< 5	ISO17025	< 5	8			
Iron	ug/l	< 5	ISO17025	105	482			
Lead	ug/l	< 5	ISO17025	< 5	< 5			
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05			
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5			
Nickel	ug/l	< 5	ISO17025	< 5	< 5			
Selenium	ug/l	< 5	ISO17025	< 5	< 5			
Zinc	ug/l	< 2	ISO17025	13	6			
Calcium	mg/l	< 0.2	ISO17025	23.2	41.5			
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10			

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83430	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.03 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 365324	BH2	None Supplied	0.50	28.3	Brown sandy clay with stones
$ 365325	BH2	None Supplied	1.00	29.1	Brown sandy clay
$ 365326	BH11	None Supplied	0.10	10.2	Brown sandy clay with stones
$ 365327	BH11	None Supplied	0.50	7.1	Brown sandy clay with stones
$ 365328	BH15	None Supplied	0.10	11.4	Brown sandy clay with stones
$ 365329	BH15	None Supplied	0.50	8.8	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83430
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.03 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83430
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.03 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83431

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.03 - JH
Sample Receipt Date:	10/10/2018
Sample Scheduled Date:	10/10/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83431, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83431	Date Sampled	13/09/18	17/09/18	17/09/18	14/09/18		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	TP / BH No	BH14	BH28	BH28	BH29		
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	Depth (m)	0.20	0.10	1.00	0.20		
Reporting Date: 31/01/2019	DETS Sample No	365330	365332	365334	365335		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.9	7.8	8.2	7.7	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	568	652	321	791	
Total Sulphate as SO_4	%	< 0.02	NONE	0.06	0.07	0.03	0.08	
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.009	0.025	0.005	0.028	
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Arsenic (As)	mg/kg	< 2	MCERTS	8	7	8	12	
Barium (Ba)	mg/kg	< 5	NONE	27	20	25	43	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.5	< 0.5	< 0.5	0.7	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	10	10	10	20	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	10	10	7	12	
Iron (Fe)	mg/kg	< 50	NONE	29790	32170	27410	46980	
Lead (Pb)	mg/kg	< 3	MCERTS	7	11	6	21	
Manganese (Mn)	mg/kg	< 5	NONE	506	385	362	680	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	8	7	12	14	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	22	25	20	37	
Zinc (Zn)	mg/kg	< 3	MCERTS	32	35	26	62	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83431	**Date Sampled**	13/09/18	17/09/18	17/09/18	14/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH14	BH28	BH28	BH29		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	0.20	0.10	1.00	0.20		
Reporting Date: 31/01/2019	**DETS Sample No**	365330	365332	365334	365335		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.71	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.23	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	1.62	< 0.1	0.51	
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	1.35	< 0.1	0.42	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.95	< 0.1	0.56	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.73	< 0.1	0.16	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.80	< 0.1	0.61	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.45	< 0.1	0.14	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.74	< 0.1	0.33	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.56	< 0.1	0.55	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.26	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.45	< 0.1	0.20	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	8.9	< 1.6	3.5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83431	**Date Sampled**	13/09/18	17/09/18	17/09/18	14/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH14	BH28	BH28	BH29		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	0.20	0.10	1.00	0.20		
Reporting Date: 31/01/2019	**DETS Sample No**	365330	365332	365334	365335		

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	16	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83431	**Date Sampled**	13/09/18	17/09/18	17/09/18	14/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH14	BH28	BH28	BH29		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	0.20	0.10	1.00	0.20		
Reporting Date: 31/01/2019	**DETS Sample No**	365330	365332	365334	365335		
Determinand	**Unit**	**RL**	**Accreditation**				
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83431	**Date Sampled**	13/09/18	17/09/18	14/09/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH14	BH28	BH29		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.03 - JH	**Depth (m)**	0.50	0.50	0.50		
Reporting Date: 31/01/2019	**DETS Sample No**	365331	365333	365336		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	8.2	8.2	8.1		
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO_4	mg/l	< 1	ISO17025	3	2	6		
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	162	345	141		
Chloride	mg/l	< 1	ISO17025	3	2	6		
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	19.1	42.4	49.8		
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Barium	ug/l	< 5	ISO17025	8	7	15		
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3		
Boron	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper	ug/l	< 5	ISO17025	< 5	5	8		
Iron	ug/l	< 5	ISO17025	31	1020	4070		
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Zinc	ug/l	< 2	ISO17025	3	4	11		
Calcium	mg/l	< 0.2	ISO17025	36.8	34	33.7		
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10		

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83431	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.03 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 365330	BH14	None Supplied	0.20	6.4	Brown sandy clay with stones
$ 365331	BH14	None Supplied	0.50	7.3	Brown sandy clay with stones
$ 365332	BH28	None Supplied	0.10	5.1	Brown sandy clay with stones
$ 365333	BH28	None Supplied	0.50	6.1	Brown sandy clay with vegetation
$ 365334	BH28	None Supplied	1.00	6.3	Brown sandy clay with stones and vegetation
$ 365335	BH29	None Supplied	0.20	11.5	Brown sandy clay with stones
$ 365336	BH29	None Supplied	0.50	9.2	Brown sandy clay with vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83431
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.03 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83431
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.03 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83556

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.05 - JH
Sample Receipt Date:	12/10/2018
Sample Scheduled Date:	12/10/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83556, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83556	**Date Sampled**	30/09/18	30/09/18	26/09/18	26/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP1	TP1	TP28	TP28	TP03
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365920	365921	365922	365923	365924

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.5	8.5	8.0	8.1	8.1
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	673	606	698	477	708
Total Sulphate as SO_4	%	< 0.02	NONE	0.07	0.06	0.07	0.05	0.07
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.019	0.004	0.018	0.005	0.016
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Arsenic (As)	mg/kg	< 2	MCERTS	< 2	< 2	4	2	3
Barium (Ba)	mg/kg	< 5	NONE	48	29	29	11	34
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	0.6	0.7	< 0.5	0.7
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	< 0.2	0.3	< 0.2	0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	20	11	12	6	14
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	15	12	15	10	18
Iron (Fe)	mg/kg	< 50	NONE	39840	24110	27120	15930	30480
Lead (Pb)	mg/kg	< 3	MCERTS	18	< 3	30	9	21
Manganese (Mn)	mg/kg	< 5	NONE	794	293	462	272	646
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	1.1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	15	9	9	4	10
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	33	19	25	12	26
Zinc (Zn)	mg/kg	< 3	MCERTS	57	20	42	15	57
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83556	**Date Sampled**	27/09/18	27/09/18	27/09/18	27/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP03	TP11	TP11	TP12	TP12
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.50	0.20	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	365925	365926	365927	365928	365929

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	8.1	8.0	8.0	7.9	7.9
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	530	1648	1483	628	440
Total Sulphate as SO_4	%	< 0.02	NONE	0.05	0.16	0.15	0.06	0.04
Fraction Organic Carbon (FOC)	Units	< 0.001	**MCERTS**	0.005	0.018	0.017	0.015	0.011
Antimony (Sb)	mg/kg	< 1	NONE	< 1	1.1	< 1	1.2	1.4
Arsenic (As)	mg/kg	< 2	**MCERTS**	< 2	6	< 2	< 2	< 2
Barium (Ba)	mg/kg	< 5	NONE	20	40	76	100	97
Beryllium (Be)	mg/kg	< 0.5	NONE	0.5	1	1.5	2.1	2
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	1.1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	0.3	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	**MCERTS**	10	35	39	48	50
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	12	18	21	26	21
Iron (Fe)	mg/kg	< 50	NONE	23690	64900	71090	70790	64250
Lead (Pb)	mg/kg	< 3	**MCERTS**	6	14	9	6	5
Manganese (Mn)	mg/kg	< 5	NONE	327	623	992	559	361
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	8	18	26	31	30
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	19	42	57	75	78
Zinc (Zn)	mg/kg	< 3	**MCERTS**	24	73	84	119	105
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83556	Date Sampled	28/09/18	28/09/18	01/10/18	01/10/18	01/10/18
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	TP / BH No	TP7	TP7	TP4	TP4	TP5
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	Depth (m)	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	DETS Sample No	365930	365931	365932	365933	365934

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.9	8.0	7.9	8.1	7.8
Total Cyanide	mg/kg	< 2	NONE	3	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	766	715	876	748	945
Total Sulphate as SO_4	%	< 0.02	NONE	0.08	0.07	0.09	0.07	0.09
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.026	0.011	0.016	0.003	0.019
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Arsenic (As)	mg/kg	< 2	MCERTS	3	< 2	< 2	2	< 2
Barium (Ba)	mg/kg	< 5	NONE	28	26	33	7	27
Beryllium (Be)	mg/kg	< 0.5	NONE	0.8	0.8	0.9	< 0.5	0.8
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.2	0.3	< 0.2	0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	18	15	16	6	14
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	15	14	15	10	16
Iron (Fe)	mg/kg	< 50	NONE	34350	36780	33980	16650	30950
Lead (Pb)	mg/kg	< 3	MCERTS	18	10	16	< 3	20
Manganese (Mn)	mg/kg	< 5	NONE	491	581	686	224	571
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	1.1	< 1	< 1	1.1
Nickel (Ni)	mg/kg	< 3	MCERTS	13	15	13	3	13
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	36	30	30	14	27
Zinc (Zn)	mg/kg	< 3	MCERTS	52	36	49	9	43
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83556	**Date Sampled**	01/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP5					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.05 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	365935					

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	8.1				
Total Cyanide	mg/kg	< 2	NONE	< 2				
Free Cyanide	mg/kg	< 2	NONE	< 2				
Total Sulphate as SO_4	mg/kg	< 200	NONE	847				
Total Sulphate as SO_4	%	< 0.02	NONE	0.08				
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.003				
Antimony (Sb)	mg/kg	< 1	NONE	< 1				
Arsenic (As)	mg/kg	< 2	MCERTS	< 2				
Barium (Ba)	mg/kg	< 5	NONE	5				
Beryllium (Be)	mg/kg	< 0.5	NONE	0.5				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	6				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	11				
Iron (Fe)	mg/kg	< 50	NONE	16090				
Lead (Pb)	mg/kg	< 3	MCERTS	3				
Manganese (Mn)	mg/kg	< 5	NONE	170				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				
Molybdenum (Mo)	mg/kg	< 1	NONE	1.5				
Nickel (Ni)	mg/kg	< 3	MCERTS	7				
Selenium (Se)	mg/kg	< 3	NONE	< 3				
Vanadium (V)	mg/kg	< 2	NONE	13				
Zinc (Zn)	mg/kg	< 3	MCERTS	8				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83556	**Date Sampled**	30/09/18	30/09/18	26/09/18	26/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP1	TP1	TP28	TP28	TP03
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365920	365921	365922	365923	365924

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.37	0.22	0.27
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.32	0.19	0.23
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	0.47	0.38	0.40
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	0.36	0.22	0.26
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	0.21	0.12	0.15
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.31	0.22	0.24
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	2	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83556	**Date Sampled**	27/09/18	27/09/18	27/09/18	27/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP03	TP11	TP11	TP12	TP12
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.50	0.20	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	365925	365926	365927	365928	365929

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.32	< 0.1	0.23	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.27	< 0.1	0.20	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.46	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.33	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.18	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.27	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	1.8	< 1.6	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83556	**Date Sampled**	28/09/18	28/09/18	01/10/18	01/10/18	01/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP7	TP7	TP4	TP4	TP5
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365930	365931	365932	365933	365934

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.12
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.26	0.17	0.18	< 0.1	0.20
Pyrene	mg/kg	< 0.1	MCERTS	0.23	0.15	0.17	< 0.1	0.18
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.42	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83556	**Date Sampled**	01/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP5					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.05 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	365935					

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 18-83556	**Date Sampled**	30/09/18	30/09/18	26/09/18	26/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP1	TP1	TP28	TP28	TP03
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365920	365921	365922	365923	365924

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 18-83556	**Date Sampled**	27/09/18	27/09/18	27/09/18	27/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP03	TP11	TP11	TP12	TP12
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.50	0.20	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	365925	365926	365927	365928	365929

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83556	**Date Sampled**	28/09/18	28/09/18	01/10/18	01/10/18	01/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP7	TP7	TP4	TP4	TP5
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365930	365931	365932	365933	365934

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83556	Date Sampled	01/10/18					
Soils Ltd	Time Sampled	None Supplied					
Site Reference: A47 Wansford	TP / BH No	TP5					
Project / Job Ref: 17076	Additional Refs	None Supplied					
Order No: 17076.05 - JH	Depth (m)	1.00					
Reporting Date: 31/01/2019	DETS Sample No	365935					

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21				
Total >C5 - C35	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83556	**Date Sampled**	30/09/18	30/09/18	26/09/18	26/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP1	TP1	TP28	TP28	TP03
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365920	365921	365922	365923	365924

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83556	**Date Sampled**	27/09/18	27/09/18	27/09/18	27/09/18	27/09/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP03	TP11	TP11	TP12	TP12
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.50	0.20	0.50	0.10	0.50
Reporting Date: 31/01/2019	**DETS Sample No**	365925	365926	365927	365928	365929

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83556	**Date Sampled**	28/09/18	28/09/18	01/10/18	01/10/18	01/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP7	TP7	TP4	TP4	TP5
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.05 - JH	**Depth (m)**	0.10	0.50	0.10	1.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	365930	365931	365932	365933	365934

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83556	**Date Sampled**	01/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP5					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.05 - JH	**Depth (m)**	1.00					
Reporting Date: 31/01/2019	**DETS Sample No**	365935					

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene	ug/kg	< 2	MCERTS	< 2				
p & m-xylene	ug/kg	< 2	MCERTS	< 2				
o-xylene	ug/kg	< 2	MCERTS	< 2				
MTBE	ug/kg	< 5	MCERTS	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83556	**Date Sampled**	26/09/18	28/09/18	01/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	TP28	TP7	TP4		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.05 - JH	**Depth (m)**	0.20	0.20	0.20		
Reporting Date: 31/01/2019	**DETS Sample No**	365936	365938	365939		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.9	7.9	8.1		
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO_4	mg/l	< 1	ISO17025	9	8	26		
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	343	280	312		
Chloride	mg/l	< 1	ISO17025	6	8	11		
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	21.6	13.6	18.6		
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Barium	ug/l	< 5	ISO17025	22	10	16		
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3		
Boron	ug/l	< 5	ISO17025	39	21	37		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper	ug/l	< 5	ISO17025	6	< 5	6		
Iron	ug/l	< 5	ISO17025	24	< 5	22		
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Zinc	ug/l	< 2	ISO17025	6	6	10		
Calcium	mg/l	< 0.2	ISO17025	52.5	39.1	65.5		
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10		

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83556	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.05 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 365920	TP1	None Supplied	0.10	7.2	Brown sandy clay with stones
$ 365921	TP1	None Supplied	0.50	6.4	Brown sandy clay with stones
$ 365922	TP28	None Supplied	0.10	8.7	Brown sandy clay with stones
$ 365923	TP28	None Supplied	1.00	4.5	Brown sandy clay with stones
$ 365924	TP03	None Supplied	0.20	6	Brown sandy clay with stones
$ 365925	TP03	None Supplied	0.50	4.3	Brown sandy clay with stones
$ 365926	TP11	None Supplied	0.20	15.4	Brown sandy clay with stones
$ 365927	TP11	None Supplied	0.50	20.3	Brown sandy clay
$ 365928	TP12	None Supplied	0.10	25.1	Brown sandy clay with vegetation
$ 365929	TP12	None Supplied	0.50	27	Brown sandy clay
$ 365930	TP7	None Supplied	0.10	11.8	Brown sandy clay with stones and concrete
$ 365931	TP7	None Supplied	0.50	8.1	Brown sandy clay with stones
$ 365932	TP4	None Supplied	0.10	10.3	Brown sandy clay with stones
$ 365933	TP4	None Supplied	1.00	7.6	Brown sandy clay with stones
$ 365934	TP5	None Supplied	0.20	10.6	Brown sandy clay with stones
$ 365935	TP5	None Supplied	1.00	9	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83556
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.05 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83556
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.05 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83738

Site Reference: A47 Wansford

Project / Job Ref: 17076

Order No: 17076.05 - JH

Sample Receipt Date: 17/10/2018

Sample Scheduled Date: 17/10/2018

Report Issue Number: 2

Reporting Date: 31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83738, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83738	**Date Sampled**	27/09/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP11					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.05 - JH	**Depth (m)**	0.20					
Reporting Date: 31/01/2019	**DETS Sample No**	366763					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.8				
Total Cyanide	ug/l	< 5	NONE	< 5				
Free Cyanide	ug/l	< 5	NONE	< 5				
Sulphate as SO_4	mg/l	< 1	ISO17025	12				
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	431				
Chloride	mg/l	< 1	ISO17025	3				
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	28.1				
Antimony	ug/l	< 5	ISO17025	< 5				
Arsenic	ug/l	< 5	ISO17025	< 5				
Barium	ug/l	< 5	ISO17025	22				
Beryllium	ug/l	< 3	ISO17025	< 3				
Boron	ug/l	< 5	ISO17025	134				
Cadmium	ug/l	< 0.4	ISO17025	< 0.4				
Chromium	ug/l	< 5	ISO17025	< 5				
Chromium (hexavalent)	ug/l	< 20	NONE	< 20				
Copper	ug/l	< 5	ISO17025	10				
Iron	ug/l	< 5	ISO17025	138				
Lead	ug/l	< 5	ISO17025	< 5				
Mercury	ug/l	< 0.05	ISO17025	< 0.05				
Molybdenum	ug/l	< 5	ISO17025	< 5				
Nickel	ug/l	< 5	ISO17025	< 5				
Selenium	ug/l	< 5	ISO17025	< 5				
Zinc	ug/l	< 2	ISO17025	10				
Calcium	mg/l	< 0.2	ISO17025	51.6				
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10				

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83738
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.05 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83751

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.06 - JH
Sample Receipt Date:	17/10/2018
Sample Scheduled Date:	17/10/2018
Report Issue Number:	2
Reporting Date:	31/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83751, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83751	**Date Sampled**	04/10/18	04/10/18	04/10/18	04/10/18	05/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP15	TP15	TP16	TP17	TP18
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.10	0.50	0.10	0.10	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	366791	366792	366793	366795	366796

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.5	7.9	7.8	7.7	7.4
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	1248	795	365	440	350
Total Sulphate as SO_4	%	< 0.02	NONE	0.12	0.08	0.04	0.04	0.04
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.038	0.007	0.013	0.017	0.015
Antimony (Sb)	mg/kg	< 1	NONE	1.3	1.1	1.4	1.1	1.3
Arsenic (As)	mg/kg	< 2	MCERTS	17	26	22	20	19
Barium (Ba)	mg/kg	< 5	NONE	41	26	51	50	61
Beryllium (Be)	mg/kg	< 0.5	NONE	1.1	1.6	1.2	1.1	1.2
W/S Boron	mg/kg	< 1	NONE	1.6	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.3	0.3	0.3	0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	27	32	28	26	27
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	20	10	16	17	19
Iron (Fe)	mg/kg	< 50	NONE	35380	94610	71520	61350	66100
Lead (Pb)	mg/kg	< 3	MCERTS	46	14	23	23	23
Manganese (Mn)	mg/kg	< 5	NONE	411	1420	1050	936	1050
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	19	22	25	22	26
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	53	69	58	52	52
Zinc (Zn)	mg/kg	< 3	MCERTS	82	74	69	70	67
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83751	**Date Sampled**	05/10/18	05/10/18	05/10/18	None Supplied	02/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP18	TP19	TP19	TP19	TP27
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.50	0.10	1.00	2.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	366798	366799	366800	366802	366803

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.9	7.9	7.8	7.9	7.9
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	392	400	386	270	898
Total Sulphate as SO_4	%	< 0.02	NONE	0.04	0.04	0.04	0.03	0.09
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.004	0.014	0.008	0.006	0.019
Antimony (Sb)	mg/kg	< 1	NONE	< 1	1.2	< 1	1.4	< 1
Arsenic (As)	mg/kg	< 2	MCERTS	18	18	19	24	9
Barium (Ba)	mg/kg	< 5	NONE	41	56	49	51	36
Beryllium (Be)	mg/kg	< 0.5	NONE	1	1.1	1.2	1.3	0.8
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	0.3	0.3	0.3	0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	21	25	26	29	16
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	13	17	16	17	14
Iron (Fe)	mg/kg	< 50	NONE	59990	62480	57570	71260	30840
Lead (Pb)	mg/kg	< 3	MCERTS	11	22	18	15	23
Manganese (Mn)	mg/kg	< 5	NONE	806	1030	887	768	604
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	24	22	23	27	12
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	47	48	50	59	29
Zinc (Zn)	mg/kg	< 3	MCERTS	46	69	62	65	53
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83751	**Date Sampled**	04/10/18	04/10/18	04/10/18	04/10/18	05/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP15	TP15	TP16	TP17	TP18
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.10	0.50	0.10	0.10	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	366791	366792	366793	366795	366796

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	0.11	0.11	0.11
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.52	< 0.1	0.36	0.38	0.37
Pyrene	mg/kg	< 0.1	MCERTS	0.45	< 0.1	0.31	0.32	0.32
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.60	< 0.1	0.50	0.51	0.52
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.39	< 0.1	0.26	0.27	0.26
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.22	< 0.1	0.16	0.16	0.16
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.39	< 0.1	0.29	0.30	0.30
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.43	< 0.1	0.36	0.36	0.36
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	0.20	0.20	0.21
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	3.4	< 1.6	2.6	2.6	2.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83751	**Date Sampled**	05/10/18	05/10/18	05/10/18	None Supplied	02/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP18	TP19	TP19	TP19	TP27
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.50	0.10	1.00	2.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	366798	366799	366800	366802	366803

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.19	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.26	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.55	0.30	< 0.1	0.29
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.47	0.26	< 0.1	0.26
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.59	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.38	0.22	< 0.1	0.20
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.20	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.37	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.42	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.25	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	3.7	< 1.6	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83751	**Date Sampled**	04/10/18	04/10/18	04/10/18	04/10/18	05/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP15	TP15	TP16	TP17	TP18
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.10	0.50	0.10	0.10	0.10
Reporting Date: 31/01/2019	**DETS Sample No**	366791	366792	366793	366795	366796

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83751	**Date Sampled**	05/10/18	05/10/18	05/10/18	None Supplied	02/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP18	TP19	TP19	TP19	TP27
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.50	0.10	1.00	2.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	366798	366799	366800	366802	366803

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83751	**Date Sampled**	04/10/18	04/10/18	04/10/18	04/10/18	05/10/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	TP15	TP15	TP16	TP17	TP18	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.06 - JH	**Depth (m)**	0.10	0.50	0.10	0.10	0.10	
Reporting Date: 31/01/2019	**DETS Sample No**	366791	366792	366793	366795	366796	
Determinand	**Unit**	**RL**	**Accreditation**				
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83751	**Date Sampled**	05/10/18	05/10/18	05/10/18	None Supplied	02/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP18	TP19	TP19	TP19	TP27
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.50	0.10	1.00	2.00	0.20
Reporting Date: 31/01/2019	**DETS Sample No**	366798	366799	366800	366802	366803

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83751	**Date Sampled**	04/10/18	05/10/18	None Supplied		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	TP16	TP18	TP19		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.06 - JH	**Depth (m)**	0.20	0.20	1.50		
Reporting Date: 31/01/2019	**DETS Sample No**	366794	366797	366801		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.9	8.0	8.0		
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO_4	mg/l	< 1	ISO17025	4	17	4		
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	276	246	230		
Chloride	mg/l	< 1	ISO17025	5	3	< 1		
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	13.4	14.2	13.9		
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Barium	ug/l	< 5	ISO17025	14	14	12		
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3		
Boron	ug/l	< 5	ISO17025	35	49	39		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Iron	ug/l	< 5	ISO17025	49	5	44		
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Zinc	ug/l	< 2	ISO17025	5	6	5		
Calcium	mg/l	< 0.2	ISO17025	32.1	48.2	32		
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10		

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83751	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.06 - JH	
Reporting Date: 31/01/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 366791	TP15	None Supplied	0.10	12	Brown sandy clay with stones and vegetation
$ 366792	TP15	None Supplied	0.50	12.6	Brown sandy clay with stones
$ 366793	TP16	None Supplied	0.10	6.8	Brown sandy clay with stones
$ 366795	TP17	None Supplied	0.10	6.7	Brown sandy clay with vegetation
$ 366796	TP18	None Supplied	0.10	8.7	Brown sandy clay with vegetation
$ 366798	TP18	None Supplied	0.50	5.5	Brown sandy clay with stones
$ 366799	TP19	None Supplied	0.10	10.4	Brown sandy clay with stones
$ 366800	TP19	None Supplied	1.00	8	Brown sandy clay with stones
^ 366802	TP19	None Supplied	2.00	12.3	Brown sandy clay with stones
$ 366803	TP27	None Supplied	0.20	5.9	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83751
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.06 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83751
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.06 - JH
Reporting Date: 31/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83821

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.06 - JH
Sample Receipt Date:	19/10/2018
Sample Scheduled Date:	19/10/2018
Report Issue Number:	2
Reporting Date:	01/02/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83821, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83821	Date Sampled	08/10/18	08/10/18	08/10/18	08/10/18	08/10/18
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	TP / BH No	TP20	TP20	TP30	TP30	TP23
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	Depth (m)	0.20	0.50	0.10	1.00	0.10
Reporting Date: 01/02/2019	DETS Sample No	367079	367080	367081	367083	367084

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.2	8.2	7.8	8.0	7.6
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	461	319	449	504	416
Total Sulphate as SO_4	%	< 0.02	NONE	0.05	0.03	0.04	0.05	0.04
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.013	0.002	0.014	0.003	0.014
Antimony (Sb)	mg/kg	< 1	NONE	2.4	2.4	2.2	2.4	2.2
Arsenic (As)	mg/kg	< 2	MCERTS	24	29	19	27	17
Barium (Ba)	mg/kg	< 5	NONE	49	27	62	22	61
Beryllium (Be)	mg/kg	< 0.5	NONE	1	0.8	1	0.8	1.2
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	25	18	25	18	26
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	15	9	17	11	16
Iron (Fe)	mg/kg	< 50	NONE	59400	83350	50900	88350	52800
Lead (Pb)	mg/kg	< 3	MCERTS	21	9	21	8	19
Manganese (Mn)	mg/kg	< 5	NONE	883	818	962	873	1120
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	1	1.1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	21	18	20	18	24
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	49	46	44	44	46
Zinc (Zn)	mg/kg	< 3	MCERTS	70	51	70	47	68
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83821	**Date Sampled**	08/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP23					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.06 - JH	**Depth (m)**	0.50					
Reporting Date: 01/02/2019	**DETS Sample No**	367086					

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	8.0				
Total Cyanide	mg/kg	< 2	NONE	< 2				
Free Cyanide	mg/kg	< 2	NONE	< 2				
Total Sulphate as SO_4	mg/kg	< 200	NONE	288				
Total Sulphate as SO_4	%	< 0.02	NONE	0.03				
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.003				
Antimony (Sb)	mg/kg	< 1	NONE	2.6				
Arsenic (As)	mg/kg	< 2	MCERTS	29				
Barium (Ba)	mg/kg	< 5	NONE	42				
Beryllium (Be)	mg/kg	< 0.5	NONE	1.2				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	26				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	13				
Iron (Fe)	mg/kg	< 50	NONE	94560				
Lead (Pb)	mg/kg	< 3	MCERTS	10				
Manganese (Mn)	mg/kg	< 5	NONE	1080				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				
Molybdenum (Mo)	mg/kg	< 1	NONE	1.1				
Nickel (Ni)	mg/kg	< 3	MCERTS	29				
Selenium (Se)	mg/kg	< 3	NONE	< 3				
Vanadium (V)	mg/kg	< 2	NONE	61				
Zinc (Zn)	mg/kg	< 3	MCERTS	61				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83821	**Date Sampled**	08/10/18	08/10/18	08/10/18	08/10/18	08/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP20	TP20	TP30	TP30	TP23
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.20	0.50	0.10	1.00	0.10
Reporting Date: 01/02/2019	**DETS Sample No**	367079	367080	367081	367083	367084

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	< 0.1	< 0.1	0.18
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.36	< 0.1	0.22	< 0.1	0.42
Pyrene	mg/kg	< 0.1	MCERTS	0.31	< 0.1	0.18	< 0.1	0.37
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	0.20	< 0.1	0.52
Chrysene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	< 0.1	< 0.1	0.13
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	0.22	< 0.1	0.55
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.11
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.20	< 0.1	< 0.1	< 0.1	0.26
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.38	< 0.1	< 0.1	< 0.1	0.39
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	0.18	< 0.1	0.23
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.4	< 1.6	< 1.6	< 1.6	3.2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83821	**Date Sampled**	08/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP23					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.06 - JH	**Depth (m)**	0.50					
Reporting Date: 01/02/2019	**DETS Sample No**	367086					

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83821	**Date Sampled**	08/10/18	08/10/18	08/10/18	08/10/18	08/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP20	TP20	TP30	TP30	TP23
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.20	0.50	0.10	1.00	0.10
Reporting Date: 01/02/2019	**DETS Sample No**	367079	367080	367081	367083	367084

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83821	Date Sampled	08/10/18					
Soils Ltd	Time Sampled	None Supplied					
Site Reference: A47 Wansford	TP / BH No	TP23					
Project / Job Ref: 17076	Additional Refs	None Supplied					
Order No: 17076.06 - JH	Depth (m)	0.50					
Reporting Date: 01/02/2019	DETS Sample No	367086					

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21				
Total >C5 - C35	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83821	**Date Sampled**	08/10/18	08/10/18	08/10/18	08/10/18	08/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP20	TP20	TP30	TP30	TP23
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.06 - JH	**Depth (m)**	0.20	0.50	0.10	1.00	0.10
Reporting Date: 01/02/2019	**DETS Sample No**	367079	367080	367081	367083	367084

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83821	**Date Sampled**	08/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP23					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.06 - JH	**Depth (m)**	0.50					
Reporting Date: 01/02/2019	**DETS Sample No**	367086					

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene	ug/kg	< 2	MCERTS	< 2				
p & m-xylene	ug/kg	< 2	MCERTS	< 2				
o-xylene	ug/kg	< 2	MCERTS	< 2				
MTBE	ug/kg	< 5	MCERTS	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83821	**Date Sampled**	08/10/18	08/10/18			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	TP30	TP23			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.06 - JH	**Depth (m)**	0.20	0.20			
Reporting Date: 01/02/2019	**DETS Sample No**	367082	367085			

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.8	7.7			
Total Cyanide	ug/l	< 5	NONE	< 5	< 5			
Free Cyanide	ug/l	< 5	NONE	< 5	< 5			
Sulphate as SO_4	mg/l	< 1	ISO17025	13	3			
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	252	172			
Chloride	mg/l	< 1	ISO17025	3	3			
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	16.7	21.6			
Antimony	ug/l	< 5	ISO17025	< 5	< 5			
Arsenic	ug/l	< 5	ISO17025	< 5	< 5			
Barium	ug/l	< 5	ISO17025	14	10			
Beryllium	ug/l	< 3	ISO17025	< 3	< 3			
Boron	ug/l	< 5	ISO17025	54	93			
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4			
Chromium	ug/l	< 5	ISO17025	< 5	< 5			
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20			
Copper	ug/l	< 5	ISO17025	10	8			
Iron	ug/l	< 5	ISO17025	34	363			
Lead	ug/l	< 5	ISO17025	< 5	< 5			
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05			
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5			
Nickel	ug/l	< 5	ISO17025	< 5	< 5			
Selenium	ug/l	< 5	ISO17025	< 5	< 5			
Zinc	ug/l	< 2	ISO17025	5	9			
Calcium	mg/l	< 0.2	ISO17025	54.1	21.7			
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10			

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83821	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.06 - JH	
Reporting Date: 01/02/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 367079	TP20	None Supplied	0.20	10.3	Brown sandy clay with stones
$ 367080	TP20	None Supplied	0.50	4.1	Brown sandy gravel with stones
$ 367081	TP30	None Supplied	0.10	7.7	Brown sandy clay with stones
$ 367082	TP30	None Supplied	0.20	6.9	Brown sandy clay with stones
$ 367083	TP30	None Supplied	1.00	3.8	Brown sandy clay with stones and vegetation
$ 367084	TP23	None Supplied	0.10	12.7	Brown sandy gravel with stones
$ 367085	TP23	None Supplied	0.20	11.6	Brown sandy clay with stones
$ 367086	TP23	None Supplied	0.50	5.1	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83821
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.06 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83821
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.06 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83823

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.07 - JH
Sample Receipt Date:	19/10/2018
Sample Scheduled Date:	19/10/2018
Report Issue Number:	2
Reporting Date:	01/02/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83823, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-83823	**Date Sampled**	09/10/18	09/10/18	04/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH30	BH30	BH32		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.07 - JH	**Depth (m)**	0.10	0.50	1.00		
Reporting Date: 01/02/2019	**DETS Sample No**	367088	367090	367093		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.0	7.4	8.0		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Free Cyanide	mg/kg	< 2	NONE	4	< 2	< 2		
Total Sulphate as SO_4	mg/kg	< 200	NONE	616	355	763		
Total Sulphate as SO_4	%	< 0.02	NONE	0.06	0.04	0.08		
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.024	0.009	0.003		
Antimony (Sb)	mg/kg	< 1	NONE	1.6	1.6	1.1		
Arsenic (As)	mg/kg	< 2	MCERTS	13	13	7		
Barium (Ba)	mg/kg	< 5	NONE	43	53	16		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7	0.8	< 0.5		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	18	19	9		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	11	11	9		
Iron (Fe)	mg/kg	< 50	NONE	39220	44330	24220		
Lead (Pb)	mg/kg	< 3	MCERTS	18	11	3		
Manganese (Mn)	mg/kg	< 5	NONE	671	846	396		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	13	16	8		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	35	35	17		
Zinc (Zn)	mg/kg	< 3	MCERTS	51	44	14		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83823	**Date Sampled**	09/10/18	09/10/18	04/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH30	BH30	BH32		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.07 - JH	**Depth (m)**	0.10	0.50	1.00		
Reporting Date: 01/02/2019	**DETS Sample No**	367088	367090	367093		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.29	< 0.1	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.46	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.47	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.37	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.4	< 1.6	< 1.6		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83823	Date Sampled	09/10/18	09/10/18	04/10/18		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	TP / BH No	BH30	BH30	BH32		
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 17076.07 - JH	Depth (m)	0.10	0.50	1.00		
Reporting Date: 01/02/2019	DETS Sample No	367088	367090	367093		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83823	**Date Sampled**	09/10/18	09/10/18	04/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH30	BH30	BH32		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.07 - JH	**Depth (m)**	0.10	0.50	1.00		
Reporting Date: 01/02/2019	**DETS Sample No**	367088	367090	367093		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5		
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-83823	**Date Sampled**	09/10/18	04/10/18			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH30	BH32			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.07 - JH	**Depth (m)**	0.20	0.50			
Reporting Date: 01/02/2019	**DETS Sample No**	367089	367092			

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.8	7.9			
Total Cyanide	ug/l	< 5	NONE	< 5	< 5			
Free Cyanide	ug/l	< 5	NONE	< 5	< 5			
Sulphate as SO_4	mg/l	< 1	ISO17025	2	1			
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	126	138			
Chloride	mg/l	< 1	ISO17025	2	2			
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	19.5	12.8			
Antimony	ug/l	< 5	ISO17025	< 5	< 5			
Arsenic	ug/l	< 5	ISO17025	< 5	< 5			
Barium	ug/l	< 5	ISO17025	9	25			
Beryllium	ug/l	< 3	ISO17025	< 3	< 3			
Boron	ug/l	< 5	ISO17025	50	30			
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4			
Chromium	ug/l	< 5	ISO17025	< 5	< 5			
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20			
Copper	ug/l	< 5	ISO17025	14	7			
Iron	ug/l	< 5	ISO17025	621	196			
Lead	ug/l	< 5	ISO17025	< 5	< 5			
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05			
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5			
Nickel	ug/l	< 5	ISO17025	5	< 5			
Selenium	ug/l	< 5	ISO17025	< 5	< 5			
Zinc	ug/l	< 2	ISO17025	17	9			
Calcium	mg/l	< 0.2	ISO17025	9.7	44.8			
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10			

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83823	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.07 - JH	
Reporting Date: 01/02/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
367088	BH30	None Supplied	0.10	12.4	Brown sandy clay with vegetation
367089	BH30	None Supplied	0.20	6.7	
367090	BH30	None Supplied	0.50	6.4	Light brown sandy clay with vegetation
$ 367092	BH32	None Supplied	0.50	7.7	
$ 367093	BH32	None Supplied	1.00	7.4	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83823
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.07 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83823
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.07 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83853

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.08 - JH
Sample Receipt Date:	19/10/2018
Sample Scheduled Date:	19/10/2018
Report Issue Number:	2
Reporting Date:	01/02/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-83853, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83853	**Date Sampled**	10/10/18	10/10/18	10/10/18	09/10/18	09/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP14A	TP14A	TP08	TP22	TP22
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.50	0.20	0.10	1.00
Reporting Date: 01/02/2019	**DETS Sample No**	367236	367238	367239	367240	367242

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.7	8.0	7.7	7.7	7.9
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	605	< 200	762	470	< 200
Total Sulphate as SO_4	%	< 0.02	NONE	0.06	< 0.02	0.08	0.05	< 0.02
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.014	0.002	0.014	0.015	0.004
Antimony (Sb)	mg/kg	< 1	NONE	2.1	2.1	1.1	1.7	2.2
Arsenic (As)	mg/kg	< 2	MCERTS	17	14	9	13	23
Barium (Ba)	mg/kg	< 5	NONE	54	67	25	57	33
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	0.9	0.6	0.9	1.1
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	24	21	11	22	32
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	16	9	10	14	14
Iron (Fe)	mg/kg	< 50	NONE	54400	58320	28010	42340	66840
Lead (Pb)	mg/kg	< 3	MCERTS	19	10	11	19	12
Manganese (Mn)	mg/kg	< 5	NONE	883	1140	517	1090	797
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	16	14	9	18	30
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	40	43	23	37	54
Zinc (Zn)	mg/kg	< 3	MCERTS	64	57	31	61	72
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-83853	**Date Sampled**	11/10/18	11/10/18	09/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	TP29	TP29	TP21		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	1.00	0.20		
Reporting Date: 01/02/2019	**DETS Sample No**	367243	367245	367246		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.3	8.6	7.6		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Total Sulphate as SO_4	mg/kg	< 200	NONE	289	299	203		
Total Sulphate as SO_4	%	< 0.02	NONE	0.03	0.03	0.02		
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.004	0.004	0.005		
Antimony (Sb)	mg/kg	< 1	NONE	1.9	1.7	2		
Arsenic (As)	mg/kg	< 2	MCERTS	15	16	14		
Barium (Ba)	mg/kg	< 5	NONE	56	37	52		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.8	0.6	0.9		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	20	15	25		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	12	10	12		
Iron (Fe)	mg/kg	< 50	NONE	47860	44530	52850		
Lead (Pb)	mg/kg	< 3	MCERTS	12	9	11		
Manganese (Mn)	mg/kg	< 5	NONE	956	679	891		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	17	16	20		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	38	32	41		
Zinc (Zn)	mg/kg	< 3	MCERTS	50	41	55		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83853	**Date Sampled**	10/10/18	10/10/18	10/10/18	09/10/18	09/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP14A	TP14A	TP08	TP22	TP22
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.50	0.20	0.10	1.00
Reporting Date: 01/02/2019	**DETS Sample No**	367236	367238	367239	367240	367242

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	0.16	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	0.22	< 0.1	0.14	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	0.35	0.36	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	< 0.1	0.18	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.33	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	1.6	< 1.6	< 1.6	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83853	**Date Sampled**	11/10/18	11/10/18	09/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	TP29	TP29	TP21		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	1.00	0.20		
Reporting Date: 01/02/2019	**DETS Sample No**	367243	367245	367246		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83853	**Date Sampled**	10/10/18	10/10/18	10/10/18	09/10/18	09/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP14A	TP14A	TP08	TP22	TP22
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.50	0.20	0.10	1.00
Reporting Date: 01/02/2019	**DETS Sample No**	367236	367238	367239	367240	367242

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83853	Date Sampled	11/10/18	11/10/18	09/10/18		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	TP / BH No	TP29	TP29	TP21		
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	Depth (m)	0.10	1.00	0.20		
Reporting Date: 01/02/2019	DETS Sample No	367243	367245	367246		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83853	**Date Sampled**	10/10/18	10/10/18	10/10/18	09/10/18	09/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	TP14A	TP14A	TP08	TP22	TP22
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.50	0.20	0.10	1.00
Reporting Date: 01/02/2019	**DETS Sample No**	367236	367238	367239	367240	367242

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83853	**Date Sampled**	11/10/18	11/10/18	09/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	TP29	TP29	TP21		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	1.00	0.20		
Reporting Date: 01/02/2019	**DETS Sample No**	367243	367245	367246		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5		
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)						
DETS Report No: 18-83853	**Date Sampled**	10/10/18	09/10/18	11/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	TP14A	TP22	TP29		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.20	0.20	0.20		
Reporting Date: 01/02/2019	**DETS Sample No**	367237	367241	367244		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.8	7.9	7.9		
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO_4	mg/l	< 1	ISO17025	1	1	8		
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	103	172	149		
Chloride	mg/l	< 1	ISO17025	1	1	2		
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	21.5	25.7	16.8		
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Barium	ug/l	< 5	ISO17025	10	18	5		
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3		
Boron	ug/l	< 5	ISO17025	22	31	44		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper	ug/l	< 5	ISO17025	7	14	< 5		
Iron	ug/l	< 5	ISO17025	149	311	120		
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Zinc	ug/l	< 2	ISO17025	9	13	7		
Calcium	mg/l	< 0.2	ISO17025	39.2	28	13.4		
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10		

Subcontracted analysis (S)

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83853	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.08 - JH	
Reporting Date: 01/02/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
367236	TP14A	None Supplied	0.10	6.1	Brown sandy clay with stones
367237	TP14A	None Supplied	0.20	6	
367238	TP14A	None Supplied	0.50	6.7	Light brown sandy clay with stones
367239	TP08	None Supplied	0.20	4.5	Brown sandy clay with stones
367240	TP22	None Supplied	0.10	8.8	Brown sandy clay with stones
367241	TP22	None Supplied	0.20	7.8	
367242	TP22	None Supplied	1.00	9.6	Brown sandy clay
367243	TP29	None Supplied	0.10	8.6	Brown sandy clay
367244	TP29	None Supplied	0.20	8.8	
367245	TP29	None Supplied	1.00	3.3	Brown sandy clay with stones and chalk
367246	TP21	None Supplied	0.20	5.4	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83853
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.08 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83853
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.08 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-83925

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.08 - JH
Sample Receipt Date:	22/10/2018
Sample Scheduled Date:	22/10/2018
Report Issue Number:	2
Reporting Date:	23/11/2018

Authorised by:

[redacted]

Kevin Old
Associate Director of Laboratory

Authorised by:

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-83925	**Date Sampled**	11/10/18	11/10/18	11/10/18	11/10/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH22	BH22	BH35	BH35	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.09 - JH	**Depth (m)**	0.10	1.00	0.20	0.50	
Reporting Date: 23/11/2018	**DETS Sample No**	367657	367658	367659	367660	

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	**MCERTS**	8.0	8.4	8.1	8.4	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	1021	513	296	< 200	
Total Sulphate as SO_4	%	< 0.02	NONE	0.10	0.05	0.03	< 0.02	
Fraction Organic Carbon (FOC)	Units	< 0.001	**MCERTS**	0.028	0.008	0.006	0.003	
Antimony (Sb)	mg/kg	< 1	NONE	1.2	1.1	2.2	< 1	
Arsenic (As)	mg/kg	< 2	**MCERTS**	9	8	27	3	
Barium (Ba)	mg/kg	< 5	NONE	33	21	47	26	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7	0.6	1.4	< 0.5	
W/S Boron	mg/kg	< 1	NONE	1.1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	**MCERTS**	14	11	31	15	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	**MCERTS**	14	12	18	11	
Iron (Fe)	mg/kg	< 50	NONE	31750	40840	73090	7943	
Lead (Pb)	mg/kg	< 3	**MCERTS**	18	7	14	7	
Manganese (Mn)	mg/kg	< 5	NONE	434	402	801	99.3	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	1.1	< 1	
Nickel (Ni)	mg/kg	< 3	**MCERTS**	10	8	32	8	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	27	34	66	21	
Zinc (Zn)	mg/kg	< 3	**MCERTS**	52	35	61	12	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-83925	**Date Sampled**	11/10/18	11/10/18	11/10/18	11/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH22	BH22	BH35	BH35		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.09 - JH	**Depth (m)**	0.10	1.00	0.20	0.50		
Reporting Date: 23/11/2018	**DETS Sample No**	367657	367658	367659	367660		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.17	0.22	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	0.27	0.42	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	0.29	0.45	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	2.90	4.10	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	0.86	1.41	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	6.99	9.97	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	6.20	9.15	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	3.86	5.98	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	3.67	5.55	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	5.88	10.20	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	1.93	3.38	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	4.83	8.97	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	3.75	6.81	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.70	1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	2.97	5.24	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	45.3	72.9	< 1.6	< 1.6	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-83925	Date Sampled	11/10/18	11/10/18	11/10/18	11/10/18		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	TP / BH No	BH22	BH22	BH35	BH35		
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.09 - JH	Depth (m)	0.10	1.00	0.20	0.50		
Reporting Date: 23/11/2018	DETS Sample No	367657	367658	367659	367660		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	17	38	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	117	279	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	133	320	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	133	320	< 42	< 42	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-83925	**Date Sampled**	11/10/18	11/10/18	11/10/18	11/10/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH22	BH22	BH35	BH35	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.09 - JH	**Depth (m)**	0.10	1.00	0.20	0.50	
Reporting Date: 23/11/2018	**DETS Sample No**	367657	367658	367659	367660	

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-83925	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.09 - JH	
Reporting Date: 23/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 367657	BH22	None Supplied	0.10	13.9	Brown sandy clay with vegetation
$ 367658	BH22	None Supplied	1.00	3.4	Brown sandy clay with stones
$ 367659	BH35	None Supplied	0.20	8.7	Brown sandy clay
$ 367660	BH35	None Supplied	0.50	7.7	Beige sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-83925
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.09 - JH
Reporting Date: 23/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-84122

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.08 - JH
Sample Receipt Date:	25/10/2018
Sample Scheduled Date:	25/10/2018
Report Issue Number:	1
Reporting Date:	31/10/2018

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-84122	**Date Sampled**	18/10/18	18/10/18	18/10/18	18/10/18	15/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH18- IP	BH17- IP	TP06- IP	TP13- IP	TP10- IP
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.20	0.10	0.10	0.20	0.10
Reporting Date: 31/10/2018	**DETS Sample No**	368400	368401	368403	368404	368405

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	7.9	8.1	8.2	8.0	8.1
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	615	889	759	390	640
Total Sulphate as SO_4	%	< 0.02	NONE	0.06	0.09	0.08	0.04	0.06
Fraction Organic Carbon (FOC)	Units	< 0.001	**MCERTS**	0.017	0.011	0.005	0.016	0.034
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Arsenic (As)	mg/kg	< 2	**MCERTS**	9	5	7	10	8
Barium (Ba)	mg/kg	< 5	NONE	26	11	8	54	30
Beryllium (Be)	mg/kg	< 0.5	NONE	0.8	< 0.5	< 0.5	0.9	0.6
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	**MCERTS**	16	7	6	17	12
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	12	7	7	17	13
Iron (Fe)	mg/kg	< 50	NONE	27570	16850	15860	37720	22760
Lead (Pb)	mg/kg	< 3	**MCERTS**	17	6	5	24	20
Manganese (Mn)	mg/kg	< 5	NONE	391	246	251	964	425
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	1.5	1.1	1.7	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	13	9	7	20	10
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	30	15	15	25	23
Zinc (Zn)	mg/kg	< 3	**MCERTS**	36	16	10	61	49
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate						
DETS Report No: 18-84122	**Date Sampled**	19/10/18	20/10/18	24/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH21A	BH21A	BH21A		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.20	1.80 - 1.90		
Reporting Date: 31/10/2018	**DETS Sample No**	368407	368408	368410		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.9	8.0	8.5		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Total Sulphate as SO_4	mg/kg	< 200	NONE	779	671	1700		
Total Sulphate as SO_4	%	< 0.02	NONE	0.08	0.07	0.17		
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.038	0.024	0.037		
Antimony (Sb)	mg/kg	< 1	NONE	2	1.5	< 1		
Arsenic (As)	mg/kg	< 2	MCERTS	6	7	6		
Barium (Ba)	mg/kg	< 5	NONE	39	33	135		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	0.6	2.3		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.3	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	12	11	22		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	25	21	24		
Iron (Fe)	mg/kg	< 50	NONE	20140	23480	34940		
Lead (Pb)	mg/kg	< 3	MCERTS	36	30	8		
Manganese (Mn)	mg/kg	< 5	NONE	357	411	2510		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Molybdenum (Mo)	mg/kg	< 1	NONE	1.2	1.1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	8	8	6		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	21	22	56		
Zinc (Zn)	mg/kg	< 3	MCERTS	298	257	48		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84122	**Date Sampled**	18/10/18	18/10/18	18/10/18	18/10/18	15/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH18- IP	BH17- IP	TP06- IP	TP13- IP	TP10- IP
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.20	0.10	0.10	0.20	0.10
Reporting Date: 31/10/2018	**DETS Sample No**	368400	368401	368403	368404	368405

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.17	< 0.1	< 0.1	0.17	0.21
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.24	0.22	0.20	0.22	0.36
Pyrene	mg/kg	< 0.1	MCERTS	0.23	0.20	0.19	0.21	0.32
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.50	< 0.1	< 0.1	< 0.1	0.53
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.13
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.27	0.24	0.24	0.25	0.34
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.13	0.12	0.12	0.12	0.20
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.37
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.17	0.17	< 0.1	< 0.1	0.23
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	1.7	< 1.6	< 1.6	< 1.6	2.7

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84122	**Date Sampled**	19/10/18	20/10/18	24/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH21A	BH21A	BH21A		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.20	1.80 - 1.90		
Reporting Date: 31/10/2018	**DETS Sample No**	368407	368408	368410		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	0.20	0.12	40.70		
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.14	0.14	0.86		
Acenaphthene	mg/kg	< 0.1	MCERTS	0.14	0.13	41.60		
Fluorene	mg/kg	< 0.1	MCERTS	0.23	0.21	35.70		
Phenanthrene	mg/kg	< 0.1	MCERTS	1.80	1.41	249		
Anthracene	mg/kg	< 0.1	MCERTS	0.56	0.63	53.90		
Fluoranthene	mg/kg	< 0.1	MCERTS	4.74	5.47	222		
Pyrene	mg/kg	< 0.1	MCERTS	4.02	5.11	173		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	2.78	4.46	48.90		
Chrysene	mg/kg	< 0.1	MCERTS	2.20	3.42	64.90		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	3.51	4.88	63		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	1.21	1.78	27.20		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	2.14	3.77	53.30		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.69	2.91	34.40		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.58	0.69	5.19		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	1.42	2.17	27.70		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	27.3	37.3	1140		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84122	**Date Sampled**	18/10/18	18/10/18	18/10/18	18/10/18	15/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH18- IP	BH17- IP	TP06- IP	TP13- IP	TP10- IP
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.20	0.10	0.10	0.20	0.10
Reporting Date: 31/10/2018	**DETS Sample No**	368400	368401	368403	368404	368405

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	53	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	53	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	53	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84122	**Date Sampled**	19/10/18	20/10/18	24/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH21A	BH21A	BH21A		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.20	1.80 - 1.90		
Reporting Date: 31/10/2018	**DETS Sample No**	368407	368408	368410		

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	8		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	16		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	9	57		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	85		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	24	16	321		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	24	25	487		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	54		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	7	423		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	11	1750		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	74	96	3413		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	74	114	5640		
Total >C5 - C35	mg/kg	< 42	NONE	98	139	6127		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84122	**Date Sampled**	18/10/18	18/10/18	18/10/18	18/10/18	15/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH18- IP	BH17- IP	TP06- IP	TP13- IP	TP10- IP
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.08 - JH	**Depth (m)**	0.20	0.10	0.10	0.20	0.10
Reporting Date: 31/10/2018	**DETS Sample No**	368400	368401	368403	368404	368405

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84122	**Date Sampled**	19/10/18	20/10/18	24/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH21A	BH21A	BH21A		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.10	0.20	1.80 - 1.90		
Reporting Date: 31/10/2018	**DETS Sample No**	368407	368408	368410		

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	6		
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	12		
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	40		
o-xylene	ug/kg	< 2	MCERTS	14	< 2	37		
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-84122	**Date Sampled**	18/10/18	15/10/18	23/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH17- IP	TP10- IP	BH21A		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.08 - JH	**Depth (m)**	0.20	0.20	1.50		
Reporting Date: 31/10/2018	**DETS Sample No**	368402	368406	368409		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.8	7.8	8.9		
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO_4	mg/l	< 1	ISO17025	14	4	56		
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	220	< 50	55		
Chloride	mg/l	< 1	ISO17025	21	4	5		
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	20.2	16.9	13.6		
Antimony	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Arsenic	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Barium	ug/l	< 5	ISO17025	32	21	8		
Beryllium	ug/l	< 3	ISO17025	< 3	< 3	< 3		
Boron	ug/l	< 5	ISO17025	32	29	52		
Cadmium	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4		
Chromium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper	ug/l	< 5	ISO17025	5	< 5	< 5		
Iron	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Lead	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Mercury	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05		
Molybdenum	ug/l	< 5	ISO17025	< 5	< 5	10		
Nickel	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Selenium	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Zinc	ug/l	< 2	ISO17025	4	< 2	< 2		
Calcium	mg/l	< 0.2	ISO17025	85.2	81.4	36.7		
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	49		

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-84122	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.08 - JH	
Reporting Date: 31/10/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
368400	BH18- IP	None Supplied	0.20	13.2	Brown sandy clay with stones
368401	BH17- IP	None Supplied	0.10	10	Brown sandy clay with stones
368402	BH17- IP	None Supplied	0.20	12.4	
368403	TP06- IP	None Supplied	0.10	7.2	Brown sandy clay with stones
368404	TP13- IP	None Supplied	0.20	9.3	Brown sandy clay with stones
368405	TP10- IP	None Supplied	0.10	12.9	Brown sandy clay with stones and vegetation
368406	TP10- IP	None Supplied	0.20	7.5	
368407	BH21A	None Supplied	0.10	8.1	Black sandy clay with stones and vegetation
368408	BH21A	None Supplied	0.20	8.3	Brown sandy clay with stones and vegetation
368409	BH21A	None Supplied	1.50	4.9	
368410	BH21A	None Supplied	1.80 - 1.90	2.2	Black sandy gravel with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84122
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.08 - JH
Reporting Date: 31/10/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84122
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.08 - JH
Reporting Date: 31/10/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-84175

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.11 - JH
Sample Receipt Date:	25/10/2018
Sample Scheduled Date:	25/10/2018
Report Issue Number:	1
Reporting Date:	31/10/2018

Authorised by:

Russell Jarvis
Associate Director of Client Services

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-84175	**Date Sampled**	16/10/18	16/10/18	16/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH24A	BH40	BH40		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.11 - JH	**Depth (m)**	0.10	0.10	0.50		
Reporting Date: 31/10/2018	**DETS Sample No**	368501	368503	368505		

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	**MCERTS**	8.0	6.5	7.2		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Total Sulphate as SO_4	mg/kg	< 200	NONE	417	272	< 200		
Total Sulphate as SO_4	%	< 0.02	NONE	0.04	0.03	< 0.02		
Fraction Organic Carbon (FOC)	Units	< 0.001	**MCERTS**	0.019	0.009	0.006		
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Arsenic (As)	mg/kg	< 2	**MCERTS**	16	4	17		
Barium (Ba)	mg/kg	< 5	NONE	46	59	73		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.9	1	1.4		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	**MCERTS**	25	27	31		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	**MCERTS**	12	15	17		
Iron (Fe)	mg/kg	< 50	NONE	38770	39210	63110		
Lead (Pb)	mg/kg	< 3	**MCERTS**	16	20	14		
Manganese (Mn)	mg/kg	< 5	NONE	406	925	1260		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	**MCERTS**	16	20	32		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	44	43	52		
Zinc (Zn)	mg/kg	< 3	**MCERTS**	55	64	63		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84175	**Date Sampled**	16/10/18	16/10/18	16/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH24A	BH40	BH40		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.11 - JH	**Depth (m)**	0.10	0.10	0.50		
Reporting Date: 31/10/2018	**DETS Sample No**	368501	368503	368505		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.22	0.23	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	0.21	0.22	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.49	< 0.1	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.26	0.26	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.13	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84175	Date Sampled	16/10/18	16/10/18	16/10/18		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	TP / BH No	BH24A	BH40	BH40		
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 17076.11 - JH	Depth (m)	0.10	0.10	0.50		
Reporting Date: 31/10/2018	DETS Sample No	368501	368503	368505		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than $30^{O}C$

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84175	**Date Sampled**	16/10/18	16/10/18	16/10/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH24A	BH40	BH40		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 17076.11 - JH	**Depth (m)**	0.10	0.10	0.50		
Reporting Date: 31/10/2018	**DETS Sample No**	368501	368503	368505		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5		
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2		
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-84175	**Date Sampled**	16/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH40					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.11 - JH	**Depth (m)**	0.20					
Reporting Date: 31/10/2018	**DETS Sample No**	368504					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.6				
Total Cyanide	ug/l	< 5	NONE	< 5				
Free Cyanide	ug/l	< 5	NONE	< 5				
Sulphate as SO_4	mg/l	< 1	ISO17025	3				
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	193				
Chloride	mg/l	< 1	ISO17025	2				
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	23				
Antimony	ug/l	< 5	ISO17025	< 5				
Arsenic	ug/l	< 5	ISO17025	< 5				
Barium	ug/l	< 5	ISO17025	17				
Beryllium	ug/l	< 3	ISO17025	< 3				
Boron	ug/l	< 5	ISO17025	33				
Cadmium	ug/l	< 0.4	ISO17025	< 0.4				
Chromium	ug/l	< 5	ISO17025	< 5				
Chromium (hexavalent)	ug/l	< 20	NONE	< 20				
Copper	ug/l	< 5	ISO17025	5				
Iron	ug/l	< 5	ISO17025	270				
Lead	ug/l	< 5	ISO17025	< 5				
Mercury	ug/l	< 0.05	ISO17025	< 0.05				
Molybdenum	ug/l	< 5	ISO17025	< 5				
Nickel	ug/l	< 5	ISO17025	< 5				
Selenium	ug/l	< 5	ISO17025	< 5				
Zinc	ug/l	< 2	ISO17025	< 2				
Calcium	mg/l	< 0.2	ISO17025	27.2				
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10				

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-84175	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.11 - JH	
Reporting Date: 31/10/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
368501	BH24A	None Supplied	0.10	14	Brown sandy clay with vegetation
368503	BH40	None Supplied	0.10	11.7	Brown sandy clay with vegetation
368504	BH40	None Supplied	0.20	10.1	Brown sandy clay with stones
368505	BH40	None Supplied	0.50	9.9	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample $^{I/S}$

& samples received in inappropriate containers for hydrocarbon analysis

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84175
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.11 - JH
Reporting Date: 31/10/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84175
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.11 - JH
Reporting Date: 31/10/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-84296

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	None Supplied
Sample Receipt Date:	29/10/2018
Sample Scheduled Date:	29/10/2018
Report Issue Number:	1
Reporting Date:	05/11/2018

Authorised by:

Russell Jarvis
Associate Director of Client Services

Authorised by:

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-84296	**Date Sampled**	16/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH24A					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	0.30					
Reporting Date: 05/11/2018	**DETS Sample No**	369044					

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	8.1				
Total Cyanide	mg/kg	< 2	NONE	< 2				
Free Cyanide	mg/kg	< 2	NONE	< 2				
Total Sulphate as SO_4	mg/kg	< 200	NONE	519				
Total Sulphate as SO_4	%	< 0.02	NONE	0.05				
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.008				
Antimony (Sb)	mg/kg	< 1	NONE	< 1				
Arsenic (As)	mg/kg	< 2	MCERTS	9				
Barium (Ba)	mg/kg	< 5	NONE	18				
Beryllium (Be)	mg/kg	< 0.5	NONE	0.5				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	11				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	9				
Iron (Fe)	mg/kg	< 50	NONE	30670				
Lead (Pb)	mg/kg	< 3	MCERTS	6				
Manganese (Mn)	mg/kg	< 5	NONE	257				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	9				
Selenium (Se)	mg/kg	< 3	NONE	< 3				
Vanadium (V)	mg/kg	< 2	NONE	19				
Zinc (Zn)	mg/kg	< 3	MCERTS	20				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84296	**Date Sampled**	16/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH24A					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	0.30					
Reporting Date: 05/11/2018	**DETS Sample No**	369044					

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	0.18				
Pyrene	mg/kg	< 0.1	MCERTS	0.18				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.23				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84296	**Date Sampled**	16/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH24A					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	0.30					
Reporting Date: 05/11/2018	**DETS Sample No**	369044					

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	**MCERTS**	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	**MCERTS**	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	**MCERTS**	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	**MCERTS**	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C10 - C12	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C12 - C16	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C16 - C21	mg/kg	< 3	**MCERTS**	< 3				
Aromatic >C21 - C35	mg/kg	< 10	**MCERTS**	< 10				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21				
Total >C5 - C35	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84296	**Date Sampled**	16/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH24A					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	0.30					
Reporting Date: 05/11/2018	**DETS Sample No**	369044					

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene	ug/kg	< 2	MCERTS	< 2				
p & m-xylene	ug/kg	< 2	MCERTS	< 2				
o-xylene	ug/kg	< 2	MCERTS	< 2				
MTBE	ug/kg	< 5	MCERTS	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-84296	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: None Supplied	
Reporting Date: 05/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 369044	BH24A	None Supplied	0.30	7.9	Light grey sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84296
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: None Supplied
Reporting Date: 05/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-84792

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.13 - JH
Sample Receipt Date:	05/11/2018
Sample Scheduled Date:	06/11/2018
Report Issue Number:	1
Reporting Date:	13/11/2018

Authorised by:

Russell Jarvis
Associate Director of Client Services

Authorised by:

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-84792	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	TP / BH No	TP24	TP25	TP25	TP26	
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.13 - JH	Depth (m)	0.10	0.20	1.00	0.50	
Reporting Date: 13/11/2018	DETS Sample No	370984	370985	370987	370988	

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.7	8.0	8.1	8.4	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	1186	1041	674	637	
Total Sulphate as SO_4	%	< 0.02	NONE	0.12	0.10	0.07	0.06	
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.051	0.028	0.013	0.005	
Antimony (Sb)	mg/kg	< 1	NONE	1.7	2.7	1.3	< 1	
Arsenic (As)	mg/kg	< 2	MCERTS	9	14	7	5	
Barium (Ba)	mg/kg	< 5	NONE	35	37	18	10	
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	0.6	< 0.5	< 0.5	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	11	24	9	5	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	19	20	23	10	
Iron (Fe)	mg/kg	< 50	NONE	28380	43820	20520	16250	
Lead (Pb)	mg/kg	< 3	MCERTS	23	14	8	5	
Manganese (Mn)	mg/kg	< 5	NONE	218	343	278	266	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	10	14	8	4	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	19	51	16	12	
Zinc (Zn)	mg/kg	< 3	MCERTS	88	166	88	14	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84792	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	TP24	TP25	TP25	TP26	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.13 - JH	**Depth (m)**	0.10	0.20	1.00	0.50	
Reporting Date: 13/11/2018	**DETS Sample No**	370984	370985	370987	370988	

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.16	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.19	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	5.20	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	2.28	
Phenanthrene	mg/kg	< 0.1	MCERTS	0.45	< 0.1	< 0.1	55.60	
Anthracene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	< 0.1	13.30	
Fluoranthene	mg/kg	< 0.1	MCERTS	2.04	0.16	< 0.1	97.90	
Pyrene	mg/kg	< 0.1	MCERTS	2.04	0.17	< 0.1	85.10	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.14	< 0.1	< 0.1	33.90	
Chrysene	mg/kg	< 0.1	MCERTS	1.10	0.15	< 0.1	38.10	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.67	0.13	< 0.1	43.80	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.50	< 0.1	< 0.1	14.40	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.28	< 0.1	< 0.1	34.80	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.96	< 0.1	< 0.1	22.90	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.29	< 0.1	< 0.1	2.67	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.88	< 0.1	< 0.1	18.90	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	12.5	< 1.6	< 1.6	469	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84792	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	TP24	TP25	TP25	TP26	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.13 - JH	**Depth (m)**	0.10	0.20	1.00	0.50	
Reporting Date: 13/11/2018	**DETS Sample No**	370984	370985	370987	370988	

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	16	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	418	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	435	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	29	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	9	< 3	277	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	498	< 10	622	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	507	< 21	929	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	942	< 42	929	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84792	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	TP24	TP25	TP25	TP26	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.13 - JH	**Depth (m)**	0.10	0.20	1.00	0.50	
Reporting Date: 13/11/2018	**DETS Sample No**	370984	370985	370987	370988	

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)						
DETS Report No: 18-84792	**Date Sampled**	None Supplied				
Soils Ltd	**Time Sampled**	None Supplied				
Site Reference: A47 Wansford	**TP / BH No**	TP25				
Project / Job Ref: 17076	**Additional Refs**	None Supplied				
Order No: 17076.13 - JH	**Depth (m)**	0.50				
Reporting Date: 13/11/2018	**DETS Sample No**	370986				

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	8.0				
Total Cyanide	ug/l	< 5	NONE	< 5				
Free Cyanide	ug/l	< 5	NONE	< 5				
Sulphate as SO_4	mg/l	< 1	ISO17025	22				
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	260				
Chloride	mg/l	< 1	ISO17025	34				
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	34.1				
Antimony	ug/l	< 5	ISO17025	< 5				
Arsenic	ug/l	< 5	ISO17025	7				
Barium	ug/l	< 5	ISO17025	18				
Beryllium	ug/l	< 3	ISO17025	< 3				
Boron	ug/l	< 5	ISO17025	46				
Cadmium	ug/l	< 0.4	ISO17025	< 0.4				
Chromium	ug/l	< 5	ISO17025	< 5				
Chromium (hexavalent)	ug/l	< 20	NONE	< 20				
Copper	ug/l	< 5	ISO17025	11				
Iron	ug/l	< 5	ISO17025	949				
Lead	ug/l	< 5	ISO17025	< 5				
Mercury	ug/l	< 0.05	ISO17025	1.17				
Molybdenum	ug/l	< 5	ISO17025	6				
Nickel	ug/l	< 5	ISO17025	< 5				
Selenium	ug/l	< 5	ISO17025	< 5				
Zinc	ug/l	< 2	ISO17025	27				
Calcium	mg/l	< 0.2	ISO17025	38.1				
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10				

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-84792	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.13 - JH	
Reporting Date: 13/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 370984	TP24	None Supplied	0.10	14.7	Black sandy clay with vegetation
^ 370985	TP25	None Supplied	0.20	4	Black sandy clay with stones and concrete
^ 370986	TP25	None Supplied	0.50	3	
^ 370987	TP25	None Supplied	1.00	7.7	Brown sandy clay with stones
^ 370988	TP26	None Supplied	0.50	6.5	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84792
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.13 - JH
Reporting Date: 13/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84792
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.13 - JH
Reporting Date: 13/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-84797

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.11 - JH
Sample Receipt Date:	30/10/2018
Sample Scheduled Date:	06/11/2018
Report Issue Number:	2
Reporting Date:	01/02/2019

Authorised by:

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-84797, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-84797	**Date Sampled**	25/10/18	25/10/18	18/09/18	18/09/18	29/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH05	BH05	BH27	BH27	BH34
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.11 - JH	**Depth (m)**	0.20	2.50	0.10	0.50	0.20
Reporting Date: 01/02/2019	**DETS Sample No**	371016	371018	371019	371020	371021

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.6	8.1	8.0	7.9	7.7
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE	458	581	673	466	639
Total Sulphate as SO_4	%	< 0.02	NONE	0.05	0.06	0.07	0.05	0.06
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.015	0.002	0.030	0.015	0.023
Antimony (Sb)	mg/kg	< 1	NONE	1.1	< 1	1.3	1.3	1.1
Arsenic (As)	mg/kg	< 2	MCERTS	5	2	12	12	10
Barium (Ba)	mg/kg	< 5	NONE	20	6	44	45	29
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	< 0.5	0.8	0.8	0.7
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	8	4	20	19	14
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	11	10	12	10	12
Iron (Fe)	mg/kg	< 50	NONE	16680	13140	42610	50760	39040
Lead (Pb)	mg/kg	< 3	MCERTS	17	< 3	19	13	18
Manganese (Mn)	mg/kg	< 5	NONE	236	158	515	564	420
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	6	< 3	15	16	15
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	14	7	38	36	30
Zinc (Zn)	mg/kg	< 3	MCERTS	62	7	51	45	35
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 18-84797	**Date Sampled**	24/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH26					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.11 - JH	**Depth (m)**	0.10					
Reporting Date: 01/02/2019	**DETS Sample No**	371022					

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	7.8				
Total Cyanide	mg/kg	< 2	NONE	< 2				
Free Cyanide	mg/kg	< 2	NONE	< 2				
Total Sulphate as SO_4	mg/kg	< 200	NONE	742				
Total Sulphate as SO_4	%	< 0.02	NONE	0.07				
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.039				
Antimony (Sb)	mg/kg	< 1	NONE	1.5				
Arsenic (As)	mg/kg	< 2	MCERTS	14				
Barium (Ba)	mg/kg	< 5	NONE	33				
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	19				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	13				
Iron (Fe)	mg/kg	< 50	NONE	43660				
Lead (Pb)	mg/kg	< 3	MCERTS	25				
Manganese (Mn)	mg/kg	< 5	NONE	448				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	15				
Selenium (Se)	mg/kg	< 3	NONE	< 3				
Vanadium (V)	mg/kg	< 2	NONE	38				
Zinc (Zn)	mg/kg	< 3	MCERTS	51				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84797	**Date Sampled**	25/10/18	25/10/18	18/09/18	18/09/18	29/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH05	BH05	BH27	BH27	BH34
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.11 - JH	**Depth (m)**	0.20	2.50	0.10	0.50	0.20
Reporting Date: 01/02/2019	**DETS Sample No**	371016	371018	371019	371020	371021

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	0.12	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.28	0.17	0.33	0.12	0.15
Pyrene	mg/kg	< 0.1	MCERTS	0.26	0.15	0.30	0.11	0.14
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.42	0.37	0.45	0.33	0.34
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.30	0.21	0.32	0.16	0.18
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.19	0.14	0.20	< 0.1	0.11
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.33	0.29	0.36	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.22	0.15	0.21	< 0.1	0.14
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.1	< 1.6	2.3	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-84797	**Date Sampled**	24/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH26					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.11 - JH	**Depth (m)**	0.10					
Reporting Date: 01/02/2019	**DETS Sample No**	371022					

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	0.20				
Anthracene	mg/kg	< 0.1	MCERTS	0.11				
Fluoranthene	mg/kg	< 0.1	MCERTS	0.57				
Pyrene	mg/kg	< 0.1	MCERTS	0.49				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.54				
Chrysene	mg/kg	< 0.1	MCERTS	0.21				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.48				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.13				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.31				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.44				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.23				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.31				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	4				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84797	**Date Sampled**	25/10/18	25/10/18	18/09/18	18/09/18	29/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH05	BH05	BH27	BH27	BH34
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.11 - JH	**Depth (m)**	0.20	2.50	0.10	0.50	0.20
Reporting Date: 01/02/2019	**DETS Sample No**	371016	371018	371019	371020	371021

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-84797	**Date Sampled**	24/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH26					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.11 - JH	**Depth (m)**	0.10					
Reporting Date: 01/02/2019	**DETS Sample No**	371022					

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21				
Total >C5 - C35	mg/kg	< 42	NONE	< 42				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84797	**Date Sampled**	25/10/18	25/10/18	18/09/18	18/09/18	29/10/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH05	BH05	BH27	BH27	BH34
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.11 - JH	**Depth (m)**	0.20	2.50	0.10	0.50	0.20
Reporting Date: 01/02/2019	**DETS Sample No**	371016	371018	371019	371020	371021

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84797	**Date Sampled**	24/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH26					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.11 - JH	**Depth (m)**	0.10					
Reporting Date: 01/02/2019	**DETS Sample No**	371022					

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene	ug/kg	< 2	MCERTS	< 2				
p & m-xylene	ug/kg	< 2	MCERTS	< 2				
o-xylene	ug/kg	< 2	MCERTS	< 2				
MTBE	ug/kg	< 5	MCERTS	< 5				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-84797	**Date Sampled**	25/10/18					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	BH05					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.11 - JH	**Depth (m)**	1.50					
Reporting Date: 01/02/2019	**DETS Sample No**	371017					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.9				
Total Cyanide	ug/l	< 5	NONE	< 5				
Free Cyanide	ug/l	< 5	NONE	< 5				
Sulphate as SO_4	mg/l	< 1	ISO17025	3				
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	505				
Chloride	mg/l	< 1	ISO17025	96				
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	15.8				
Antimony	ug/l	< 5	ISO17025	< 5				
Arsenic	ug/l	< 5	ISO17025	< 5				
Barium	ug/l	< 5	ISO17025	10				
Beryllium	ug/l	< 3	ISO17025	< 3				
Boron	ug/l	< 5	ISO17025	20				
Cadmium	ug/l	< 0.4	ISO17025	< 0.4				
Chromium	ug/l	< 5	ISO17025	< 5				
Chromium (hexavalent)	ug/l	< 20	NONE	< 20				
Copper	ug/l	< 5	ISO17025	< 5				
Iron	ug/l	< 5	ISO17025	23				
Lead	ug/l	< 5	ISO17025	< 5				
Mercury	ug/l	< 0.05	ISO17025	0.05				
Molybdenum	ug/l	< 5	ISO17025	< 5				
Nickel	ug/l	< 5	ISO17025	< 5				
Selenium	ug/l	< 5	ISO17025	< 5				
Zinc	ug/l	< 2	ISO17025	< 2				
Calcium	mg/l	< 0.2	ISO17025	32.6				
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10				

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-84797	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.11 - JH	
Reporting Date: 01/02/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 371016	BH05	None Supplied	0.20	4.9	Brown sandy clay with stones and vegetation
$ 371018	BH05	None Supplied	2.50	4.5	Brown sandy clay with stones
$ 371019	BH27	None Supplied	0.10	10.4	Brown sandy clay with stones
$ 371020	BH27	None Supplied	0.50	6.7	Brown sandy clay with vegetation
371021	BH34	None Supplied	0.20	6.2	Brown sandy clay
$ 371022	BH26	None Supplied	0.10	8.5	Brown sandy clay with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

$ samples exceeded recommended holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84797
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.11 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84797
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.11 - JH
Reporting Date: 01/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-85104

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.14 - JH
Sample Receipt Date:	13/11/2018
Sample Scheduled Date:	13/11/2018
Report Issue Number:	1
Reporting Date:	20/11/2018

Authorised by:

[redacted]

Kevin Old
Associate Director of Laboratory

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 18-85104	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH33	BH33			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.14 - JH	**Depth (m)**	0.10	0.50			
Reporting Date: 20/11/2018	**DETS Sample No**	372187	372188			

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected			
pH	pH Units	N/a	MCERTS	7.2	7.3			
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2			
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2			
Total Sulphate as SO_4	mg/kg	< 200	NONE	413	< 200			
Total Sulphate as SO_4	%	< 0.02	NONE	0.04	< 0.02			
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.024	0.006			
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1			
Arsenic (As)	mg/kg	< 2	MCERTS	10	5			
Barium (Ba)	mg/kg	< 5	NONE	35	26			
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	< 0.5			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	18	15			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	13	9			
Iron (Fe)	mg/kg	< 50	NONE	29280	16380			
Lead (Pb)	mg/kg	< 3	MCERTS	21	11			
Manganese (Mn)	mg/kg	< 5	NONE	346	117			
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1			
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	13	8			
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3			
Vanadium (V)	mg/kg	< 2	NONE	32	28			
Zinc (Zn)	mg/kg	< 3	MCERTS	45	20			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 18-85104	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH33	BH33			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.14 - JH	**Depth (m)**	0.10	0.50			
Reporting Date: 20/11/2018	**DETS Sample No**	372187	372188			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	0.16	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85104	**Date Sampled**	None Supplied	None Supplied				
Soils Ltd	**Time Sampled**	None Supplied	None Supplied				
Site Reference: A47 Wansford	**TP / BH No**	BH33	BH33				
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied				
Order No: 17076.14 - JH	**Depth (m)**	0.10	0.50				
Reporting Date: 20/11/2018	**DETS Sample No**	372187	372188				

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10			
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10			
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21			
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 18-85104	Date Sampled	None Supplied	None Supplied			
Soils Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: A47 Wansford	TP / BH No	BH33	BH33			
Project / Job Ref: 17076	Additional Refs	None Supplied	None Supplied			
Order No: 17076.14 - JH	Depth (m)	0.10	0.50			
Reporting Date: 20/11/2018	DETS Sample No	372187	372188			

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2			
Toluene	ug/kg	< 5	MCERTS	< 5	< 5			
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2			
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2			
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2			
MTBE	ug/kg	< 5	MCERTS	< 5	< 5			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-85104	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.14 - JH	
Reporting Date: 20/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 372187	BH33	None Supplied	0.10	12.1	Brown sandy clay with stones and vegetation
^ 372188	BH33	None Supplied	0.50	7.5	Brown sandy clay with vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-85104
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.14 - JH
Reporting Date: 20/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-85496

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.12 - JH
Sample Receipt Date:	21/11/2018
Sample Scheduled Date:	21/11/2018
Report Issue Number:	1
Reporting Date:	27/11/2018

Authorised by:

[redacted]

Dave Ashworth
Deputy Quality Manager

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 27/11/2018	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
pH	pH Units	N/a	**ISO17025**	7.1	7.8	7.4	7.4	7.3
Electrical Conductivity	uS/cm	< 5	NONE	1660	1620	1170	1090	1260
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Sulphate as SO_4	mg/l	< 1	**ISO17025**	52	8	122	94	113
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	72	< 50	< 50	< 50	< 50
Ammonium as NH_4	ug/l	< 50	NONE	72	< 50	< 50	< 50	< 50
Ammonium as NH_4	mg/l	< 0.05	NONE	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Chloride	mg/l	< 1	**ISO17025**	285	386	147	189	181
Nitrate as NO_3	mg/l	< 0.5	**ISO17025**	< 0.5	23.6	51	36.1	35.8
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	12.1	8.5	9	9.2	9.5
Antimony (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Arsenic (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Barium (dissolved)	ug/l	< 5	**ISO17025**	107	51	26	22	24
Beryllium (dissolved)	ug/l	< 3	**ISO17025**	< 3	< 3	< 3	< 3	< 3
Boron (dissolved)	ug/l	< 5	**ISO17025**	168	45	36	58	33
Cadmium (dissolved)	ug/l	< 0.4	**ISO17025**	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	< 20
Copper (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	**ISO17025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Nickel (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Selenium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	**ISO17025**	< 2	< 2	< 2	< 2	< 2
Calcium (dissolved)	mg/l	< 0.2	**ISO17025**	173	83.6	182	167	173
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S
(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 27/11/2018	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
pH	pH Units	N/a	**ISO17025**	7.6	7.4	7.5	8.0	7.3
Electrical Conductivity	uS/cm	< 5	NONE	942	1050	704	1920	2170
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Sulphate as SO_4	mg/l	< 1	**ISO17025**	132	88	48	16	888
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50	143	157	1060	1100
Ammonium as NH_4	ug/l	< 50	NONE	< 50	143	157	1060	1100
Ammonium as NH_4	mg/l	< 0.05	NONE	< 0.05	0.14	0.16	1.06	1.10
Chloride	mg/l	< 1	**ISO17025**	85	155	30	357	142
Nitrate as NO_3	mg/l	< 0.5	**ISO17025**	31.2	29.8	40.3	< 0.5	2.1
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	9.4	9.6	9.3	9.9	10.9
Antimony (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Arsenic (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Barium (dissolved)	ug/l	< 5	**ISO17025**	35	49	45	22	71
Beryllium (dissolved)	ug/l	< 3	**ISO17025**	< 3	< 3	< 3	< 3	< 3
Boron (dissolved)	ug/l	< 5	**ISO17025**	132	95	36	3370	1680
Cadmium (dissolved)	ug/l	< 0.4	**ISO17025**	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	< 20
Copper (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	**ISO17025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	65.1	< 5
Nickel (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Selenium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	**ISO17025**	< 2	< 2	< 2	< 2	< 2
Calcium (dissolved)	mg/l	< 0.2	**ISO17025**	155	137	128	19.9	265
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.12 - JH	**Depth (m)**	4.66	1.69	7.94	7.90		
Reporting Date: 27/11/2018	**DETS Sample No**	373834	373835	373836	373837		

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
pH	pH Units	N/a	**ISO17025**	7.7	7.2	7.6	7.9	
Electrical Conductivity	uS/cm	< 5	NONE	944	1550	766	811	
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	39	< 5	
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	
Sulphate as SO_4	mg/l	< 1	**ISO17025**	71	125	64	99	
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	201	< 50	< 50	386	
Ammonium as NH_4	ug/l	< 50	NONE	201	< 50	< 50	386	
Ammonium as NH_4	mg/l	< 0.05	NONE	0.20	< 0.05	< 0.05	0.39	
Chloride	mg/l	< 1	**ISO17025**	110	265	67	108	
Nitrate as NO_3	mg/l	< 0.5	**ISO17025**	< 0.5	5.1	31.5	0.7	
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	9	13.5	7.6	8.8	
Antimony (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Arsenic (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Barium (dissolved)	ug/l	< 5	**ISO17025**	45	87	34	18	
Beryllium (dissolved)	ug/l	< 3	**ISO17025**	< 3	< 3	< 3	< 3	
Boron (dissolved)	ug/l	< 5	**ISO17025**	1240	58	115	1020	
Cadmium (dissolved)	ug/l	< 0.4	**ISO17025**	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	
Copper (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Lead (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Mercury (dissolved)	ug/l	< 0.05	**ISO17025**	< 0.05	< 0.05	< 0.05	< 0.05	
Molybdenum (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	9.2	
Nickel (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Selenium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	8	< 5	
Zinc (dissolved)	ug/l	< 2	**ISO17025**	< 2	< 2	< 2	< 2	
Calcium (dissolved)	mg/l	< 0.2	**ISO17025**	55.8	197	79	27.7	
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - Speciated PAH							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 27/11/2018	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Naphthalene	ug/l	< 0.01	NONE	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.01	NONE	0.01	< 0.01	< 0.01	< 0.01	< 0.01

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - Speciated PAH							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 27/11/2018	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Naphthalene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	0.02	< 0.01
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	0.02	< 0.01

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - Speciated PAH							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.12 - JH	**Depth (m)**	4.66	1.69	7.94	7.90		
Reporting Date: 27/11/2018	**DETS Sample No**	373834	373835	373836	373837		

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Naphthalene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	0.01	< 0.01	
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	
Total EPA-16 PAHs	ug/l	< 0.01	NONE	< 0.01	< 0.01	0.01	< 0.01	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 27/11/2018	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	< 140

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 27/11/2018	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	< 140

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.12 - JH	**Depth (m)**	4.66	1.69	7.94	7.90	
Reporting Date: 27/11/2018	**DETS Sample No**	373834	373835	373836	373837	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 27/11/2018	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	< 1
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10
o-xylene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.12 - JH	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 27/11/2018	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	< 1
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10
o-xylene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.12 - JH	**Depth (m)**	4.66	1.69	7.94	7.90	
Reporting Date: 27/11/2018	**DETS Sample No**	373834	373835	373836	373837	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	
o-xylene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-85496
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.12 - JH
Reporting Date: 27/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-86155

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.15-JH
Sample Receipt Date:	05/12/2018
Sample Scheduled Date:	05/12/2018
Report Issue Number:	1
Reporting Date:	11/12/2018

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate							
DETS Report No: 18-86155	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	TP02	TP02			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.15-JH	**Depth (m)**	0.10	0.50			
Reporting Date: 11/12/2018	**DETS Sample No**	376585	376587			

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected			
pH	pH Units	N/a	MCERTS	7.7	7.6			
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2			
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2			
Total Sulphate as SO_4	mg/kg	< 200	NONE	621	562			
Total Sulphate as SO_4	%	< 0.02	NONE	0.06	0.06			
Fraction Organic Carbon (FOC)	Units	< 0.001	MCERTS	0.014	0.002			
Antimony (Sb)	mg/kg	< 1	NONE	< 1	< 1			
Arsenic (As)	mg/kg	< 2	MCERTS	9	8			
Barium (Ba)	mg/kg	< 5	NONE	25	16			
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	< 0.5			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	11	8			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	14	8			
Iron (Fe)	mg/kg	< 50	NONE	20810	17920			
Lead (Pb)	mg/kg	< 3	MCERTS	11	5			
Manganese (Mn)	mg/kg	< 5	NONE	347	196			
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1			
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	8	8			
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3			
Vanadium (V)	mg/kg	< 2	NONE	21	15			
Zinc (Zn)	mg/kg	< 3	MCERTS	33	15			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 18-86155	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	TP02	TP02			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.15-JH	**Depth (m)**	0.10	0.50			
Reporting Date: 11/12/2018	**DETS Sample No**	376585	376587			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	0.17	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	0.55	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	0.33	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	1.14	0.29			
Pyrene	mg/kg	< 0.1	MCERTS	1.02	0.29			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.03	0.61			
Chrysene	mg/kg	< 0.1	MCERTS	0.52	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.35	0.72			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.44	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.88	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.85	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.76	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.69	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	9.7	1.9			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-86155	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	TP02	TP02			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.15-JH	**Depth (m)**	0.10	0.50			
Reporting Date: 11/12/2018	**DETS Sample No**	376585	376587			

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10			
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10			
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21			
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-86155	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	TP02	TP02			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.15-JH	**Depth (m)**	0.10	0.50			
Reporting Date: 11/12/2018	**DETS Sample No**	376585	376587			

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2			
Toluene	ug/kg	< 5	MCERTS	< 5	< 5			
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2			
p & m-xylene	ug/kg	< 2	MCERTS	< 2	4			
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2			
MTBE	ug/kg	< 5	MCERTS	< 5	< 5			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Leachate Analysis Certificate - BS EN 12457:1 (2:1 Single Stage)							
DETS Report No: 18-86155	**Date Sampled**	None Supplied					
Soils Ltd	**Time Sampled**	None Supplied					
Site Reference: A47 Wansford	**TP / BH No**	TP02					
Project / Job Ref: 17076	**Additional Refs**	None Supplied					
Order No: 17076.15-JH	**Depth (m)**	0.20					
Reporting Date: 11/12/2018	**DETS Sample No**	376586					

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	6.1				
Total Cyanide	ug/l	< 5	NONE	< 5				
Free Cyanide	ug/l	< 5	NONE	< 5				
Sulphate as SO_4	mg/l	< 1	ISO17025	1				
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50				
Chloride	mg/l	< 1	ISO17025	2				
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	12.1				
Antimony	ug/l	< 5	ISO17025	< 5				
Arsenic	ug/l	< 5	ISO17025	< 5				
Barium	ug/l	< 5	ISO17025	15				
Beryllium	ug/l	< 3	ISO17025	< 3				
Boron	ug/l	< 5	ISO17025	19				
Cadmium	ug/l	< 0.4	ISO17025	< 0.4				
Chromium	ug/l	< 5	ISO17025	< 5				
Chromium (hexavalent)	ug/l	< 20	NONE	< 20				
Copper	ug/l	< 5	ISO17025	< 5				
Iron	ug/l	< 5	ISO17025	< 5				
Lead	ug/l	< 5	ISO17025	< 5				
Mercury	ug/l	< 0.05	ISO17025	< 0.05				
Molybdenum	ug/l	< 5	ISO17025	7				
Nickel	ug/l	< 5	ISO17025	< 5				
Selenium	ug/l	< 5	ISO17025	< 5				
Zinc	ug/l	< 2	ISO17025	3				
Calcium	mg/l	< 0.2	ISO17025	37.3				
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10				

Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-86155	
Soils Ltd	
Site Reference: A47 Wansford	
Project / Job Ref: 17076	
Order No: 17076.15-JH	
Reporting Date: 11/12/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 376585	TP02	None Supplied	0.10	14	Brown sandy clay with stones and vegetation
^ 376586	TP02	None Supplied	0.20	12.5	
^ 376587	TP02	None Supplied	0.50	13.1	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-86155
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.15-JH
Reporting Date: 11/12/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-86155
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.15-JH
Reporting Date: 11/12/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 19-00394

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.16 - JH
Sample Receipt Date:	14/01/2019
Sample Scheduled Date:	14/01/2019
Report Issue Number:	1
Reporting Date:	17/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 19-00394	**Date Sampled**	None Supplied	None Supplied			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: A47 Wansford	**TP / BH No**	BH21	TP09A			
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied			
Order No: 17076.16 - JH	**Depth (m)**	8.50	1.00			
Reporting Date: 17/01/2019	**DETS Sample No**	381794	381795			

Determinand	Unit	RL	Accreditation					
Organic Matter	%	< 0.1	MCERTS	1.8	1.3			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions
DETS Report No: 19-00394
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.16 - JH
Reporting Date: 17/01/2019

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 381794	BH21	None Supplied	8.50	17.1	Brown sandy clay
^ 381795	TP09A	None Supplied	1.00	4.4	Brown sandy clay with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-00394
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.16 - JH
Reporting Date: 17/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

Appendix C.2 Groundwater Chemical Laboratory Results

John Hills
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
[redacted]

DETS Report No: 18-85496

Site Reference:	A47 Wansford
Project / Job Ref:	17076
Order No:	17076.GW.01
Sample Receipt Date:	21/11/2018
Sample Scheduled Date:	21/11/2018
Report Issue Number:	2
Reporting Date:	29/01/2019

Authorised by:

Russell Jarvis
Associate Director of Client Services

This report supersedes 18-85496, issue no.1.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 29/01/2019	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
pH	pH Units	N/a	**ISO17025**	7.1	7.8	7.4	7.4	7.3
Electrical Conductivity	uS/cm	< 5	NONE	1660	1620	1170	1090	1260
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Sulphate as SO_4	mg/l	< 1	**ISO17025**	52	8	122	94	113
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	72	< 50	< 50	< 50	< 50
Ammonium as NH_4	ug/l	< 50	NONE	72	< 50	< 50	< 50	< 50
Ammonium as NH_4	mg/l	< 0.05	NONE	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Chloride	mg/l	< 1	**ISO17025**	285	386	147	189	181
Nitrate as NO_3	mg/l	< 0.5	**ISO17025**	< 0.5	23.6	51	36.1	35.8
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	12.1	8.5	9	9.2	9.5
Antimony (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Arsenic (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Barium (dissolved)	ug/l	< 5	**ISO17025**	107	51	26	22	24
Beryllium (dissolved)	ug/l	< 3	**ISO17025**	< 3	< 3	< 3	< 3	< 3
Boron (dissolved)	ug/l	< 5	**ISO17025**	168	45	36	58	33
Cadmium (dissolved)	ug/l	< 0.4	**ISO17025**	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	< 20
Copper (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	**ISO17025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Nickel (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Selenium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	**ISO17025**	< 2	< 2	< 2	< 2	< 2
Calcium (dissolved)	mg/l	< 0.2	**ISO17025**	173	83.6	182	167	173
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S
(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 29/01/2019	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
pH	pH Units	N/a	**ISO17025**	7.6	7.4	7.5	8.0	7.3
Electrical Conductivity	uS/cm	< 5	NONE	942	1050	704	1920	2170
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Sulphate as SO_4	mg/l	< 1	**ISO17025**	132	88	48	16	888
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	< 50	143	157	1060	1100
Ammonium as NH_4	ug/l	< 50	NONE	< 50	143	157	1060	1100
Ammonium as NH_4	mg/l	< 0.05	NONE	< 0.05	0.14	0.16	1.06	1.10
Chloride	mg/l	< 1	**ISO17025**	85	155	30	357	142
Nitrate as NO_3	mg/l	< 0.5	**ISO17025**	31.2	29.8	40.3	< 0.5	2.1
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	9.4	9.6	9.3	9.9	10.9
Antimony (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Arsenic (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Barium (dissolved)	ug/l	< 5	**ISO17025**	35	49	45	22	71
Beryllium (dissolved)	ug/l	< 3	**ISO17025**	< 3	< 3	< 3	< 3	< 3
Boron (dissolved)	ug/l	< 5	**ISO17025**	132	95	36	3370	1680
Cadmium (dissolved)	ug/l	< 0.4	**ISO17025**	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	< 20
Copper (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	**ISO17025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	65.1	< 5
Nickel (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Selenium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	**ISO17025**	< 2	< 2	< 2	< 2	< 2
Calcium (dissolved)	mg/l	< 0.2	**ISO17025**	155	137	128	19.9	265
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.GW.01	**Depth (m)**	4.66	1.69	7.94	7.90		
Reporting Date: 29/01/2019	**DETS Sample No**	373834	373835	373836	373837		

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
pH	pH Units	N/a	**ISO17025**	7.7	7.2	7.6	7.9	
Electrical Conductivity	uS/cm	< 5	NONE	944	1550	766	811	
Total Cyanide	ug/l	< 5	NONE	< 5	< 5	39	< 5	
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	< 5	
Sulphate as SO_4	mg/l	< 1	**ISO17025**	71	125	64	99	
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Ammoniacal Nitrogen as NH_4	ug/l	< 50	NONE	201	< 50	< 50	386	
Ammonium as NH_4	ug/l	< 50	NONE	201	< 50	< 50	386	
Ammonium as NH_4	mg/l	< 0.05	NONE	0.20	< 0.05	< 0.05	0.39	
Chloride	mg/l	< 1	**ISO17025**	110	265	67	108	
Nitrate as NO_3	mg/l	< 0.5	**ISO17025**	< 0.5	5.1	31.5	0.7	
Dissolved Organic Carbon (DOC)	mg/l	< 0.1	NONE	9	13.5	7.6	8.8	
Antimony (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Arsenic (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Barium (dissolved)	ug/l	< 5	**ISO17025**	45	87	34	18	
Beryllium (dissolved)	ug/l	< 3	**ISO17025**	< 3	< 3	< 3	< 3	
Boron (dissolved)	ug/l	< 5	**ISO17025**	1240	58	115	1020	
Cadmium (dissolved)	ug/l	< 0.4	**ISO17025**	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20	
Copper (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Lead (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Mercury (dissolved)	ug/l	< 0.05	**ISO17025**	< 0.05	< 0.05	< 0.05	< 0.05	
Molybdenum (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	9.2	
Nickel (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Selenium (dissolved)	ug/l	< 5	**ISO17025**	< 5	< 5	8	< 5	
Zinc (dissolved)	ug/l	< 2	**ISO17025**	< 2	< 2	< 2	< 2	
Calcium (dissolved)	mg/l	< 0.2	**ISO17025**	55.8	197	79	27.7	
Total Phenols (monohydric)	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	

Subcontracted analysis (S)
Insufficient sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - Speciated PAH							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 29/01/2019	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Naphthalene	ug/l	< 0.01	NONE	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.01	NONE	0.01	< 0.01	< 0.01	< 0.01	< 0.01

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - Speciated PAH							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 29/01/2019	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Naphthalene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	0.02	< 0.01
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	0.02	< 0.01

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - Speciated PAH							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34		
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: 17076.GW.01	**Depth (m)**	4.66	1.69	7.94	7.90		
Reporting Date: 29/01/2019	**DETS Sample No**	373834	373835	373836	373837		

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Naphthalene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	0.01	< 0.01	
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008	
Total EPA-16 PAHs	ug/l	< 0.01	NONE	< 0.01	< 0.01	0.01	< 0.01	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 29/01/2019	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	< 140

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 29/01/2019	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	< 70
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	< 140

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH CWG Banded							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.GW.01	**Depth (m)**	4.66	1.69	7.94	7.90	
Reporting Date: 29/01/2019	**DETS Sample No**	373834	373835	373836	373837	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C21 - C34	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C34)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (C5 - C35)	ug/l	< 70	NONE	< 70	< 70	< 70	< 70	
Total >C5 - C35	ug/l	< 140	NONE	< 140	< 140	< 140	< 140	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH01	BH03A	BH07	BH09	BH11
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	0.65	7.86	6.40	5.15	2.82
Reporting Date: 29/01/2019	**DETS Sample No**	373824	373825	373826	373827	373828

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	< 1
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10
o-xylene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	15/11/18
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: A47 Wansford	**TP / BH No**	BH16	BH18	BH20	BH24	BH26
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17076.GW.01	**Depth (m)**	8.36	6.34	4.55	3.16	3.93
Reporting Date: 29/01/2019	**DETS Sample No**	373829	373830	373831	373832	373833

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	(hs)
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	< 1
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10
o-xylene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	< 5
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	< 10

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-85496	**Date Sampled**	15/11/18	15/11/18	15/11/18	15/11/18	
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: A47 Wansford	**TP / BH No**	BH27	BH29	BH33	BH34	
Project / Job Ref: 17076	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 17076.GW.01	**Depth (m)**	4.66	1.69	7.94	7.90	
Reporting Date: 29/01/2019	**DETS Sample No**	373834	373835	373836	373837	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	
o-xylene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	< 5	
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING
4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-85496
Soils Ltd
Site Reference: A47 Wansford
Project / Job Ref: 17076
Order No: 17076.GW.01
Reporting Date: 29/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Appendix D Gas Monitoring Data

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS: Gas/Dips/PID
Client: Soils Limited
Site: A47 Wansford
Date: 05-06/11/2018

Quote No:
Visit No: 1 **of** 8
Operator: PM **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	0.2	0.2	ND	ND	4.3	4.3	1	1	ND	ND	13.7	13.7	ND	ND	4.4	4.4	19.43	60	0.56	2.68	
BH03A	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.5	20.5	ND	ND	0	0	0.09	60	7.82	10.47	
BH06	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	20.2	20.2	ND	ND	0.3	0.3	0.02	60	Dry	6.25	
BH07	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	20.5	20.9	2	ND	0	0	0	60	6.67	10.02	
BH09	ND	ND	ND	ND	2.4	2.4	ND	ND	ND	ND	17.9	17.9	2.5	ND	0	0	0.05	60	5.14	9.31	
BH11	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	19.7	19.7	2.1	ND	0	0	0.07	60	2.81	6.97	
BH13	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	20.1	20.1	ND	ND	0	0	0.07	60	6.87	7.1	Limted water, wet mud at base
BH16	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	15.4	15.4	ND	ND	0	0	0.02	60	8.26	18.75	
BH18	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	19.6	19.6	ND	ND	0	0	0.03	60	6.32	9.58	
BH20	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	20.7	20.7	1.9	ND	0	0	0.12	60	4.57	5.84	
BH24	0.1	0.1	ND	ND	0.3	0.3	ND	ND	ND	ND	18.4	18.9	2.5	ND	0	0	0	60	3.26	15.57	No gas valve on bung
BH26	ND	ND	ND	ND	1.3	1.3	1	1	ND	ND	15.6	15.6	4.1	ND	-0.5	-0.5	-1.7	60	3.93	14.89	
BH27	ND	ND	ND	ND	0.5	0.4	ND	ND	ND	ND	20	20	0.1	ND	0	0	0	60	4.73	14.45	
BH29	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.7	20.7	ND	ND	0	0	0.09	60	1.76	3.22	
BH34	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	20.9	20.9	ND	ND	0	0	-0.98	60	7.84	25.67	
BH36	ND	ND	ND	ND	0.7	0.7	ND	ND	ND	ND	20.1	20.1	ND	ND	0	0	-0.03	60	Dry	2.75	
BH37A	ND	ND	ND	ND	2.2	2.2	ND	ND	ND	ND	18	18	ND	ND	0	0	0.02	60	Dry	4.56	
BH39	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	20.8	20.8	ND	ND	0	0	0.03	60	5.49	5.54	Limited water, wet mud at base
Max	**ND**	**ND**	**ND**	**ND**	**2.2**	**2.2**	**ND**	**ND**	**ND**	**ND**	**20.8**	**20.8**	**NR**	**ND**	**0.0**	**0.0**	**0**	**60**	**5.49**	**5.54**	
Min	**ND**	**ND**	**ND**	**ND**	**0.5**	**0.5**	**ND**	**ND**	**ND**	**ND**	**13.7**	**13.7**	**NR**	**ND**	**0.0**	**0.0**	**0.0**	**60**	**DRY**	**2.68**	

ND - Not detected
NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			08:30	Start			14:45	End		
Barometric pressure (mbar):			1005	Start			1004	End		
Pressure trend (Daily):			X	Falling		Steady		Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			12	Before			12	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:
Ground gas meter: GA 5000 SERIAL: G505418
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 24/10/18
Date of next calibration: 24/04/19

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS: Gas/Dips/PID
Client: Soils Limited
Site: A47 Wansford
Date: 12/11/2018

Quote No:
Visit No: 2 **of** 8
Operator: PM **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	ND	ND	ND	ND	4.1	4.1	1	1	1	1	10.6	10.6	0.2	ND	6.9	6.9	21.39	60	0.65	2.68	
BH03A	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.2	20.2	ND	ND	0	0	0.02	60	7.83	10.47	
BH06	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	19.9	19.9	ND	ND	0	0	0.05	60	Dry	6.25	
BH07	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	19.8	19.8	ND	ND	0	0	-0.14	60	6.4	10.07	
BH09	ND	ND	ND	ND	2.7	2.7	ND	ND	ND	ND	16.4	16.4	0.3	ND	0	0	4.12	60	5.15	9.31	
BH11	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	17.9	17.9	0.1	ND	0	0	0.03	60	2.82	6.97	
BH13	ND	ND	ND	ND	1	1	ND	ND	ND	ND	20	20	ND	ND	0	0	0.07	60	6.87	7.05	Limted water, wet mud at base
BH16	ND	ND	ND	ND	1.2	1.2	ND	ND	1	1	10.5	10.5	0.1	ND	0	0	0.07	60	8.36	18.75	
BH18	ND	ND	ND	ND	1.7	1.7	ND	ND	ND	ND	19	19	ND	ND	0	0	0.02	60	6.34	9.58	
BH20	ND	ND	ND	ND	1.2	1.2	ND	ND	ND	ND	19.6	19.6	0.1	ND	0	0	0.05	60	4.55	5.84	
BH24	ND	ND	ND	ND	0.1	0.1	1	1	ND	ND	19.6	20.2	ND	ND	0	0	0.09	60	3.16	15.62	No gas valve on bung
BH26	ND	ND	ND	ND	1.2	1.2	2	2	ND	ND	16	16	0.6	ND	-1.2	-1.2	-3.16	60	3.93	14.94	
BH27	ND	ND	ND	ND	0.6	0.6	1	1	ND	ND	19.5	19.5	0.8	ND	-0.3	-0.3	-0.38	60	4.66	14.5	
BH29	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.4	20.4	0.1	ND	0	0	0.03	60	1.69	3.22	
BH33	ND	ND	ND	ND	0.6	0.6	1	1	ND	ND	20.6	20.6	0.5	ND	0	0	0.05	60	7.94	11.16	New install
BH34	ND	ND	ND	ND	0.1	0.1	1	1	ND	ND	20.6	20.6	0.1	ND	0	0	0.09	60	7.9	25.62	
BH36	ND	ND	ND	ND	0.2	0.2	1	1	ND	ND	20.2	20.4	0.2	ND	0.1	0.1	-0.03	60	Dry	2.75	
BH37A	ND	ND	ND	ND	1.6	1.6	1	1	1	1	17.2	17.2	0.1	ND	0	0	0	60	Dry	4.56	
BH39	ND	ND	ND	ND	0.1	0.1	1	1	ND	ND	20.4	20.4	0.3	ND	0	0	0.02	60	5.5	5.54	Limited water, wet mud at base
Max	**ND**	**ND**	**ND**	**ND**	**1.6**	**1.6**	**1**	**1**	**1**	**1**	**20.4**	**20.4**	**NR**	**ND**	**0.1**	**0.1**	**0**	**60**	**5.50**	**5.54**	
Min	**ND**	**ND**	**ND**	**ND**	**0.5**	**0.5**	**ND**	**ND**	**ND**	**ND**	**10.6**	**10.6**	**NR**	**ND**	**0.0**	**0.0**	**0.0**	**60**	**DRY**	**2.68**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			08:30	Start			13:00	End		
Barometric pressure (mbar):			1007	Start			1007	End		
Pressure trend (Daily):				Falling	X	Steady		Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			8	Before			12	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA 5000 SERIAL: G505418
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 24/10/18
Date of next calibration: 24/04/19

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS: Gas/Dips/PID
Client: Soils Limited
Site: A47 Wansford
Date: 22/11/2018

Quote No:
Visit No: 3 **of** 8
Operator: PM, IS **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	ND	ND	ND	ND	4.1	4.1	ND	ND	ND	ND	13	13	0.3	ND	10.8	10.8	5.43	60	0.95	2.68	
BH03A	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.3	20.3	ND	ND	0	0	-0.1	60	8.34	10.3	
BH06	ND	ND	ND	ND	0.7	0.7	ND	ND	ND	ND	20.1	20.1	0.2	ND	0	0	-0.12	60	Dry	6.18	
BH07	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	20	20	ND	ND	0	0	-0.11	60	6.42	9.84	
BH09	ND	ND	ND	ND	2.6	2.5	ND	ND	ND	ND	18.3	18.3	ND	ND	0.1	0.1	-0.05	60	5.11	9.31	
BH11	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	19	19	0.3	ND	0	0	0.02	60	2.87	6.97	
BH13	ND	ND	ND	ND	1.2	1.2	ND	ND	ND	ND	20	20	ND	ND	0	0	-0.13	60	6.91	7.04	Limted water, wet mud at base
BH16	ND	ND	ND	ND	1.3	1.3	ND	ND	ND	ND	12.6	12.6	ND	ND	0	0	0.04	60	8.32	18.87	
BH18	ND	ND	ND	ND	1.9	1.9	ND	ND	ND	ND	18.4	18.4	ND	ND	0	0	0.03	60	6.36	10.46	
BH20	ND	ND	ND	ND	1.2	1.2	ND	ND	ND	ND	20.7	20.7	0.4	ND	0	0	-0.12	60	4.57	5.84	
BH24	0.4	0.4	ND	ND	1	1	ND	ND	ND	ND	12.5	12.5	ND	ND	0	0	-0.09	60	2.88	15.62	No gas valve on bung
BH26	0.1	0.1	ND	ND	0.8	0.8	ND	ND	ND	ND	20.1	20.1	ND	ND	-0.9	-0.9	-0.93	60	4.01	15.28	
BH27	ND	ND	ND	ND	1.1	1.1	1	1	ND	ND	18	18	0.3	ND	0	0	0.07	60	4.74	14.45	
BH29	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	20.6	20.6	ND	ND	0.1	0.1	0.07	60	1.66	3.22	
BH33	0.1	0.1	ND	ND	0.4	0.4	ND	ND	ND	ND	21	21	ND	ND	0	0	0.05	60	7.9	11.13	
BH34	0.2	0.2	ND	ND	0.2	0.2	5	5	ND	ND	20.1	20.1	ND	ND	0	0	0.09	60	7.91	25.59	
BH36	0.1	0.1	ND	ND	0.8	0.8	ND	ND	ND	ND	20.2	20.2	ND	ND	0	0	-0.03	60	Dry	2.75	
BH37A	ND	ND	ND	ND	2.1	2.1	ND	ND	ND	ND	17.6	17.6	ND	ND	0	0	0	60	Dry	4.56	
BH39	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.5	20.5	ND	ND	0	0	0.02	60	5.53	5.53	Limited water, wet mud at base
Max	**0.1**	**0.1**	**ND**	**ND**	**2.1**	**2.1**	**ND**	**ND**	**ND**	**ND**	**20.5**	**20.5**	**NR**	**ND**	**0.0**	**0.0**	**0**	**60**	**5.53**	**5.53**	
Min	**ND**	**ND**	**ND**	**ND**	**0.3**	**0.3**	**ND**	**ND**	**ND**	**ND**	**13.0**	**13.0**	**NR**	**ND**	**0.0**	**0.0**	**-0.1**	**60**	**DRY**	**2.68**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist	X	Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Precipitation:		None	X	Slight		Moderate		Heavy		
Time monitoring performed:			08:30	Start			11:45	End		
Barometric pressure (mbar):			1019	Start			1019	End		
Pressure trend (Daily):				Falling	X	Steady		Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			8	Before			8	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA 5000 SERIAL: G505418
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 24/10/18
Date of next calibration: 24/04/19

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS: Gas/Dips/PID
Client: Soils Limited
Site: A47 Wansford
Date: 29/11/2018

Quote No:
Visit No: 4 **of** 8
Operator: PM, IS **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	0.1	ND	ND	ND	4	4	ND	ND	ND	ND	11.5	11.5	0.5	ND	9.1	9.1	19.93	60	0.73	2.68	
BH03A	0.1	0.1	ND	ND	0.5	0.5	ND	ND	ND	ND	19.8	19.8	0.5	ND	0	0	-0.11	60	8.04	10.42	
BH06	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	19.6	19.6	ND	ND	0	0	0.1	60	Dry	6.18	
BH07	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	19.6	19.6	0.2	ND	0	0	0.02	60	6.4	7.16	
BH09	ND	ND	ND	ND	2.1	2.1	ND	ND	ND	ND	18.6	18.6	0.6	ND	0	0	0.03	60	5.07	9.31	
BH11	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	18.4	18.4	0.4	ND	0	0	0.02	60	2.5	6.85	
BH13	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	18.6	18.6	ND	ND	0	0	0.02	60	6.91	7.05	Limted water, wet mud at base
BH16	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	10.8	10.8	0.3	ND	0	0	0.52	60	6.84	18.73	
BH18	ND	ND	ND	ND	1.9	1.9	ND	ND	ND	ND	18.7	18.7	ND	ND	0	0	0.01	60	6.33	10.31	
BH20	0.1	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	20.2	20.2	1.4	ND	0	0	0.05	60	4.6	5.89	
BH24	0.3	0.3	ND	ND	1.2	1.2	ND	ND	ND	ND	12.8	12.8	ND	ND	0.1	0.1	-0.19	60	2.79	15.64	No gas valve on bung
BH26	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	19.3	19.3	0.1	ND	1.5	1.5	0.77	60	3.96	15.03	
BH27	ND	ND	ND	ND	1	1	1	1	ND	ND	18.4	18.4	1	ND	0	0	0.03	60	4.68	14.35	
BH29	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	21.3	21.3	0.1	ND	0	0	-0.03	60	1.59	3.22	
BH33	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	19.9	19.9	0.9	ND	0	0	0.03	60	7.91	10.94	
BH34	0.2	0.2	ND	ND	0.2	0.2	4	4	ND	ND	18.7	18.7	0.2	ND	0	0	0.27	60	7.8	25.6	
BH36	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.4	20.4	0.2	ND	0	0	-0.02	60	Dry	2.75	
BH37A	ND	ND	ND	ND	2	2	ND	ND	ND	ND	18.3	18.3	0.1	ND	0	0	0	60	Dry	4.56	
BH39	0.1	0.1	ND	ND	ND	ND	ND	ND	ND	ND	20.1	20.1	ND	ND	0	0	0.17	60	Dry	5.54	
Max	**0.1**	**0.1**	**ND**	**ND**	**2.0**	**2.0**	**ND**	**ND**	**ND**	**ND**	**20.4**	**20.4**	**NR**	**ND**	**0.0**	**0.0**	**0**	**60**	**DRY**	**5.54**	
Min	**ND**	**ND**	**ND**	**ND**	**0.5**	**0.5**	**ND**	**ND**	**ND**	**ND**	**11.5**	**11.5**	**NR**	**ND**	**0.0**	**0.0**	**-0.1**	**60**	**DRY**	**2.68**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist	X	Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Precipitation:		None	X	Slight		Moderate		Heavy		
Time monitoring performed:			08:00	Start			11:00	End		
Barometric pressure (mbar):			997	Start			992	End		
Pressure trend (Daily):			X	Falling		Steady		Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			13	Before			11	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA 5000 SERIAL: G505418
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 24/10/18
Date of next calibration: 24/04/19

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS: Gas/Dips/PID
Client: Soils Limited
Site: A47 Wansford
Date: 11/12/2018

Quote No:
Visit No: 5 **of** 8
Operator: PM, IS **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	0.1	0.1	ND	ND	4.2	4.2	ND	ND	ND	ND	8.9	8.9	0.4	ND	6.4	6.4	2.58	60	0.67	2.68	
BH03A	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	19.9	19.9	0.2	ND	0	0	-0.04	60	8.4	10.41	
BH06	ND	ND	ND	ND	0.7	0.7	ND	ND	ND	ND	19.7	19.7	ND	ND	0	0	-0.06	60	Dry	6.01	
BH07	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	19.6	19.6	0.3	ND	0	0	-0.05	60	6.46	10.19	
BH09	ND	ND	ND	ND	2.9	2.9	ND	ND	ND	ND	17.5	17.5	ND	ND	0	0	0.07	60	5.09	9.36	
BH11	ND	ND	ND	ND	1.6	1.6	ND	ND	ND	ND	19.5	19.5	1.5	ND	0	0	-0.05	60	2.87	6.85	
BH13	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	19.7	19.7	ND	ND	0	0	-0.05	60	Dry	7.05	
BH16	ND	ND	ND	ND	1.8	1.8	ND	ND	ND	ND	6.7	6.7	0.5	ND	0	0	-0.07	60	6.35	18.04	
BH18	ND	ND	ND	ND	1.6	1.6	ND	ND	ND	ND	19.3	19.3	ND	ND	0	0	-0.07	60	6.41	10.36	
BH20	0.1	ND	ND	ND	1.2	1.2	ND	ND	ND	ND	20.6	20.6	ND	ND	0	0	0	60	4.6	5.89	
BH24	0.2	0.2	ND	ND	1.6	1.6	ND	ND	ND	ND	13.2	13.2	0.5	ND	0	0	-0.04	60	2.79	15.63	No gas valve on bung
BH26	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	18.9	18.9	0.7	ND	-0.6	-0.6	-1.03	60	4.01	15	
BH27	ND	ND	ND	ND	1	1	ND	ND	ND	ND	19.8	19.8	0.3	ND	0	0	-0.17	60	4.65	14.5	
BH29	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	21.8	21.8	ND	ND	0	0	-0.02	60	1.5	3.27	
BH33	0.1	0.1	ND	ND	0.7	0.7	ND	ND	ND	ND	20.8	20.8	0.7	ND	0	0	-0.02	60	7.93	10.97	
BH34	0.1	0.1	ND	ND	0.3	0.3	ND	ND	ND	ND	20.7	20.7	1.2	ND	0	0	-0.03	60	7.74	25.6	
BH36	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.8	20.8	ND	ND	0	0	0.09	60	Dry	2.79	
BH37A	ND	ND	ND	ND	1.7	1.7	ND	ND	ND	ND	19.5	19.5	ND	ND	0	0	0.02	60	Dry	4.54	
BH39	ND	ND	ND	ND	0.7	0.7	ND	ND	ND	ND	20.8	20.8	ND	ND	-0.1	-0.1	-0.06	60	Dry	5.53	
Max	**ND**	**ND**	**ND**	**ND**	**1.7**	**1.7**	**ND**	**ND**	**ND**	**ND**	**20.8**	**20.8**	**NR**	**ND**	**0.0**	**0.0**	**0**	**60**	**DRY**	**5.53**	
Min	**ND**	**ND**	**ND**	**ND**	**0.5**	**0.5**	**ND**	**ND**	**ND**	**ND**	**8.9**	**8.9**	**NR**	**ND**	**0.0**	**0.0**	**-0.1**	**60**	**DRY**	**2.68**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Precipitation:		None	X	Slight		Moderate		Heavy		
Time monitoring performed:			08:00	Start			11:00	End		
Barometric pressure (mbar):			1027	Start			1027	End		
Pressure trend (Daily):				Falling	X	Steady		Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			6	Before			6	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA 5000 SERIAL: G505418
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 24/10/18
Date of next calibration: 24/04/19

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client:
Site: A47 Wansford
Date: 21.12.18

Quote No:
Visit No: 6 **of** 8
Operator: WM & PM **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	0.1	ND	2.0	ND	4.4	4.4	ND	ND	ND	ND	5.4	5.4	0.0	NA	18.4	18.4	93	30	0.72	2.67	
BH03A	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	21.0	21.0	0.0	NA	0.1	0.1	0	30	7.85	10.21	
BH06	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	20.5	20.5	0.0	NA	0.0	0.0	0	30	DRY	7.18	
BH07	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	20.5	20.5	0.0	NA	0.1	0.1	0	30	6.70	10.20	
BH9	ND	ND	ND	ND	3.4	3.4	ND	ND	ND	ND	15.5	15.5	0.0	NA	0.0	0.0	0	30	4.82	9.18	
BH11	ND	ND	ND	ND	1.8	1.8	ND	ND	ND	ND	18.1	18.1	0.0	NA	0.1	0.1	0	30	3.22	6.79	
BH13	ND	ND	ND	ND	1.5	1.5	ND	ND	ND	ND	20.0	20.0	0.0	NA	0.0	0.0	0	30	DRY	7.04	
BH16	ND	ND	ND	ND	1.7	1.7	ND	ND	ND	ND	9.4	9.4	0.0	NA	0.2	0.2	0	30	8.60	18.14	
BH18	ND	ND	ND	ND	2.1	2.1	ND	ND	ND	ND	19.7	19.7	2.5	NA	0.1	0.1	0	30	6.75	10.27	
BH20	ND	ND	ND	ND	1.3	1.3	ND	ND	ND	ND	20.1	20.1	0.0	NA	0.0	0.0	0	30	5.00	5.51	
BH24	0.2	0.2	4.0	4.0	1.5	1.5	ND	ND	ND	ND	13.1	13.1	0.0	NA	0.0	0.0	-1	30	2.82	15.51	
BH26	ND	ND	ND	ND	1.4	1.4	ND	ND	ND	ND	19.3	19.3	0.2	NA	0.7	0.7	1	30	4.30	15.02	
BH27	ND	ND	ND	ND	1.1	0.5	ND	ND	ND	ND	19.5	20.2	0.0	NA	0.0	0.0	0	30	4.90	14.55	
BH29	ND	ND	ND	ND	0.4	0.4	ND	ND	ND	ND	20.7	20.7	0.0	NA	0.0	0.0	0	30	15.20	3.17	
BH33	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	20.9	20.9	0.0	NA	0.1	0.1	0	30	8.28	10.42	
BH34	0.1	0.1	2.0	2.0	0.3	0.3	ND	ND	ND	ND	20.0	20.0	0.0	NA	0.0	0.0	0	30	8.15	24.14	
BH36	ND	ND	ND	ND	1.0	1.0	ND	ND	ND	ND	20.0	20.0	0.1	NA	0.2	0.2	0	30	DRY	2.75	
BH37A	ND	ND	ND	ND	2.3	2.3	ND	ND	ND	ND	18.4	18.4	0.0	NA	0.1	0.1	0	30	4.96	4.56	
BH39	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	20.7	20.7	0.0	NA	0.3	0.3	0	30	DRY	5.54	
Max	**ND**	**ND**	**ND**	**ND**	**0.1**	**0.1**	**ND**	**ND**	**ND**	**ND**	**20.7**	**20.7**	**NR**	**ND**	**0.3**	**0.3**	**0**	**30**	**DRY**	**5.54**	
Min	**ND**	**ND**	**ND**	**ND**	**0.1**	**0.1**	**ND**	**ND**	**ND**	**ND**	**20.7**	**20.7**	**NR**	**0.0**	**0.3**	**0.3**	**0.0**	**30**	**DRY**	**5.54**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:	X	Dry		Moist		Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			08:00	Start			13:00	End		
Barometric pressure (mbar):			993	Start			995	End		
Pressure trend (Daily):				Falling		Steady	X	Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			6	Before			7	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA5000; G501518
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: #####
Date of next calibration: #####

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS: Gas/Dips/PID
Client: Soils Limited
Site: A47 Wansford
Date: 08/01/2019

Quote No:
Visit No: 7 **of** 8
Operator: PM, WM **Project Manager:** Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	0.5	0.5	ND	ND	3.9	3.9	ND	ND	ND	ND	5.1	5.1	0.3	ND	1.9	1.9	6.34	60	0.56	2.67	
BH03A	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	21.7	21.7	ND	ND	0.1	0.1	-0.05	60	8.28	10.2	
BH06	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	21.2	21.2	ND	ND	0.1	0.1	-0.03	60	Dry	6.18	
BH07	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	21.1	21.1	ND	ND	0	0	-0.07	60	6.48	10.2	
BH09	ND	ND	ND	ND	2.2	2.1	ND	ND	ND	ND	18.7	18.7	0.5	ND	0	0	-0.02	60	5.09	9.29	
BH11	ND	ND	ND	ND	1.6	1.6	ND	ND	ND	ND	19	19	0.4	ND	0	0	-0.02	60	2.83	6.83	
BH13	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	21.4	21.4	ND	ND	0.1	0.1	0.14	60	Dry	7.06	
BH16	ND	ND	ND	ND	1.6	1.6	ND	ND	ND	ND	16.9	16.9	ND	ND	0.1	0.1	0.05	60	8.24	18.07	
BH18	ND	ND	ND	ND	1.7	1.7	ND	ND	ND	ND	20.8	20.8	ND	ND	0	0	-0.05	60	6.23	10.24	
BH20	0.1	ND	ND	ND	1.2	1.2	ND	ND	ND	ND	20.3	21.1	0.3	ND	0	0	0.09	60	4.64	5.53	
BH24	0.3	0.3	ND	ND	1.4	1.4	1	1	ND	ND	8	8	0.4	ND	0	0	-0.86	60	2.57	15.48	
BH26	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	19.9	19.9	0.5	ND	-0.2	-0.2	-0.17	60	3.96	14.75	
BH27	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	18.8	18.8	1.3	ND	0	0	-0.09	60	4.59	15.33	
BH29	ND	ND	ND	ND	0.9	0.9	1	1	ND	ND	21.1	21.1	ND	ND	0	0	-0.03	60	1.22	3.22	
BH33	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	21.4	21.4	ND	ND	0	0	-0.17	60	7.96	10.82	
BH34	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	21.1	21.1	ND	ND	0.1	0.1	-0.12	60	7.71	25.57	
BH36	ND	ND	ND	ND	1.3	1.3	ND	ND	ND	ND	20.1	20.2	ND	ND	0.1	0.1	-0.15	60	Dry	2.75	
BH37A	ND	ND	ND	ND	2.4	2.4	ND	ND	ND	ND	18.5	18.5	ND	ND	0	0	-0.02	60	Dry	4.56	
BH39	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	20.9	20.9	ND	ND	0.2	0.2	0.02	60	5.29	5.54	
Max	**ND**	**ND**	**ND**	**ND**	**2.4**	**2.4**	**ND**	**ND**	**ND**	**ND**	**20.9**	**20.9**	**NR**	**ND**	**0.2**	**0.2**	**0**	**60**	**5.29**	**5.54**	
Min	**ND**	**ND**	**ND**	**ND**	**0.6**	**0.6**	**ND**	**ND**	**ND**	**ND**	**5.1**	**5.1**	**NR**	**ND**	**0.1**	**0.1**	**-0.1**	**60**	**DRY**	**2.67**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			08:00	Start			11:00	End		
Barometric pressure (mbar):			1027	Start			1026	End		
Pressure trend (Daily):			X	Falling		Steady		Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			8	Before			8	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA 5000 SERIAL: G505418
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 24/10/18
Date of next calibration: 24/04/19

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client:

Site: A47 Wansford

Date: 24.01.2019

Quote No:

Visit No: 8 **of** 8

Operator: WM & IS

Project Manager: Phil Sanders

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (mb)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
BH01	0.2	0.2	4.0	4.0	4.8	4.8	ND	ND	ND	ND	0.2	0.2	ND	NA	12.4	12.4	31.42	30	1.35	2.75	
BH03A	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.2	20.2	ND	NA	0.0	0.0	-0.02	30	8.37	10.18	
BH06	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	20.5	20.5	ND	NA	0.0	0.0	-0.04	30	DRY	6.16	
BH07	ND	ND	ND	ND	1.0	1.0	ND	ND	ND	ND	20.3	20.3	ND	NA	0.0	0.0	0.05	30	6.50	9.89	
BH09	ND	ND	ND	ND	3.2	3.2	ND	ND	ND	ND	15.8	15.8	0.3	NA	0.0	0.0	0.05	30	5.12	9.2	
BH11	ND	ND	ND	ND	2.0	2.0	ND	ND	ND	ND	18.3	18.3	ND	NA	0.0	0.0	0.04	30	2.66	6.76	
BH13	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	20.5	20.5	ND	NA	0.0	0.0	0.00	30	DRY	7.06	
BH16	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	20.7	20.7	ND	NA	0.0	0.0	0.00	30	8.31	18.04	
BH18	ND	ND	ND	ND	1.6	1.6	ND	ND	ND	ND	20.3	20.3	ND	NA	0.0	0.0	0.03	30	6.38	10.12	
BH20	ND	ND	ND	ND	1.4	1.4	ND	ND	ND	ND	19.7	20.5	ND	NA	0.0	0.0	-0.12	30	5.10	5.53	
BH24	0.4	0.4	8.0	8.0	1.6	1.6	ND	ND	ND	ND	4.5	4.5	ND	NA	0.0	0.0	0.13	30	2.48	15.42	
BH26	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	20.3	20.3	ND	NA	0.0	0.0	0.12	30	4.02	14.59	
BH27	ND	ND	ND	ND	0.8	0.8	ND	ND	ND	ND	19.8	19.8	0.5	NA	0.0	0.0	0.10	30	4.57	15.28	
BH29	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.7	20.9	0.1	NA	0.0	0.0	0.07	30	1.28	3.21	
BH33	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	21.1	21.2	ND	NA	0.0	0.0	-0.10	30	8.40	10.53	
BH34	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.7	20.7	ND	NA	0.1	0.1	0.03	30	8.13	25.26	Sediment on end of dip tape
BH36	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	21.1	21.1	ND	NA	0.1	0.1	0.10	30	DRY	2.82	
BH37A	ND	ND	ND	ND	0.4	0.4	ND	ND	ND	ND	20.7	20.7	ND	NA	0.0	0.0	-0.02	30	5.00	4.56	Bung not fitted on arrival- had fallen down well casing
BH39	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	20.9	20.9	ND	NA	0.1	0.1	0.07	30	5.66	5.54	
Max	**ND**	**ND**	**ND**	**ND**	**0.4**	**0.4**	**ND**	**ND**	**ND**	**ND**	**20.7**	**20.7**	**NR**	**ND**	**0.0**	**0.0**	**0**	**30**	**5.00**	**4.56**	
Min	**ND**	**ND**	**ND**	**ND**	**0.4**	**0.4**	**ND**	**ND**	**ND**	**ND**	**20.7**	**20.7**	**NR**	**0.0**	**0.0**	**0.0**	**0.0**	**30**	**5.00**	**4.56**	

ND - Not detected

NR - Not recorded

NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist		Wet		Snow	X	Frozen
Wind:	X	Calm		Light		Moderate		Strong		
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			07:45	Start			09:34	End		
Barometric pressure (mbar):			1010	Start			1010	End		
Pressure trend (Daily):				Falling		Steady	X	Rising		
Source:	timeanddate.com									
Air Temperature (Deg. C):			-1	Before			1	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA5000; G501518

Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%

Gas Flow range: +100/-50 l/hour

Differential Pressure: (+/-) 1000 Pa

Date of last calibration: #####

Date of next calibration: #####

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

Appendix E Groundwater Sampling Parameters

Groundwater Monitoring

Low Flow - Sampling Record Sheet

CLIENT Soils Ltd.
DATE 15/11/2018
WEATHER Dry

SITE A47 Wansford
TIME On: 08:00 Off: 14:00
MONITORING PERSONNEL P. Murphy

Monitoring Location	Time	DTL m	DTB m	End m	EC mS/cm	Temp C	pH	ORP mv	DO %	Dissolved Oxygen PPM	Purge Volume L	Odour description	Sediment description	Oil/grease visible	Colour description	Turbidity description	Comments
BH01	13:15	0.65	2.68		1396.6	13.54	7.11	168.1	64.5	6.85	12	None	Mod, fine	None	Brown-grey	Low	
BH03A	13:30	7.83	10.47		1725.4	14.25	7.49	11.1	62.44	6.73	16	None	Mod, fine	None	Brown-grey	Low	
BH06																	Dry, not sampled
BH07	12:00	6.4	10.02		1272.9	14.11	7.04	62.9	81.59	8.81	22	None	Mod, fine	None	Brown-grey	Low	
BH09	12:15	5.15	9.31		1100	14.02	7.18	166.2	66.45	6.76	25	None	Mod, fine	None	Brown	Low	
BH11	12:30	2.82	6.97		1162.1	12.84	7.15	174.8	39.41	4.28	25	None	Mod, fine	None	Brown	Low	
BH13																	No water, wet silt at base, unsampled
BH16	13:00	8.36	18.75		1040.5	13.65	7.28	51.4	47	5.19	63	None	Mod, fine	None	Brown-grey	Low	
BH18	13:15	6.34	9.58		1020.7	14.92	7.19	-139.9	4.53	0.49	20	None	Mod, fine	None	Brown-grey	Low	
BH20	13:45	4.55	5.84		615.01	14.37	7.25	171.4	70.39	7.18	8	None	Mod, fine	None	Brown	Low	
BH24	10:30	3.16	15.57		1900.5	14.53	7.85	-42.7	20.57	2.2	76	None	Mod, fine	None	Brown-grey	Low	
BH26	10:30	3.93	14.89		1676	13.39	7.12	126.6	44.58	4.57	67	None	Mod, fine	None	Brown	Low	
BH27	11:00	4.66	14.45		1042.2	11.99	7.52	-37.1	13.2	1.5	60	None	Mod, fine	None	Brown-grey	Low	
BH29	11:00	1.69	3.22		1351.1	13.44	7.28	86.9	99.55	10.16	9	None	Mod, fine	None	Brown	Low	
BH33	09:20	7.94	11.15		381.88	11.99	7.55	197.7	40.33	4.29	60	None	Mod, fine	None	Grey	Low	
BH34	09:40	7.9	25.67		696.33	11.42	7.89	189.2	60.76	6.54	108	None	Mod, fine	None	Grey	Low	
BH36																	Dry, not sampled
BH37A																	Dry, not sampled
BH39																	Dry, not sampled
IBC																	Dry, not sampled

Appendix F Site Photographs

Contents

1.1 BH01A (CP) 2
1.2 BH02 (DS+RC) 3
1.3 BH03 (DS+RC) 6
1.4 BH03A (DS+RC) 8
1.5 BH04 (DS+RC) 12
1.6 BH05 (DS+RC) 14
1.7 BH06 (DS+RC) 18
1.8 BH07 (DS +RC) 20
1.9 BH08 (CP + RC) 23
1.10 BH09 (CP + RC) 25
1.11 BH11 (CP + RC) 27
1.12 BH12 (RC) 29
1.13 BH13 (DS + RC) 32
1.14 BH14 (DS+RC) 38
1.15 BH14A (DS+RC) 44
1.16 BH15 (DS + RC) 51
1.17 BH16 57
1.19 BH17 (RC) 63
1.20 BH18 (RC) 67
1.21 BH19 (DS +RC) 70
1.22 BH20 73

1.1 BH01A (CP)



Photo 1:	Inspection Pit



Photo 2:	Reinstatement and Installation

1.2 BH02 (DS+RC)



Photo 1:	Core Run 1.20m – 3.20m bgl



Photo 2:	Core Run 3.20m – 4.70m bgl



Photo 3:	Core Photos 4.70m – 6.20m bgl – UT100 sample takes the core run to 6.50m bgl.



Photo 4:	Core Photos 6.70m – 8.50m bgl



Photo 5:	Core Photos 6.70 – 10.00m bgl



Photo 6:	Reinstatement

1.3 BH03 (DS+RC)



Photo 1:	Inspection Pit



Photo 2:	Core Photo 1.00m – 4.50m bgl



Photo 3:	Core Photo: 4.50m – 7.50m bgl

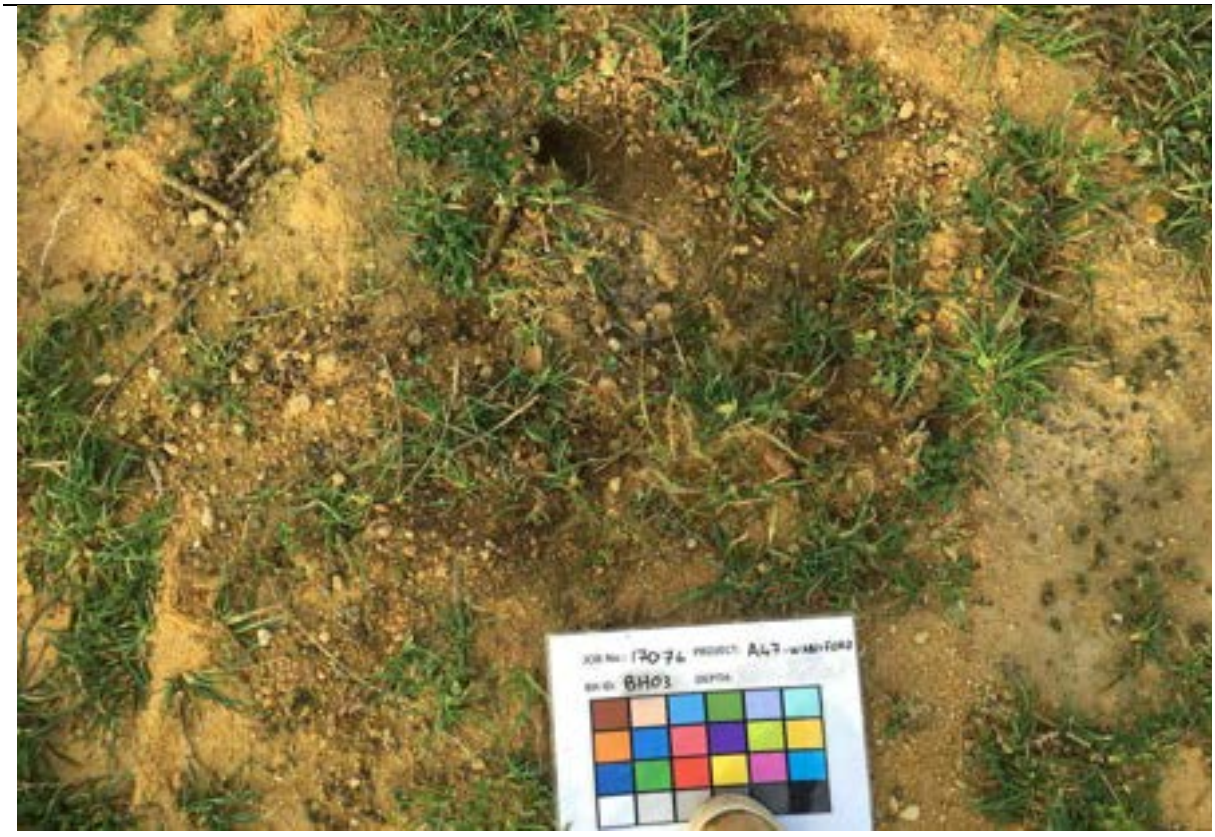


Photo 4:	Reinstatement

1.4 BH03A (DS+RC)



Photo 1:	Inspection Pit

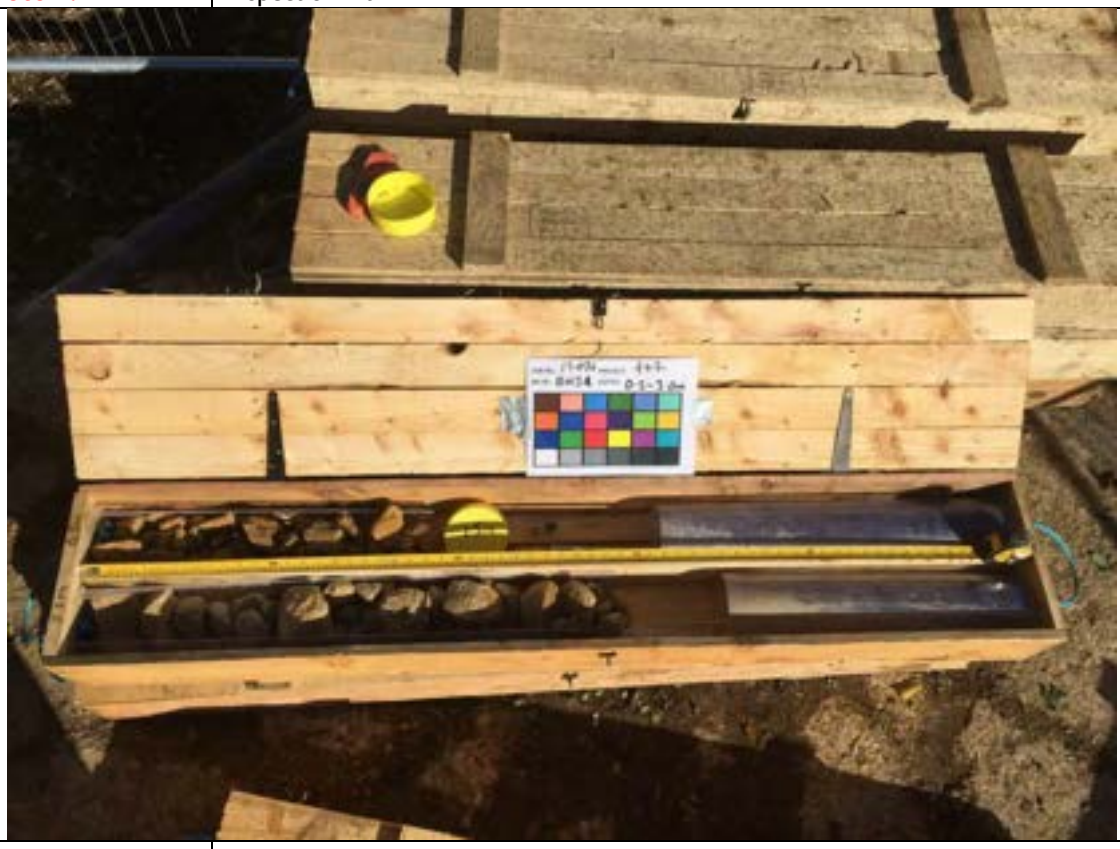


Photo 2:	Core Photos: 0.50m – 3.00m bgl



Photo 3:	Core Photo: 3.00m – 6.00m bgl



Photo 4:	Core Photo: 6.00m – 9.00m bgl



Photo 5:	Core Phot0: 9.00m – 13.50m bgl (UT at 13.50m – 14.00m bgl)



Photo 6:	Core Photos: 14.00m – 15.00m bgl



Photo 7:	Reinstatement and installation

1.5 BH04 (DS+RC)



Photo 1:	Inspection Pit



Photo 2:	Core Photo: 0.50m – 3.00m bgl



Photo 3:	Core Photo 3.00m – 6.00m bgl



Photo 4:	Reinstatement

1.6 BH05 (DS+RC)



Photo 1:	Inspection Pit



Photo 2:	Core Photo: 0.87m – 1.73m bgl



Photo 3:	Core Photo: 1.73m – 2.00m bgl



Photo 4:	Core Photo 2.00m – 3.50m bgl



Photo 5:	Core Photos: 3.50m – 5.00m bgl



Photo 6:	Core Photo: 5.00m – 6.00m bgl



Photo 7:	Reinstatement

1.7 BH06 (DS+RC)



Photo 1:	Core Photo: 0.50m bgl – 3.00m bgl



Photo 2:	Core Photo: 3.00m – 6.00m bgl



Photo 3:	Reinstatement and well installation

1.8 BH07 (DS +RC)



Photo 1:	Core Photo: 0.70m – 3.00m bgl



Photo 2:	Core Photo: 3.00m – 6.00m bgl



Photo 3:	Core Photo: 6.00 – 9.00m bgl



Photo 4:	Core Photo: 9.00m – 12.00m bgl

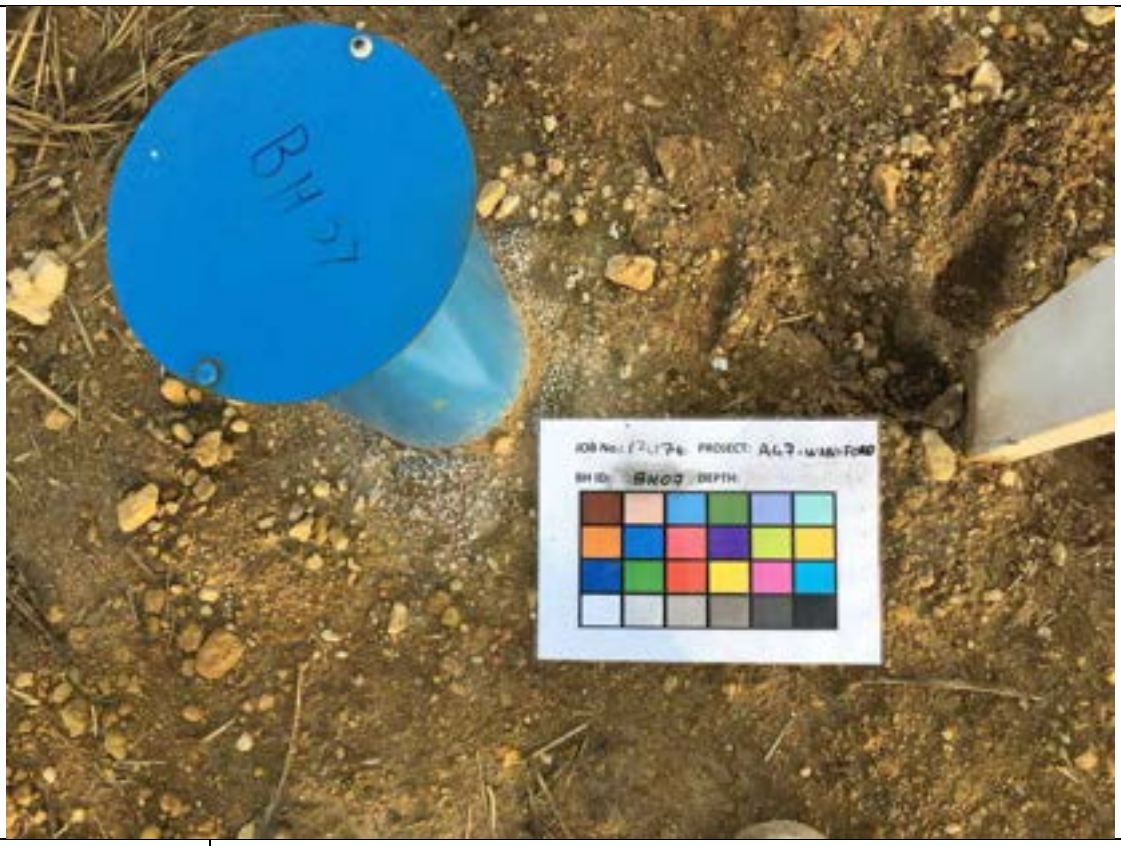


Photo 5:	Reinstatement and well installation,

1.9 BH08 (CP + RC)



Photo 1:	Core Photos: 6.10 – 9.00m bgl (1.20m bgl to 6.10m bgl drilling using CP)



Photo 2:	Core Photo: 9.00 – 10.50m bgl



Photo 3:	Reinstatement – field had since been ploughed

1.10 BH09 (CP + RC)



Photo 1:	Inspection Pit – followed by CP drilling to 5.00m bgl



Photo 2:	Core Photo: 5.00 – 7.50m bgl. (SPT from 4.50m bgl to 5.00m bgl)



Photo 3:	Core Photo: 7.50 – 10.50m bgl



Photo 4:	Reinstatement and well installation

1.11 BH11 (CP + RC)



Photo 1:	Core Photo: 1.40 – 6.00m bgl (1.20 – 1.40m bgl drilled using CP)



Photo 2:	Core Photos: 6.00 – 9.00m bgl



Photo 3:	Core Photo: 9.00 – 10.50m bgl



Photo 4:	Reinstatement and well installation,

1.12 BH12 (RC)



Photo 1:	Inspection Pit



Photo 2:	Core Photo: 0.60 – 3.00 bgl



Photo 3:	Core Photo: 3.00 – 6.00m bgl



Photo 4:	Core Photo: 6.00 – 9.00m bgl



Photo 5:	Core Photo: 9.00 – 10.50m bgl



Photo 6:	Reinstatement

1.13 BH13 (DS + RC)



Photo 1:	Inspection Pit to 0.70m bgl



Photo 2:	Core Photo 0.70 – 3.20m bgl



Photo 3:	Core Photo: 3.20 – 4.70m bgl



Photo 4:	Core Photo: 4.70 – 6.20m bgl



Photo 5:	Core Photo: 6.20 – 7.70m bgl



Photo 6:	Core Photo: 7.70 – 10.70m bgl



Photo 7:	Core Photo:10.70 – 13.70m bgl



Photo 8:	Core Photo: 13.70 – 16.70m bgl



Photo 9:	Core Photo: 16.70 – 19.70m bgl



Photo 10:	Core Photo: 19.70 – 20.00m bgl



Photo 11:	Reinstatement and well installation

1.14 BH14 (DS+RC)

Photos have been annotated in order to clarify accurate depths.



Photo 1:	Core Photo: 1.00 – 4.00m bgl – Inspection pit 1.00m bgl

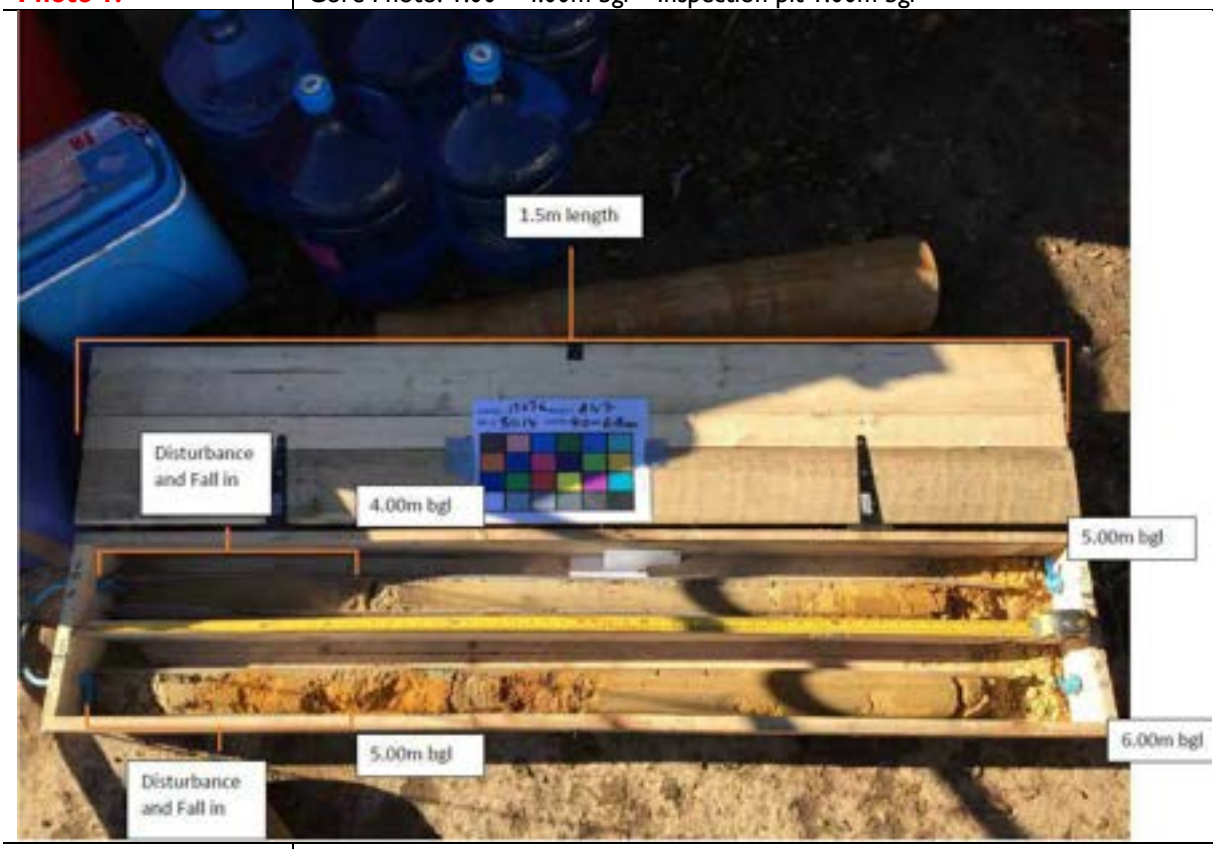


Photo 2:	Core Photo: 4.00 – 6.00m bgl

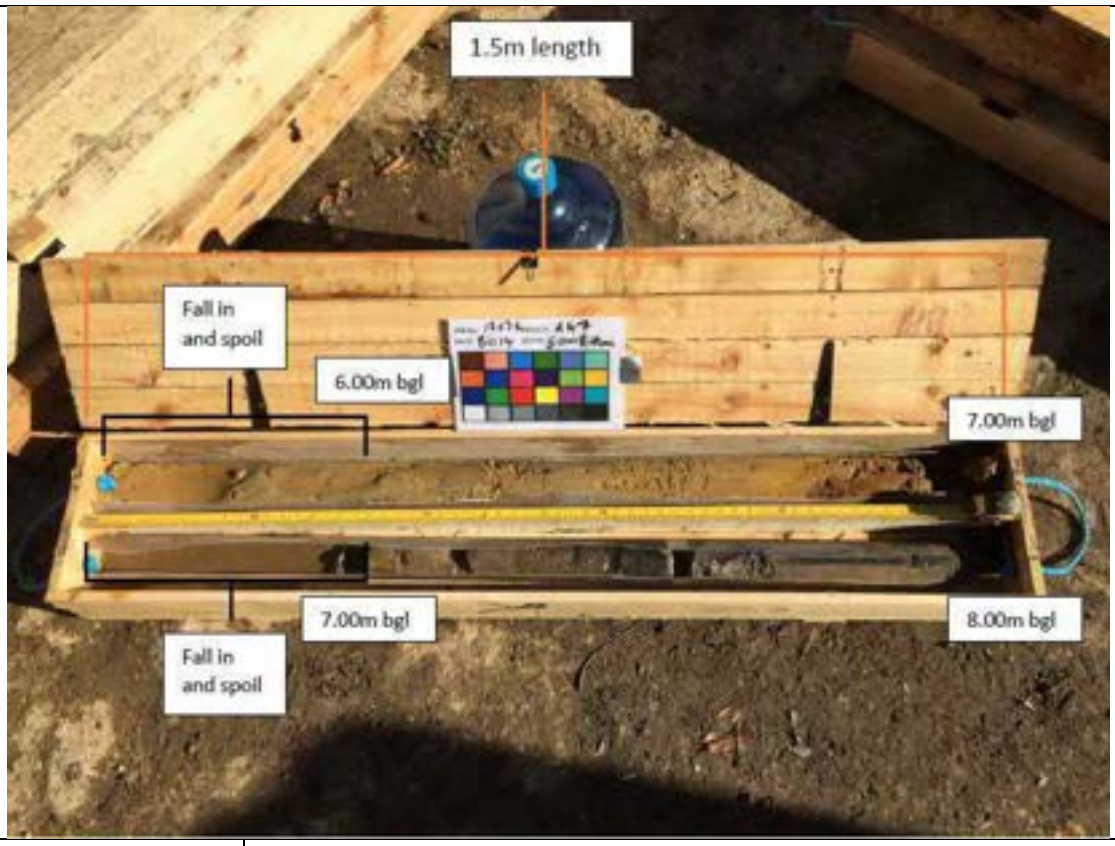


Photo 3:	Core Photo: 6.00 – 8.00m bgl

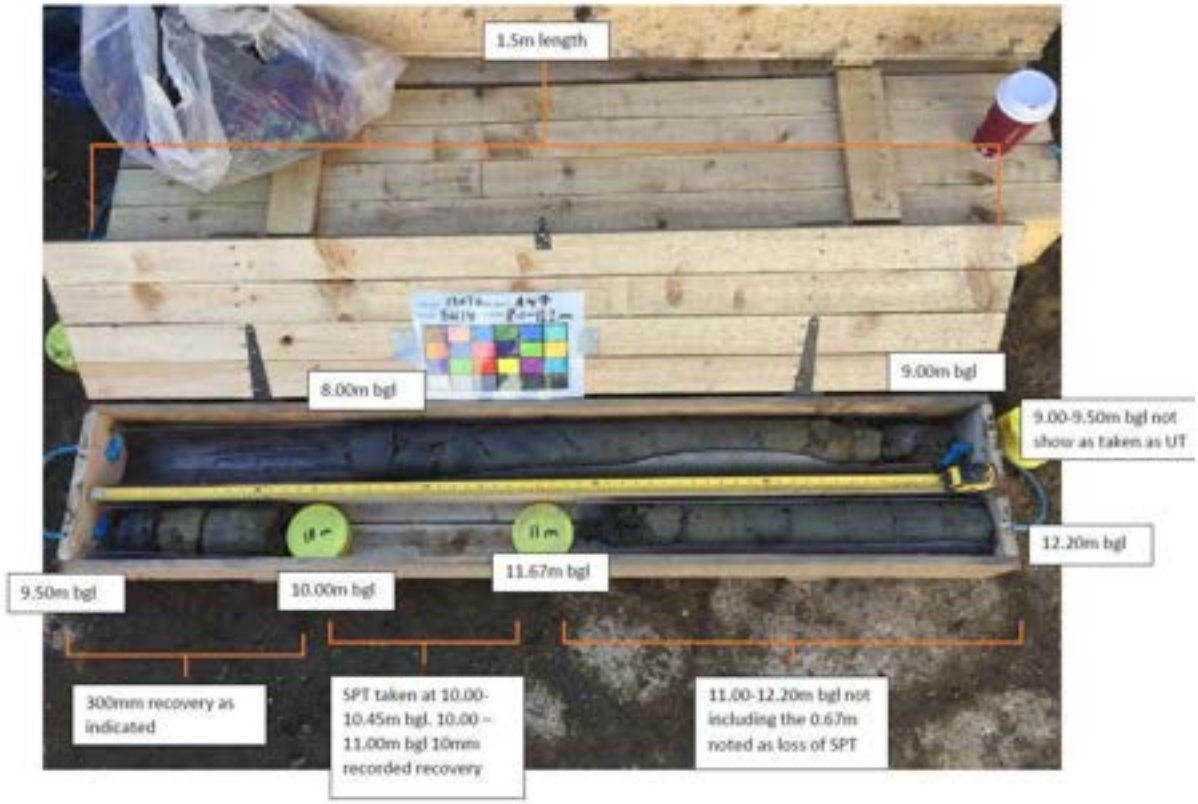


Photo 4:	Core Photo 8.00 – 12.20m bgl

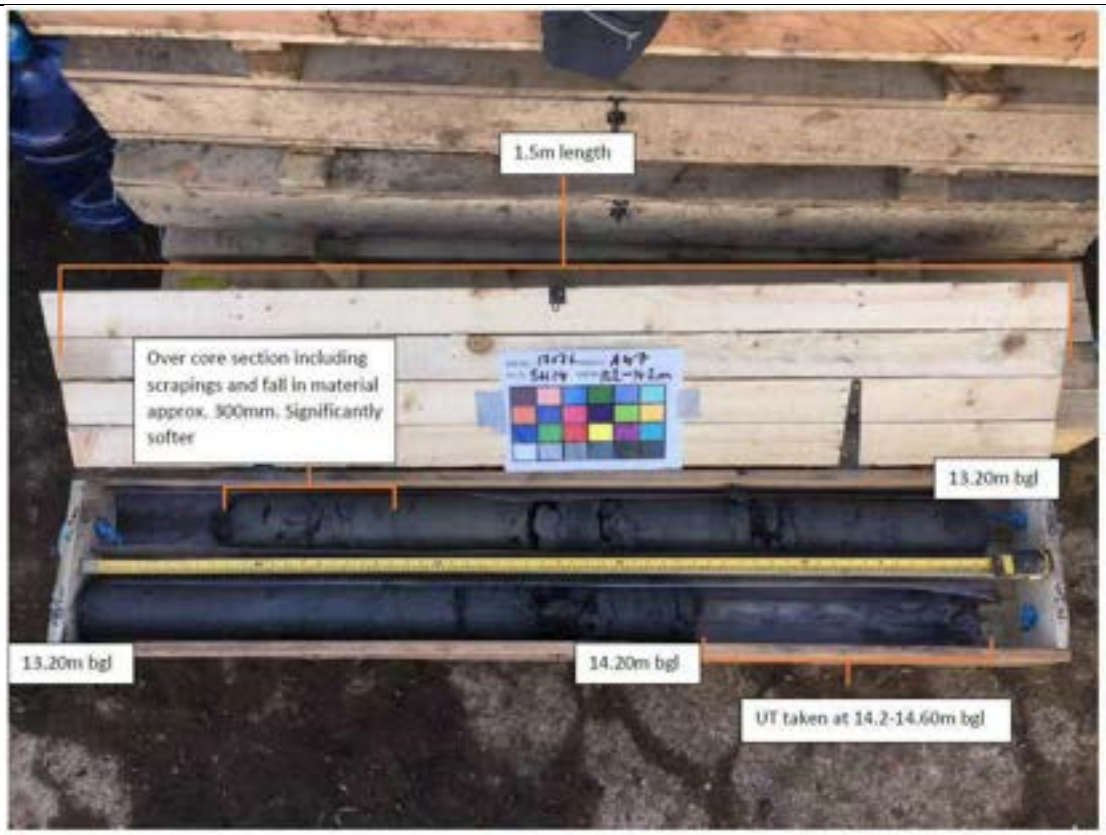


Photo 5:	Core Photo: 12.20 – 14.20m bgl



Photo 6:	Core Photo: 14.20 – 16.20m bgl



Photo 7:	Core Photo: 16.20 – 18.20m bgl

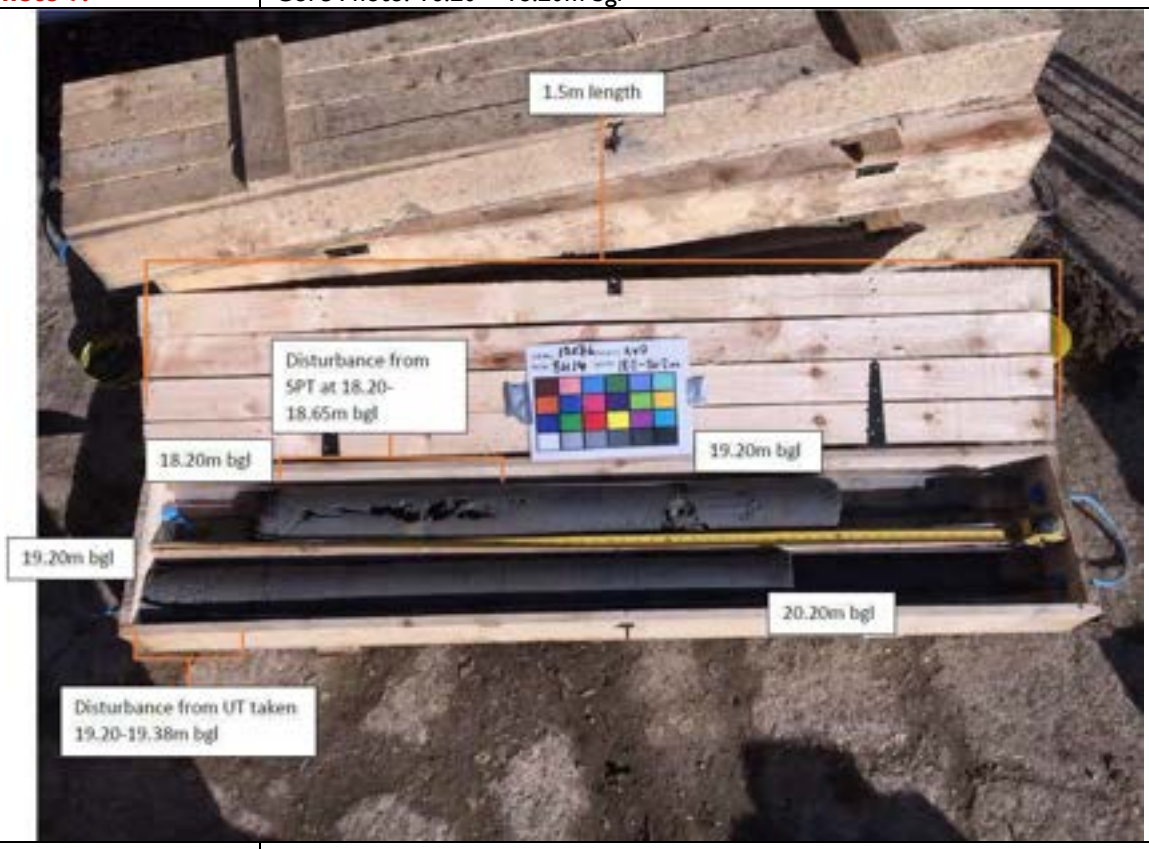


Photo 8:	Core Photo: 18.20 – 20.20m bgl



Photo 9:	Core Photo: 20.20 – 22.20m bgl

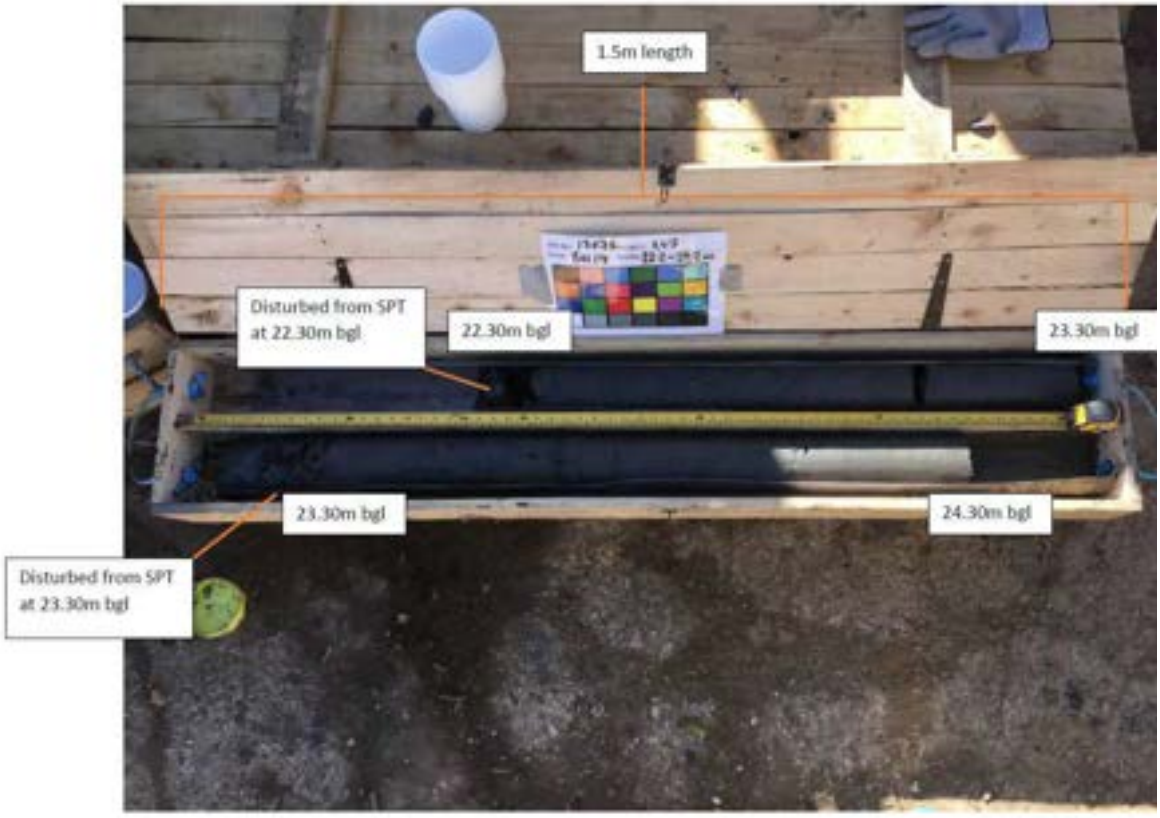


Photo 10:	Core Photo: 22.30 – 24.30m bgl

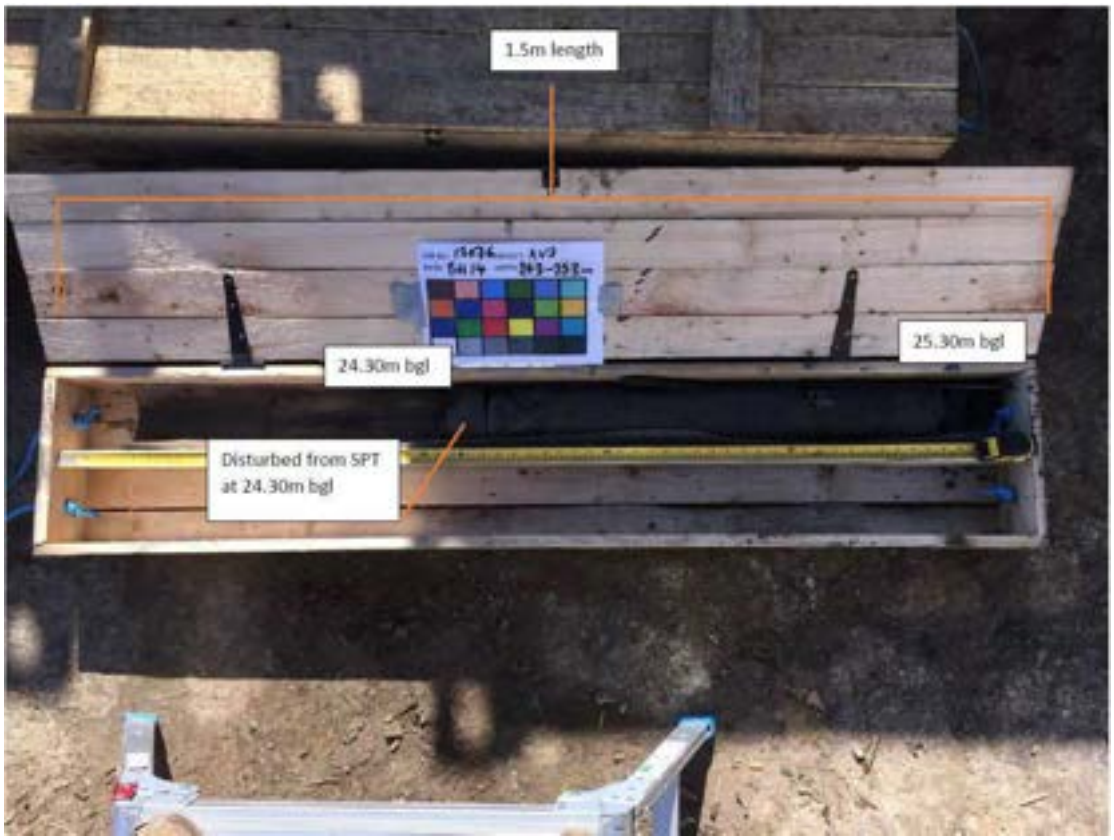


Photo 11:	Core Photo: 24.30 – 25.30m bgl



Photo 12:	Reinstament photo – location has since been ploughed

1.15 BH14A (DS+RC)



Photo 1:	Core Photo: 5.00 – 7.00m bgl – HDIP to 1.20m bgl. Open holed to 5.00m bgl.



Photo 2:	Photo Core: 7.00 – 9.00m bgl



Photo 3:	Core Photo: 9.00 – 10.00m bgl



Photo 4:	Core Photo: 10.00 – 11.50m bgl



Photo 5:	Core Photo: 11.50 – 13.00m bgl



Photo 6:	Core Photo: 13.00 – 14.50m bgl



Photo 7:	Core Photo: 14.50 – 16.00m bgl



Photo 8:	Core Photo: 16.00 – 17.50m bgl



Photo 9:	Core Photo: 17.50 – 19.00m bgl



Photo 10:	Core Photo: 19.00 – 20.50m bgl



Photo 11:	Core Photo: 20.50 – 22.00m bgl



Photo 12:	Core Photo: 22.00 – 23.50m bgl



Photo 13:	Core Photo: 23.50 – 25.00m bgl

1.16 BH15 (DS + RC)

Photos have been annotated in order to clarify accurate depths.



Photo 1:	Core Photo: 1.00 – 1.70m bgl



Photo 2:	Core Photo: 1.70 – 4.80m bgl



Photo 3:	Core Photo: 4.80 – 7.20m bgl

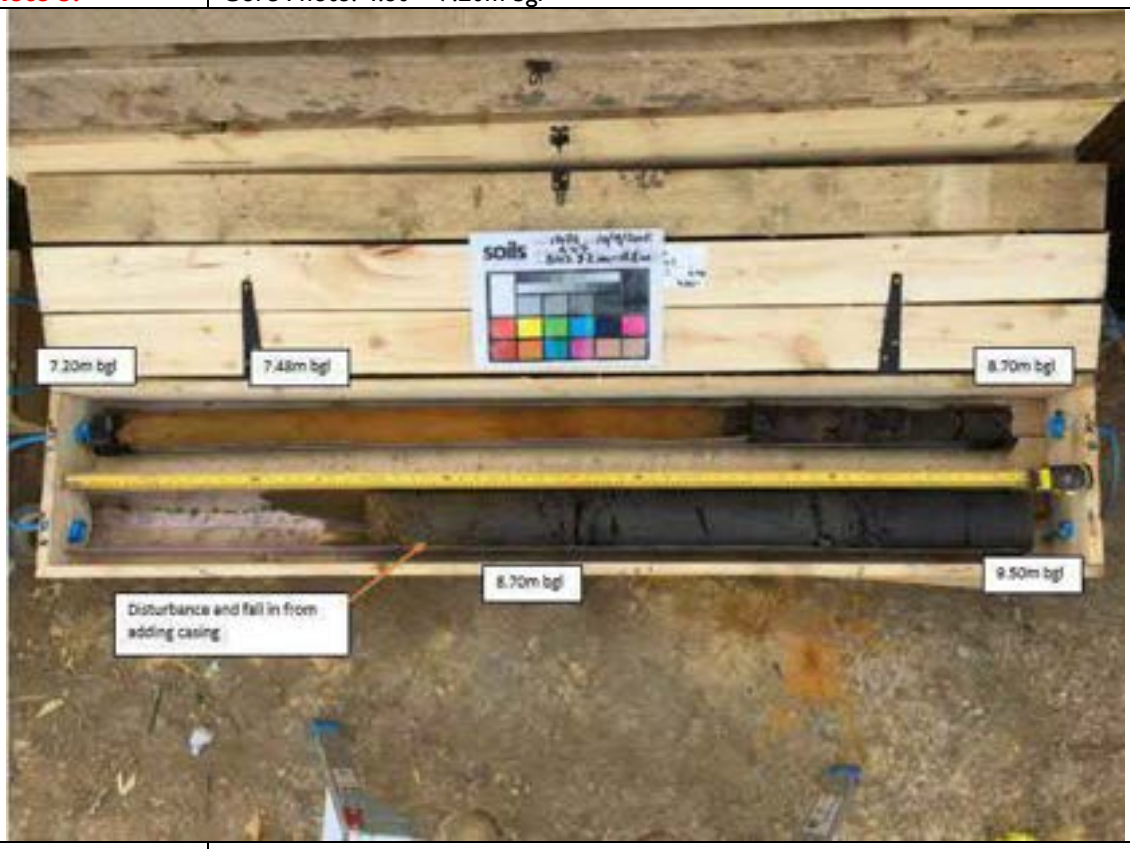


Photo 4:	Core Photo: 7.20 – 9.50m bgl

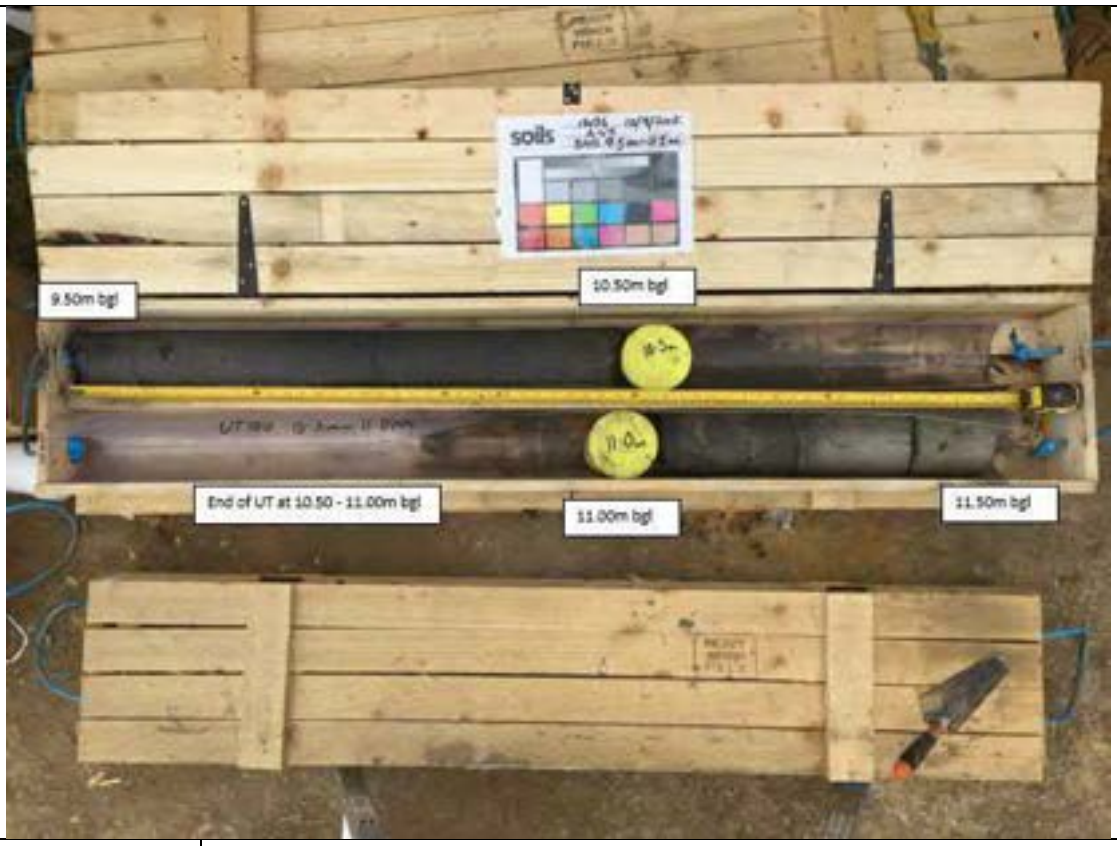


Photo 5:	Core Photo: 9.50 – 11.50m bgl

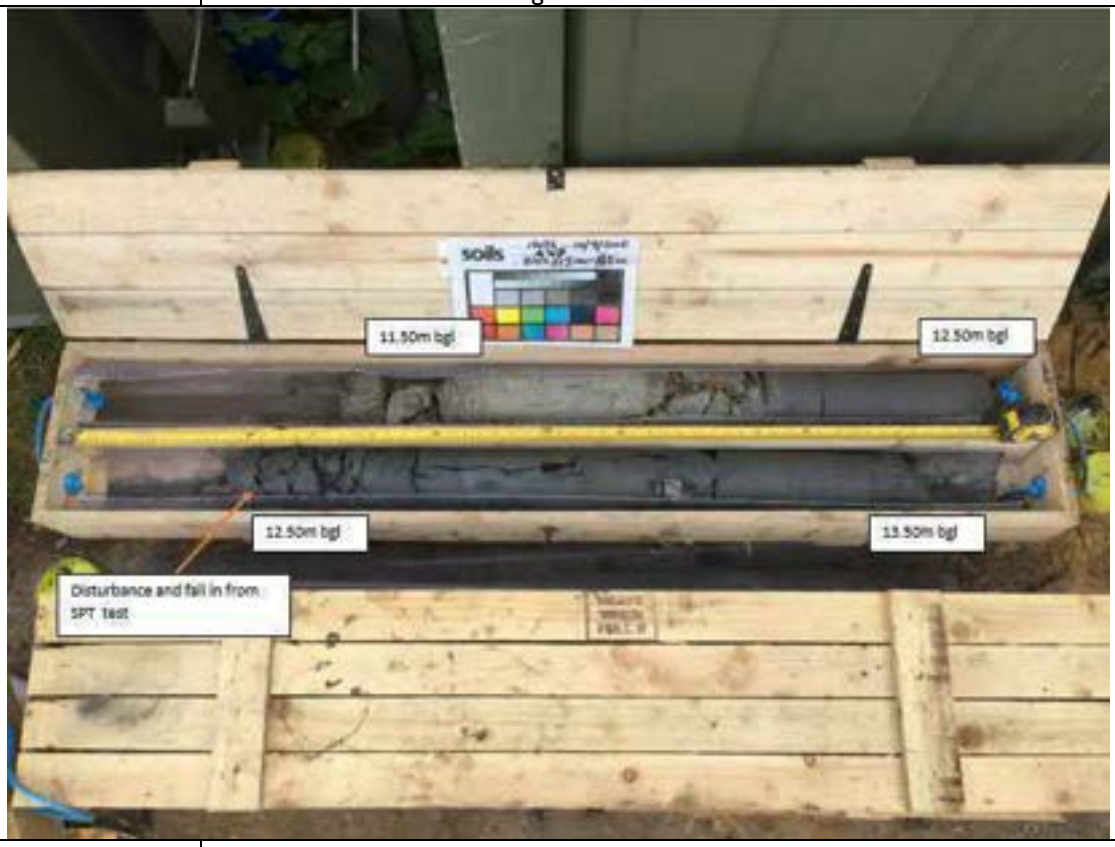


Photo 6:	Core Photo: 11.50 – 13.50m bgl



Photo 7:	Core Photo: 13.50 – 15.50m bgl



Photo 8:	Core Photo: 15.50 – 17.50m bgl



Photo 9:	Core Photo: 17.50-19.50m bgl



Photo 10:	Core Photo: 19.50-21.50m bgl



Photo 11:	Core Photo: 21.50-23.50m bgl



Photo 12:	Core Photo: 23.50-25.00m bgl

1.17 BH16



Photo 1:	Inspection Pit to 1.00m bgl



Photo 2:	Core Photo: 1.00 – 2.00m bgl



Photo 3:	Core Photo: 2.00 – 3.00m bgl



Photo 4:	Core Photo: 3.00 – 4.26m bgl



Photo 5:	Core Photo: 4.26 – 5.50m bgl



Photo 6:	Core Photo: 7.10 – 9.50m bgl (No photo available for 5.50 – 7.10m bgl)



Photo 7:	Core Photo: 9.50 – 12.50m bgl



Photo 8:	Core Photo: 12.50 – 15.50m bgl



Photo 9:	Core Photo: 15.50 – 18.50m bgl



Photo 10:	Core Photo: 18.50 – 20.00m bgl



Photo 11:	Reinstatement – location has since been ploughed

1.19 BH17 (RC)



Photo 1:	Inspection Pit to 0.80m bgl



Photo 2:	Core Photo: 0.80 – 3.00m bgl



Photo 3:	Core Photo: 3.00 – 6.00m bgl



Photo 4:	Core Photo: 6.00 – 10.50m bgl



Photo 5:	Core Photo: 10.50 – 13.50m bgl



Photo 6:	Core Photo:13.50 – 15.00m bgl



Photo 7:	Reinstatement

1.20 BH18 (RC)



Photo 1:	Inspection Pit to 1.00m bgl



Photo 2:	Core Photo: 1.00 – 3.00m bgl



Photo 3:	Core Photo: 3.00 – 6.00m bgl



Photo 4:	Core Photo: 7.50 – 10.50m bgl. No recovery from 6.00 to 7.50m bgl

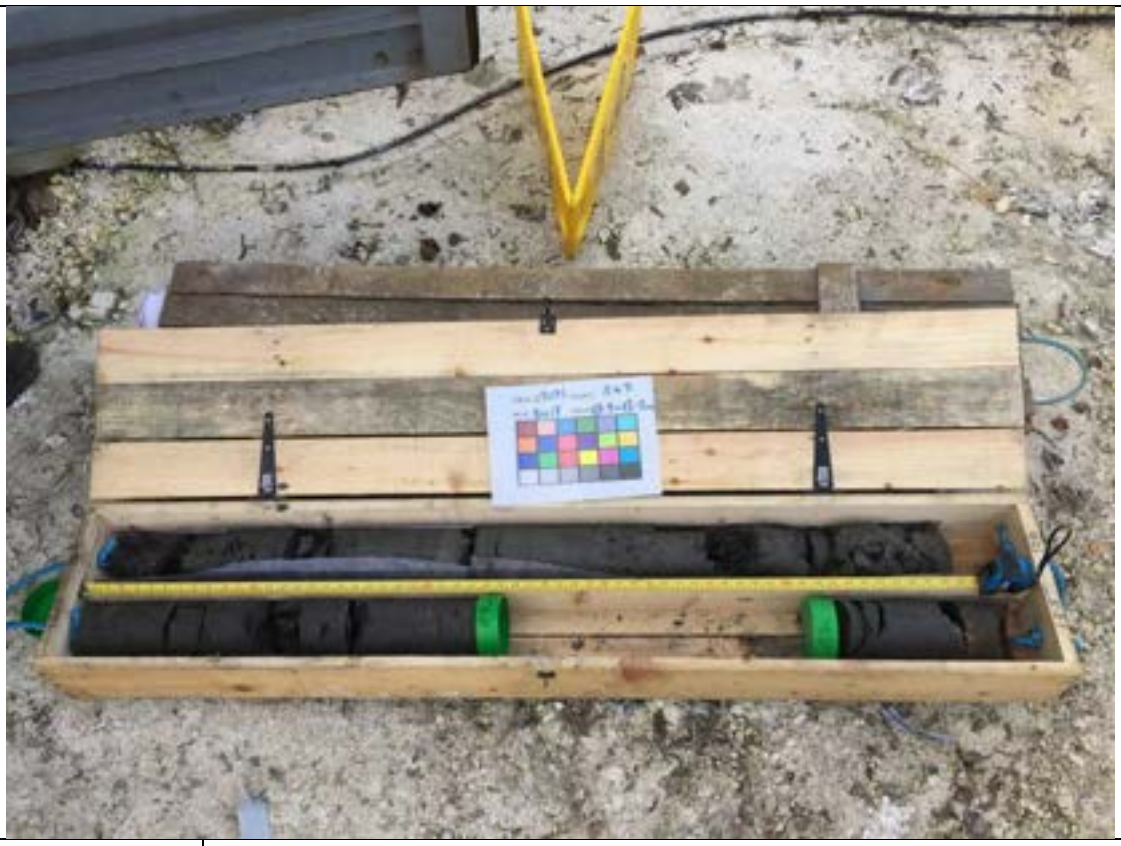


Photo 5:	Core Photo: 10.50 – 13.50m bgl

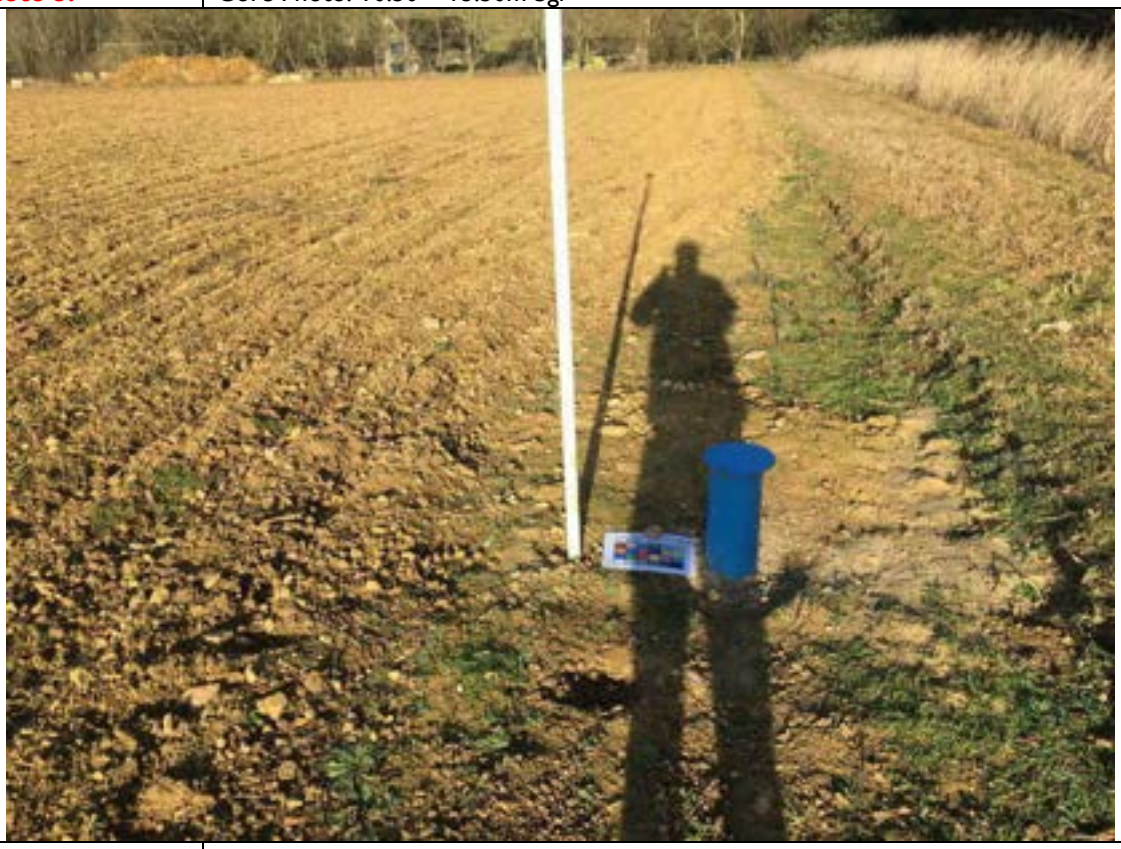


Photo 6:	Reinstatement and well installation.

1.21 BH19 (DS +RC)



Photo 1:	Inspection Pit to 0.50m bgl



Photo 2:	Core Photo: 0.50 – 3.00m bgl



Photo 3:	Core Photo: 3.00 – 7.50m bgl



Photo 4:	Core Photo: 7.50 – 10.50m bgl



Photo 4:	Core Photo: 10.50 – 12.00m bgl (Photo board labelled incorrectly).



Photo 5:	Core Photo: Reinstatement – Location has since been ploughed

1.22 BH20



Photo 1:	Reinstatement – Location has since been ploughed

Contents

1.23 BH21 (DS + RC) 72
1.24 BH21A (RC) 75
1.25 BH22 (DS+RC) 77
1.26 BH24 (DS+RC) 82
1.27 BH24A (DS+RC) 85
1.28 BH25 (CP) 88
1.29 BH26 (DS+RC) 89
1.30 BH27 (CP) 92
1.31 BH28 (CP) 93
1.32 BH29 (CP) 94
1.33 BH30 (CP) 95
1.34 BH31 (CP + RC) 96
1.35 BH32 (CP + RC) 100
1.36 BH33 (DS+RC) 105
1.37 BH34 (DS+RC) 113
1.38 BH35 (CP) 120
1.39 BH36 (CP) 121
1.40 BH37 (CP) 122
1.41 BH37A (CP) 123
1.42 BH38 (CP) 124
1.43 BH39 (CP) 125
1.44 BH40 (CP) 126
1.45 BH41 (CP) 127

1.23 BH21 (DS + RC)

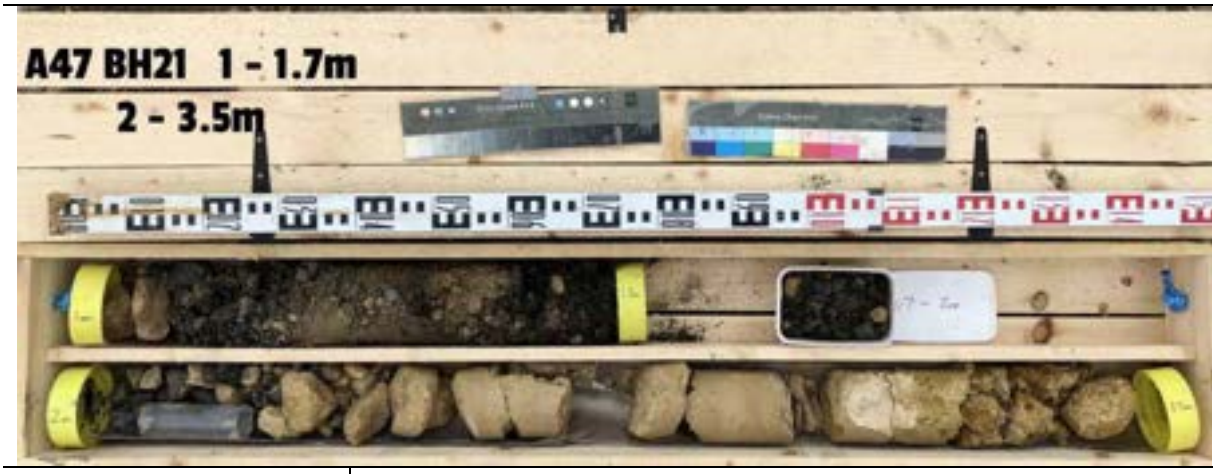


Photo 1:	Core Photo: 1.00 – 3.50m bgl. HDIP to 0.60. no photograph from 0.60 – 1.00m bgl



Photo 2:	Core Photo: 3.50 – 6.50m bgl



Photo 3:	Core Photo: 8.00 – 9.50m bgl. No Photograph from 6.50 – 8.00m bgl



Photo 4:	Core Photo: 10.00 – 13.00m bgl



Photo 5:	Core Photo: 13.00 – 14.50m bgl



Photo 6:	Reinstatement

1.24 BH21A (RC)



Photo 1:	Core Photo: 10.60 – 12.00m bgl. Open holed to 10.00m bgl



Photo 2:	Core Photo:12.00 – 13.50m bgl



Photo 3:	Core Photo: 13.50 - 15.00m bgl

1.25 BH22 (DS+RC)



Photo 1:	Core Photo 1.00 – 2.50m bgl. Inspection Pit to 1.00m bgl – Photo not available



Photo 2:	Core Photo: 2.50 – 3.00m bgl



Photo 3:	Core Photo: 3.00 – 4.50m bgl



Photo 4:	Core Photo: 4.50 – 6.00m bgl



Photo 5:	Core Photo: 6.00 – 7.50m bgl



Photo 6:	Core Photo: 7.50 – 10.50m bgl (Photo board labelled incorrectly)



Photo 7:	Core Photo: 10.50 – 13.50m bgl



Photo 8:	Core Photo: 13.50 – 15.00m bgl



Photo 9:	Reinstatement of BH22

1.26 BH24 (DS+RC)



Photo 1:	Core Photo: 5.00 – 6.50m bgl. No photo available for G.L to 5.00m bgl



Photo 2:	Core Photo: 9.00 – 10.50m bgl. No photo available from 6.50 – 9.00m bgl.



Photo 3:	Core Photo: 10.50 – 12.00m bgl



Photo 4:	Core Photo: 12.00 – 13.50m bgl



Photo 5:	Core Photo: 13.50 – 15.00m bgl



Photo 6:	BH24 reinstatement and well installation.

1.27 BH24A (DS+RC)



Photo 1:	Core Photo: 6.50 – 9.50m bgl. Location open holed to 6.50m bgl.



Photo 2:	Core Photo: 9.50 – 11.00m bgl



Photo 3:	Core Photo: 11.00 - 12.50m bgl



Photo 4:	Core Photo: 12.50 – 14.00m bgl



Photo 5:	Core Photo: 14.00 – 15.50m bgl

1.28 BH25 (CP)



Photo 1:	BH25 Reinstatement and well installation. No further photos available

1.29 BH26 (DS+RC)



Photo 1:	Core Photo: 1.20 – 3.70m bgl. No photograph available of inspection pit.



Photo 2:	Core Photo: 3.70 – 6.20m bgl. UT sample take between 5.20 – 5.70m bgl



Photo 3:	Core Photo: 6.20 – 9.20m bgl



Photo 4:	Core Photo: 9.20 – 12.20m bgl



Photo 5:	Core Photo: 12.20 – 15.20m bgl



Photo 6:	Core Photo: BH26 Reinstatement and well installation.

1.30 BH27 (CP)



Photo 1:	Reinstatement and well installation. No further photos available.

1.31 BH28 (CP)



Photo 1:	Reinstatement and well installation. No further photos available.

1.32 BH29 (CP)



Photo 1:	BH29 Reinstatement and well Installation No further photos available.

1.33 BH30 (CP)



Photo 1:	Reinstatement and well installation. No further photos available.

1.34 BH31 (CP + RC)



Photo 1:	Core Photo: 9.80 – 10.50m bgl. Hole drilled with CP from 0.60m bgl to 9.80m bgl. No photographic evidence available.



Photo 2:	Core Photo: 12.00 – 13.50m bgl. No photographic evidence available for 10.50m bgl – 12.00m bgl



Photo 3:	Core Photo: 13.50 – 15.00 m bgl



Photo 4:	Core Photo: 15.00m bgl – 16.50m bgl



Photo 5:	Core Photo: 16.50 – 18.00m bgl



Photo 6:	Core Photo: 18.00 – 19.50m bgl



Photo 7:	Core Photo: 19.50 – 21.00m bgl



Photo 8:	Core Photo: Reinstatement

1.35 BH32 (CP + RC)



Photo 1:	Core Photo:11.70 – 12.50m bgl. CP drilled to 11.70m bgl



Photo 2:	Core Photo: 12.50 – 14.00m bgl



Photo 3:	Core Photo:14.00 – 15.50m bgl



Photo 4:	Core Photo: 15.50 – 17.00m bgl



Photo 5:	Core Photo: 17.00 – 18.50m bgl



Photo 6:	Core Photo: 18.50 – 20.00m bgl



Photo 7:	Core Photo: 20.00 – 21.50m bgl

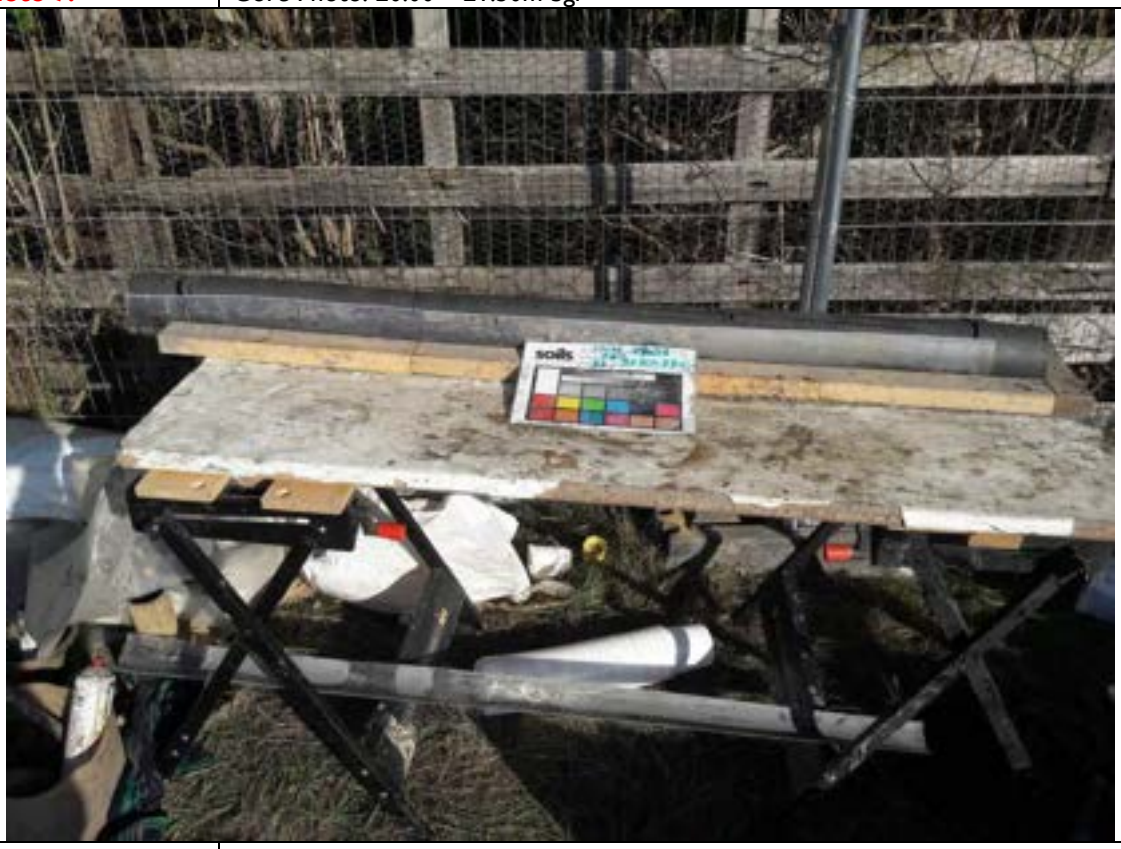


Photo 8:	Core Photo: 21.50 – 23.00m bgl



Photo 9:	Core Photo: 23.00 – 25.50m bgl



Photo 10:	Reinstatement of BH32

1.36 BH33 (DS+RC)



Photo 1:	Inspection pit to 1.00m bgl



Photo 2:	Core Photo: 1.00 – 2.50m bgl

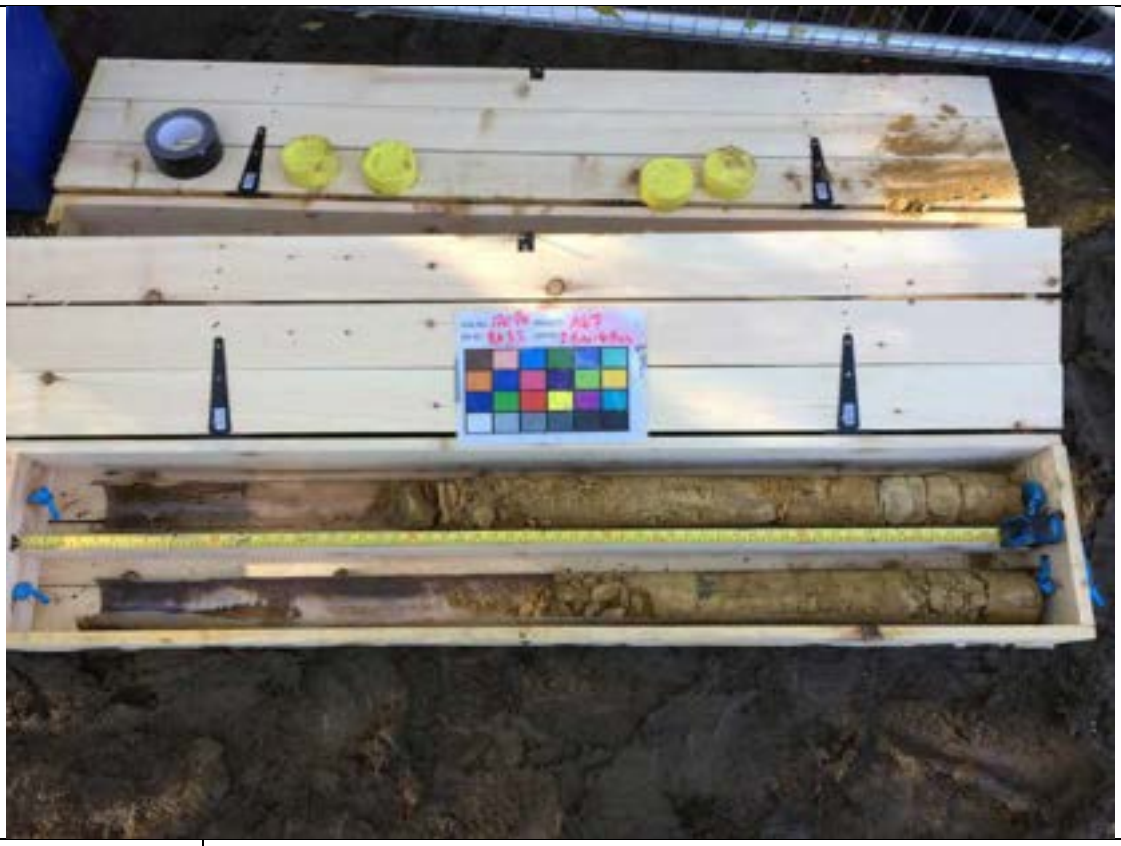


Photo 3:	Core Photo: 2.50 – 4.50m bgl



Photo 4:	Core Photo: 4.50 – 6.00m bgl



Photo 5:	Core Photo: 6.00 – 6.40m bgl



Photo 6:	Core Photo: 6.40 – 8.00m bgl



Photo 7:	Core Photo: 8.00 – 9.50m bgl



Photo 8:	Core Photo: 10.00 – 11.50m bgl. No photographic evidence from 9.50 – 10.00m bgl due to over core of SPT.



Photo 9:	Core Photo: 11.50 – 11.95m bgl. Hole backfilled due to reaming casing.



Photo 10:	Core Photo: 12.00 – 12.75m bgl



Photo 11:	Core Photo: 14.50 – 16.00m bgl. No core recovery from 12.70 – 14.50m bgl

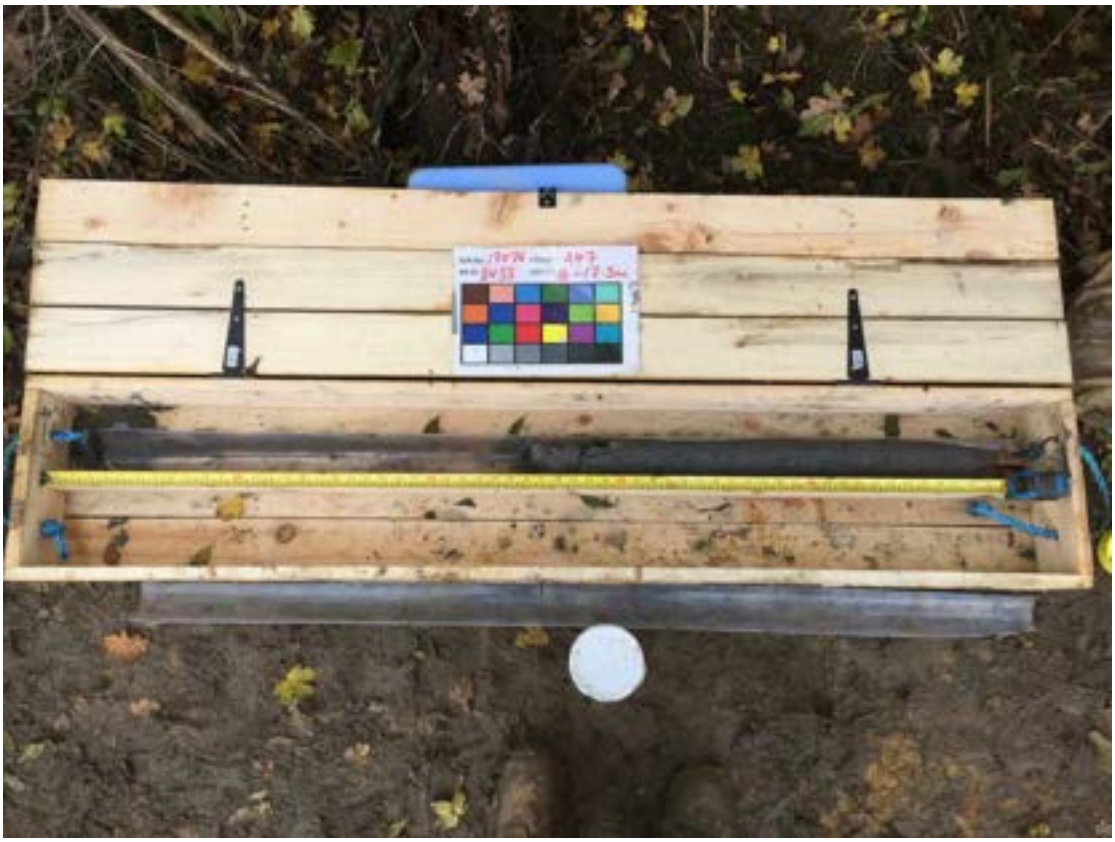


Photo 12:	Core Photo: 16.00 – 17.50m bgl



Photo 13:	Core Photo: 17.50 – 18.60m bgl



Photo 14:	Core Photo: 18.60 – 20.10m bgl



Photo 15:	Core Photo: Reinstatement and Well installation

1.37 BH34 (DS+RC)



Photo 1:	Inspection pit to 1.00m bgl



Photo 2:	Core Photo: 1.50 – 4.50m bgl. No photographic evidence for 1.00 – 1.50m bgl



Photo 3:	Core Photo: 4.50 – 6.00m bgl



Photo 4:	Core Photo: 8.00 – 11.50m bgl. No photographic evidence for 6.00 – 8.00m bgl



Photo 5:	Core Photo: 11.50 – 13.00m bgl



Photo 6:	Core Photo: 13.00 – 14.50m bgl



Photo 7:	Core Photo: 14.50 – 16.00m bgl



Photo 8:	Core Photo: 16.00 - 17.50m bgl



Photo 9:	Core Photo: 17.50 – 19.00m bgl



Photo 10:	Core Photo: 19.00 – 20.50m bgl



Photo 11:	Core Photo: 20.50 – 22.00m bgl



Photo 12:	Core Photo: 22.86 – 24.00m bgl. No photographic evidence for 22.37 – 22.86m bgl



Photo 13:	Core Photo: 24.00 – 25.50m bgl



Photo 14:	Reinstatement and well installation,

1.38 BH35 (CP)

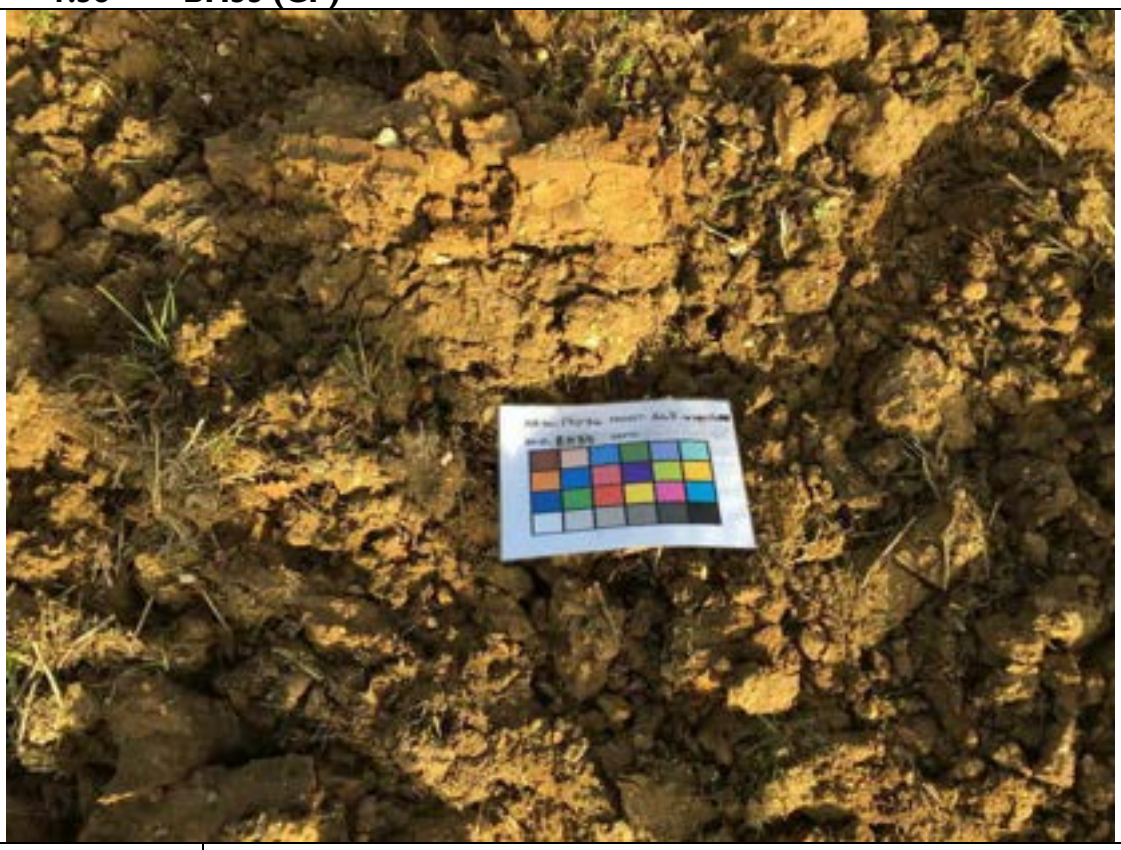


Photo 1:	Reinstatement. Location has since been ploughed,

1.39 BH36 (CP)



Photo 1:	Inspection pit to 1.20m bgl



Photo 2:	Core Photo: Reinstatement and well installation.

1.40 BH37 (CP)



Photo 1:	BH37 Reinstatement

1.41 BH37A (CP)



Photo 1:	BH37 Reinstatement and well installation

1.42 BH38 (CP)



Photo 1:	BH38 Reinstatement

1.43 BH39 (CP)



Photo 1:	BH39 Reinstatement and well installation

1.44 BH40 (CP)



Photo 1:	BH40 Reinstatement

1.45 BH41 (CP)



Photo 1:	Inspection pit to 0.70m bgl



Photo 2:	Core Photo: Reinstatement

Soils Limited
Geotechnical & Environmental Consultants

Newton House
Cross Road, Tadworth
Surrey KT20 5SR

T 01737 814221
[redacted]

Contents

2.1 TP01 2
2.2 TP02 3
2.3 TP03 5
2.4 TP04 7
2.5 TP05 9
2.6 TP06 11
2.7 TP07 13
2.8 TP08 14
2.9 TP09 16
2.10 TP09A 18
2.11 TP10 20
2.12 TP11 22
2.13 TP12 23
2.14 TP13 25
2.15 TP14 27
2.16 TP14A 29
2.17 TP15 31
2.18 TP16 33
2.19 TP17 35
2.20 TP18 37
2.21 TP19 39
2.22 TP20 41
2.23 TP21 42
2.24 TP22 43
2.25 TP23 44
2.26 TP27 46
2.27 TP28 48
2.28 TP29 49
2.29 TP30 51

2.1 TP01



Photo 1:	Reinstatement of TP01. No further photos available

2.2 TP02



Photo 1:	Trial Pit Photo: Arisings



Photo 2:	Trial Pit Photo: Side walls to 1.70m bgl



Photo 3:	Trial Pit Photo: Reinstatement

2.3 TP03



Photo 1:	Trial Pit Photo: excavation to 1.70m bgl



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement. Field has since been ploughed

2.4 TP04



Photo 1:	Trial Pit Photo: Side wall of excavation to 2.30m bgl



Photo 2:	Trial Pit Photo: Arisings

	
Photo 3:	Trial Pit Photo: Reinstatement. Field has since been ploughed

2.5 TP05



Photo 1:	Trial Pit Photo: Trial Hole excavated to 2.80m bgl.



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement. Field has since been ploughed

2.6 TP06



Photo 1:	Trial Pit Photo: Side walls excavated to 1.60m bgl



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement. Field has since been ploughed

2.7 TP07



Photo 1:	Trial Pit Photo: Reinstatement of TP07. No further photos available

2.8 TP08



Photo 1:	Trial Pit Photo: Side wall excavated to 2.40m bgl



Photo 2:	Trial Pit Photo: Arisings to 2.40m bgl

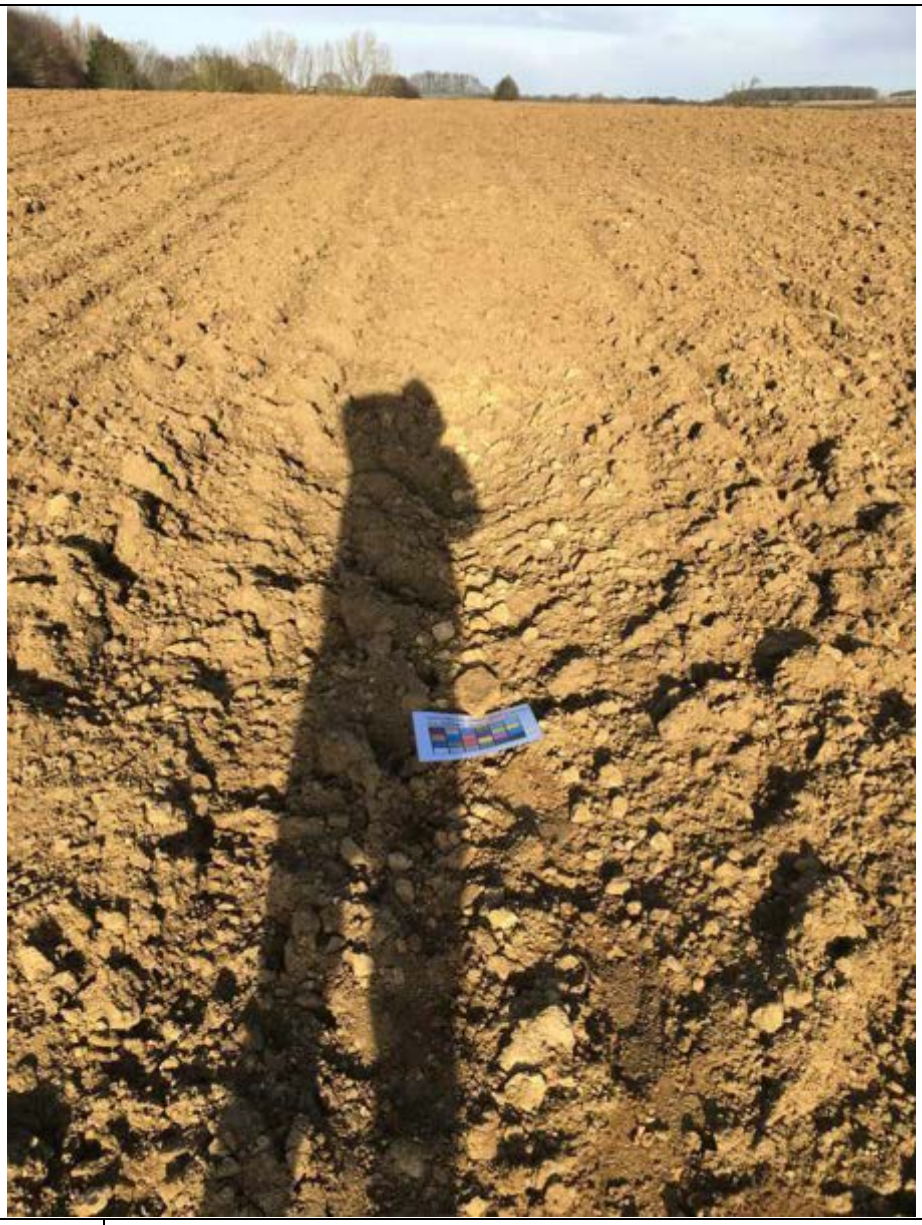


Photo 3:	Trial Pit Photo: Reinstatement. Field has since been ploughed

2.9 TP09



Photo 1:	Trial Pit Photo: Side profile at 4.50m bgl



Photo 2:	Trial Pit Photo: Dis-used and unattached land drain at 0.70m bgl



Photo 3:	Trial Pit Photo: Reinstatement

2.10 TP09A



Photo 1:	Trial Pit Photo: side profile at 4.50m bgl



Photo 2:	Trial Pit Photo: Arisings.

	
Photo 3:	Trial Pit Photo: Reinstatement

2.11 TP10



Photo 1:	Trial Pit Photo: Profile to 3.10m bgl



Photo 2:	Trial Pit Photo: Arisings to 3.10m bgl



Photo 3:	Trial Pit Photo: TP10 Reinstatement

2.12 TP11

No Photos available for TP11.

2.13 TP12



Photo 1:	Trial Pit Photo: Side wall excavation of TP11



Photo 2:	Trial Pit Photo: Arisings during excavation



Photo 3:	Trial Pit Photo: Reinstatement of TP11

2.14 TP13



Photo 1:	Trial Pit Photo: Profile of TP13 at 4.50m bgl



Photo 2:	Trial Pit Photo: Arisings from TP13 at 4.50m bgl

	
Photo 3:	Trial Pit Photo: Reinstatement

2.15 TP14

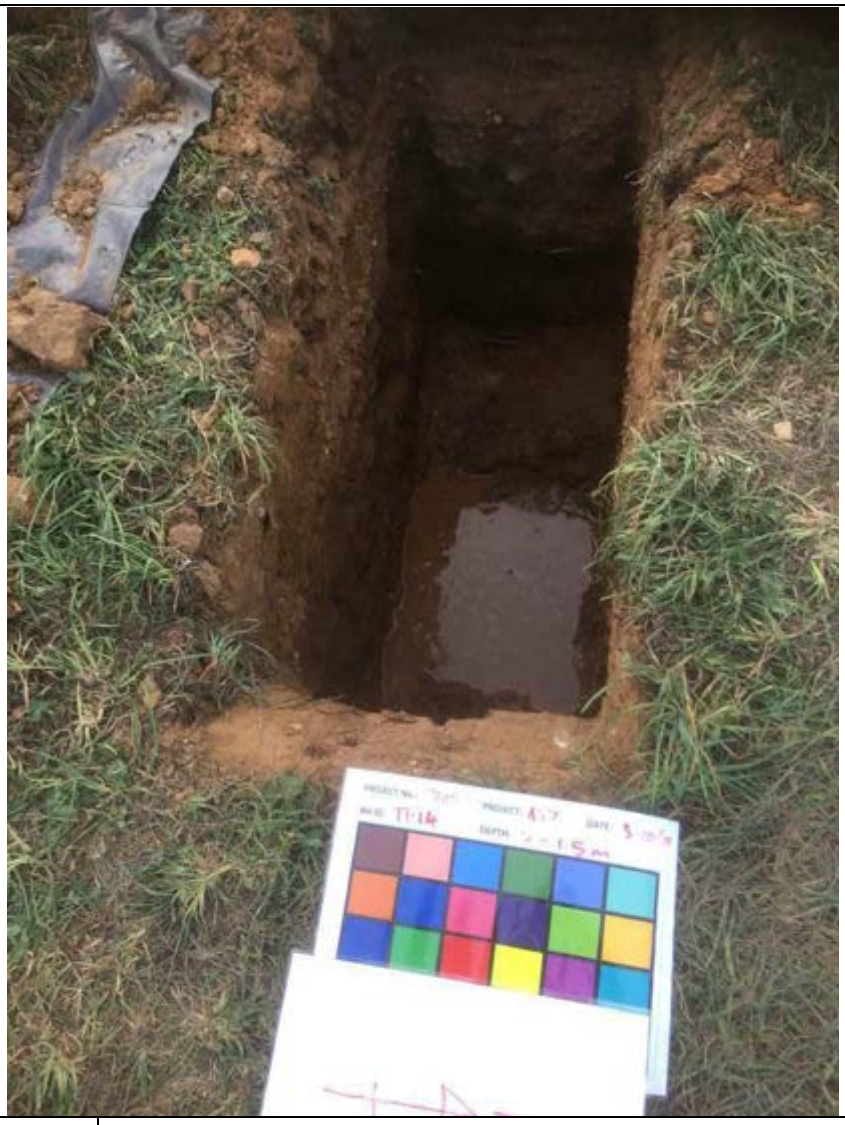


Photo 1:	Trial Pit Photo: Side walls during infiltration testing at 1.50m bgl



Photo 2:	Trial Pit Photo: Arisings at 1.50m bgl



Photo 3:	Trial Pit Photo: Reinstatement

2.16 TP14A



Photo 1:	Trial Pit Photo: Side walls at 4.50m bgl



Photo 2:	Trial Pit Photo: Arisings at 4.50m bgl



Photo 3:	Trial Pit Photo: Reinstatement of TP14A

2.17 TP15



Photo 1:	Trial Pit Photo: Side profile



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement

2.18 TP16



Photo 1:	Trial Pit Photo: side wall profile at 2.00m bgl



Photo 2:	Trial Pit Photo: Arisings from 2.00m bgl



Photo 3:	Trial Pit Photo: Reinstatement. Location has since been ploughed

2.19 TP17



Photo 1:	Trial Pit Photo: Side wall excavated to 3.05m bgl



Photo 2:	Trial Pit Photo: Arisings at 3.05m bgl



Photo 3:	Trial Pit Photo: Reinstatement. Location has since been ploughed

2.20 TP18



Photo 1:	Trial Pit Photo: Site wall excavated to 4.50m bgl



Photo 2:	Trial Pit Photo: Arisings

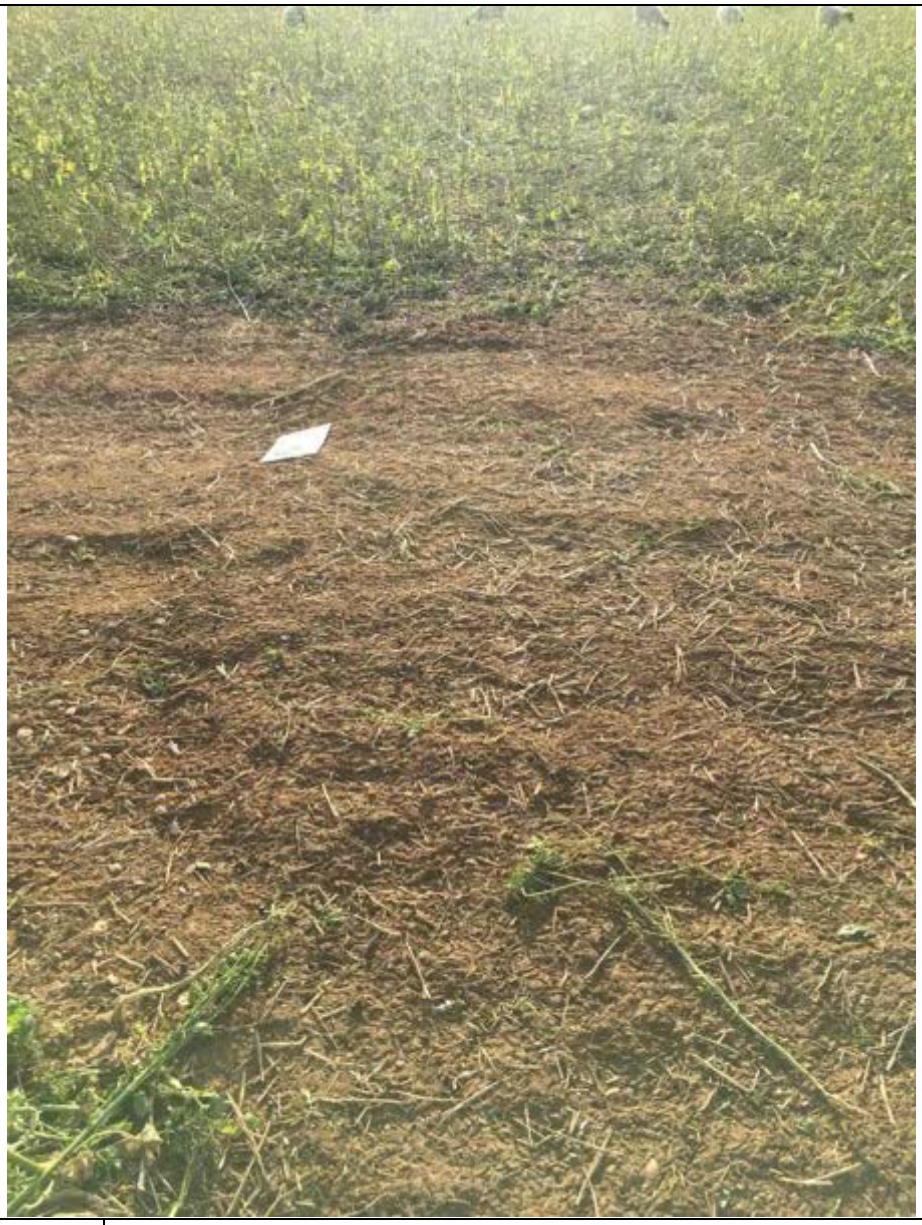


Photo 3:	Trial Pit Photo: Reinstatement

2.21 TP19



Photo 1:	Trial Pit Photo: Side wall excavated to 4.50m bgl



Photo 2:	Trial Pit Photo: Arisings

	
Photo 3:	Trial Pit Photo: Reinstatement. Location has been tracked over,

2.22 TP20



Photo 1:	Trial Pit Photo: Side wall profile at 4.50m bgl



Photo 2:	Trial Pit Photo: Arisings from TP20. No reinstatement photo available.

2.23 TP21



Photo 1:	Trial Pit Photo: Side wall profile at 4.50m bgl



Photo 2:	Trial Pit Photo: No reinstatement photo available.

2.24 TP22



Photo 1:	Trial Pit Photo: Side wall



Photo 2:	Trial Pit Photo: Arisings. No reinstatement photo available

2.25 TP23



Photo 1:	Trial Pit Photo: Side wall of excavation



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement of trial hole

2.26 TP27



Photo 1:	Trial Pit Photo: Side wall of excavation



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement of trial hole

2.27 TP28



Photo 1:	Trial Pit Photo: Side wall of excavation



Photo 2:	Trial Pit Photo: depth of excavation. No photo of arisings or reinstatement available.

2.28 TP29



Photo 1:	Trial Pit Photo: Side wall of excavation



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo: Reinstatement

2.29 TP30



Photo 1:	Trial Pit Photo: Side wall profile



Photo 2:	Trial Pit Photo: Arisings



Photo 3:	Trial Pit Photo :Reinstatement

Appendix G SPT Hammer Certificates

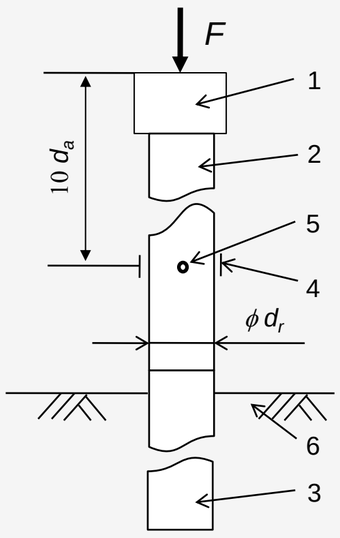
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		PREMIER 110
Client		SOILS LTD
Test No		EQU2033
Test Depth (m)		7.50
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



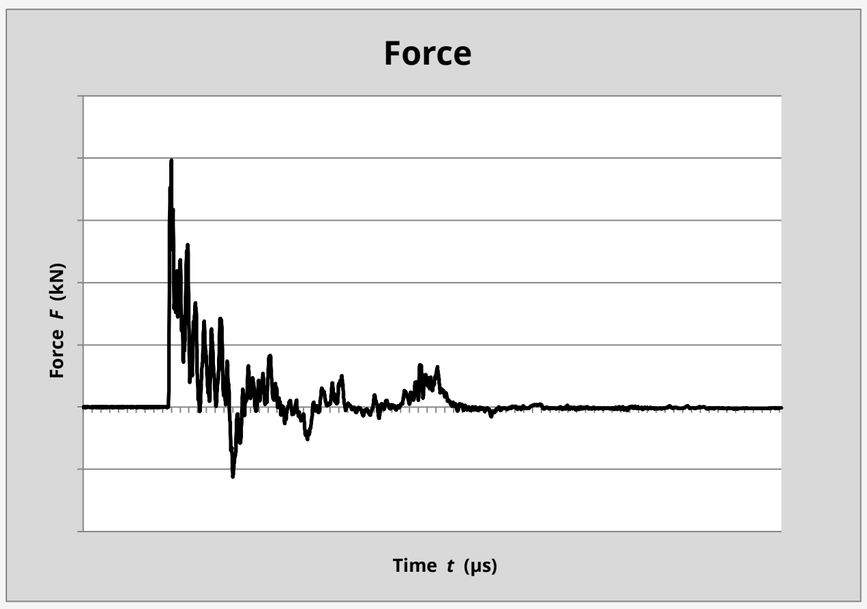
Key

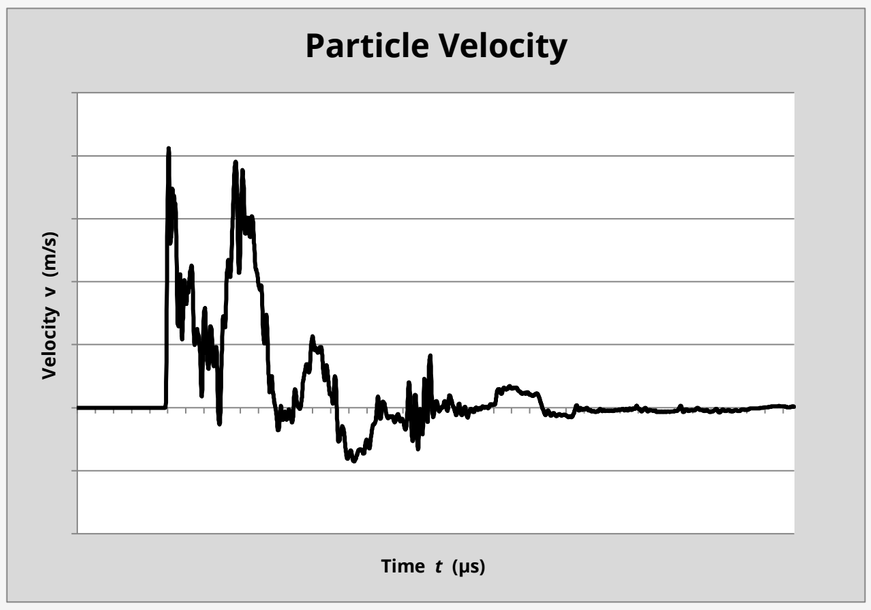
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

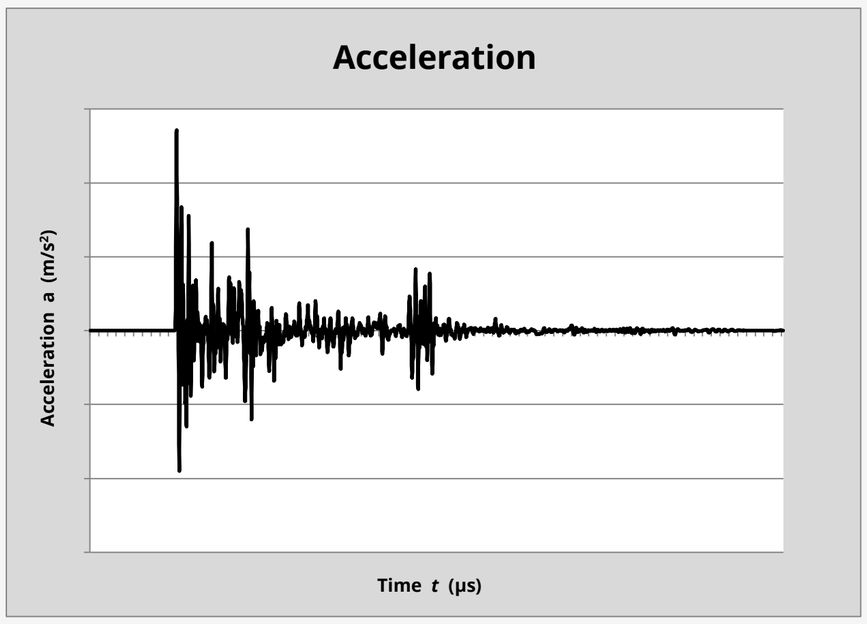
F Force
d_r Diameter of rod

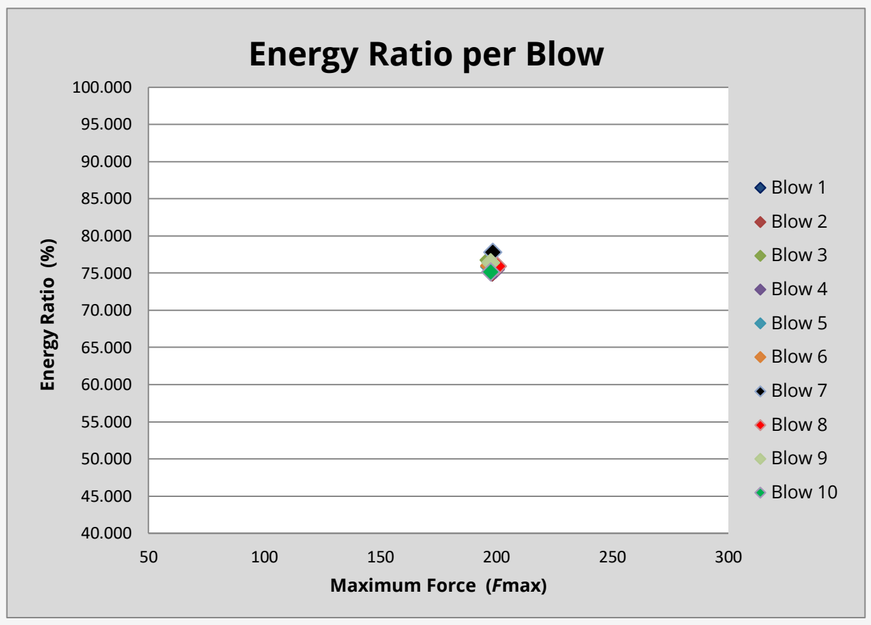
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
09/02/2018	09/02/2019	PREMIER 2









Observations:
1.

E_{meas} =	**0.361** kN-m	
E_{theor} =	**0.473** kN-m	

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **76.23%**

© Copyright 2018

Equipe SPT Analyzer Operators: **AF**

Prepared by:	[redacted]	**Checked by:**	[redacted]	**Date:** 12/02/2018

© Copyright 2018 **Equipe Group**, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing Laboratories
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref:	SEDS4
Test Date:	05/05/2018
Report Date:	05/05/2018
File Name:	SEDS4.spt
Test Operator:	CHARLWOODS

Instrumented Rod Data

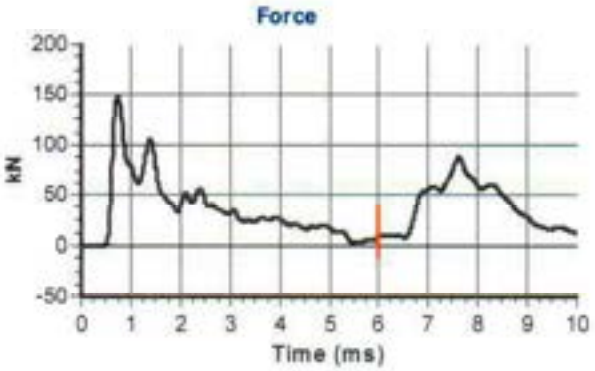
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	6458
Accelerometer No.2:	9607

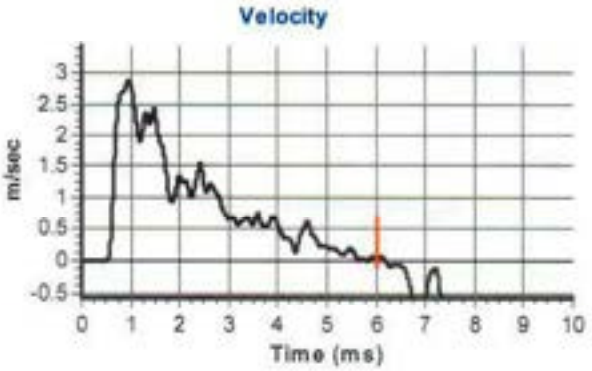
SPT Hammer Information

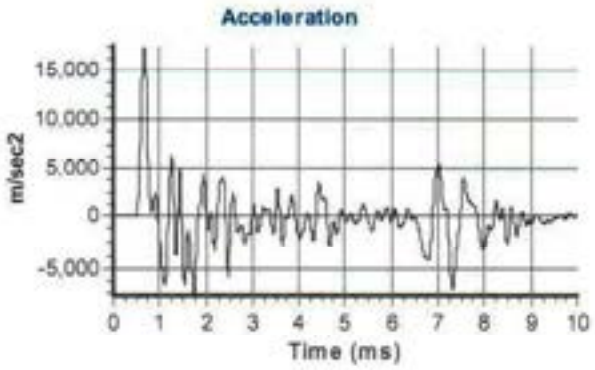
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.5

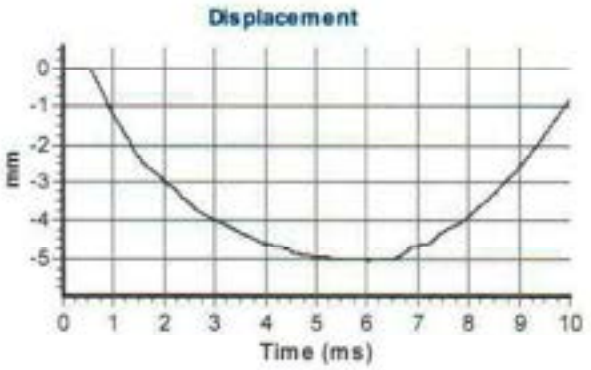
Comments / Location

Charlwoods









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	297

Energy Ratio E_r (%): **63**

[redacted]

Signed: N P Burrows

Title: Field Operations Manager

The recommended calibration interval is 6 months

SPTMAN ver.1.92 All rights reserved, Testconsult ©2010

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR1575
Test Date: 20/07/2018
Report Date: 20/07/2018
File Name: AR1575.spt C.P. SPT HAMMER
Test Operator: BH

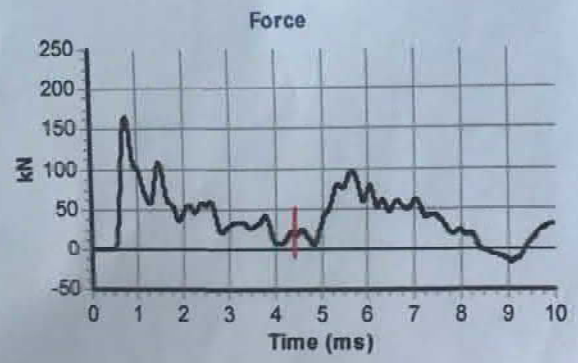
Instrumented Rod Data

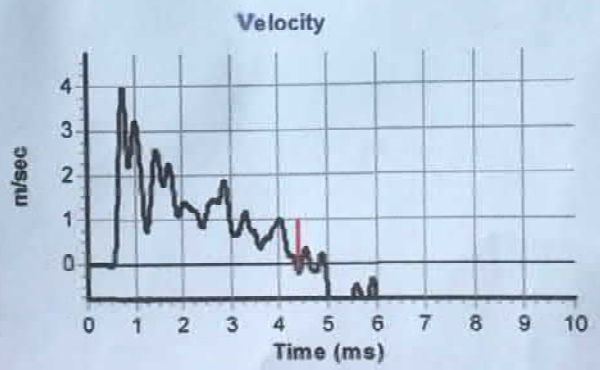
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

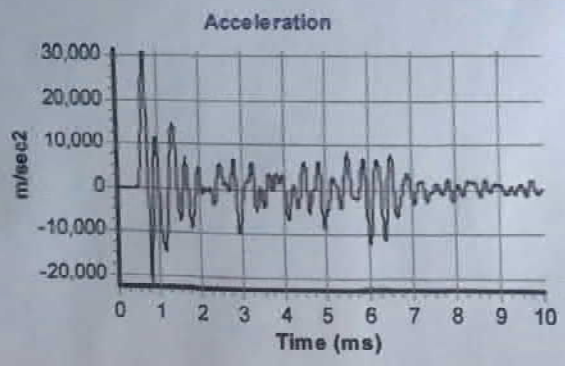
SPT Hammer Information

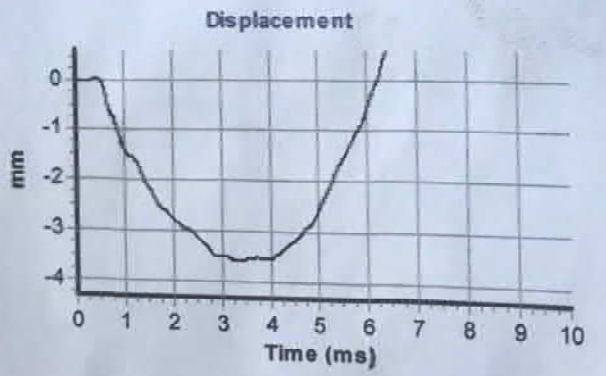
Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location









Calculations

Area of Rod A (mm2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 344

Energy Ratio E_r (%): 73

[redacted]

Signed: M.GARDNER
Title: FITTER

The recommended calibration interval is 12 months

SPTMAN ver.1.93 All rights reserved, Testconsult ©2010

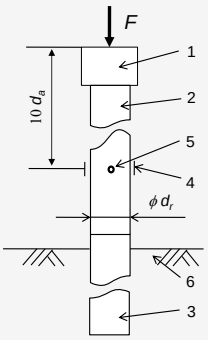
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		AUTO HAMMER
Client		S M ASSOCIATES
Test No		EQU2069
Test Depth (m)		6.50
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



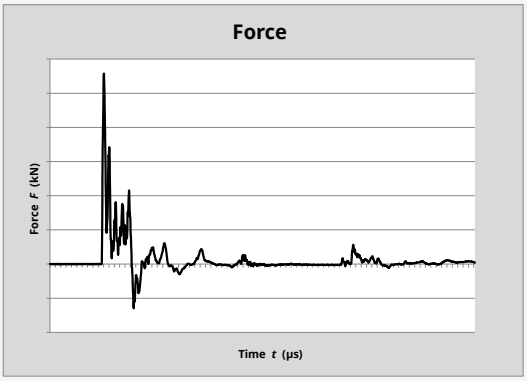
Key

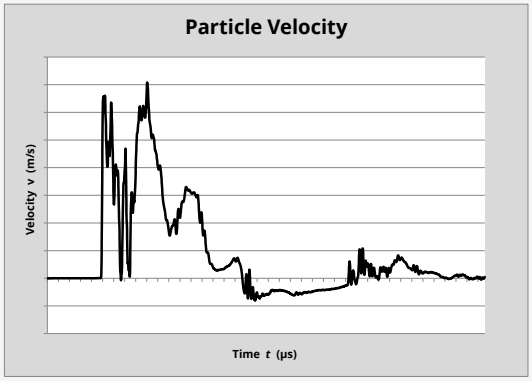
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

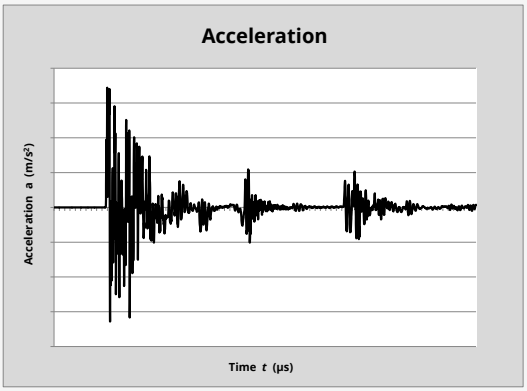
F Force
d_r Diameter of rod

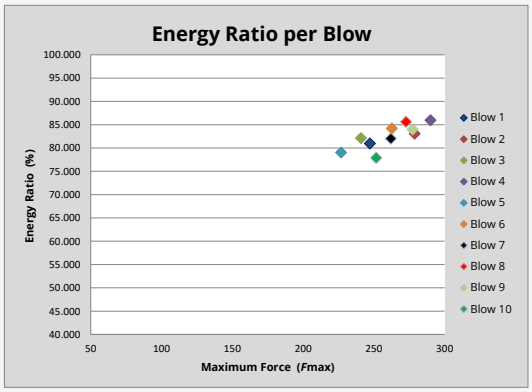
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
17/04/2018	17/04/2019	TEC1301612020









Observations:
1.

E_{meas} =	**0.389**	kN-m
E_{theor} =	**0.473**	kN-m

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **82.18%**

© Copyright 2018

Equipe SPT Analyzer Operators: AF

Prepared by:	[redacted]	**Checked by:**	[redacted]	**Date:**	02/05/2018

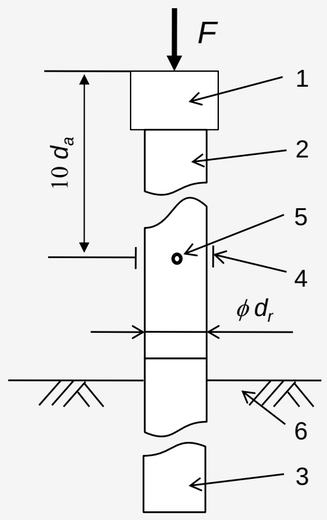
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		AUTO HAMMER
Client		S M ASSOCIATES
Test No		EQU2172
Test Depth (m)		6.40
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



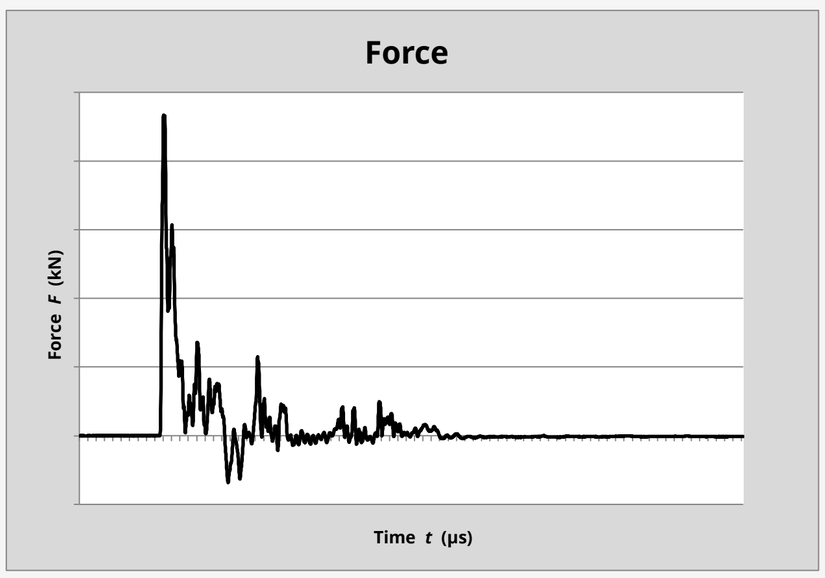
Key

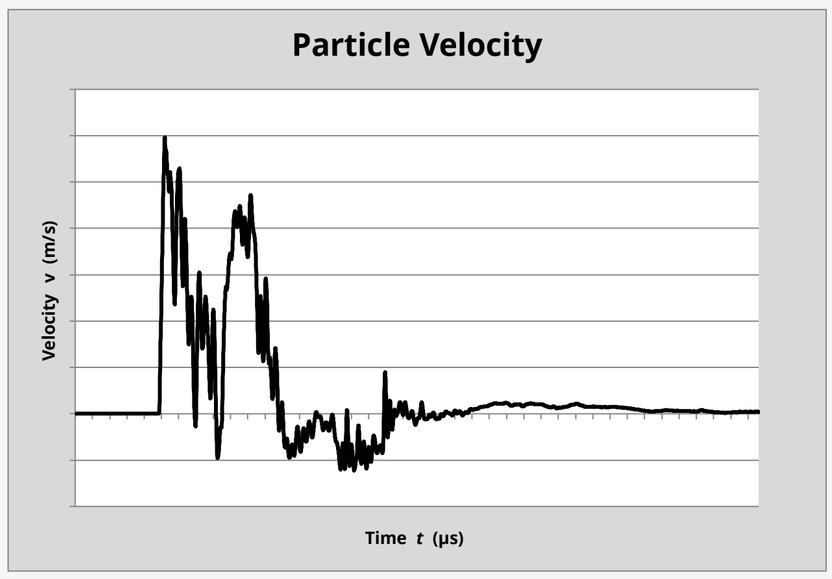
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

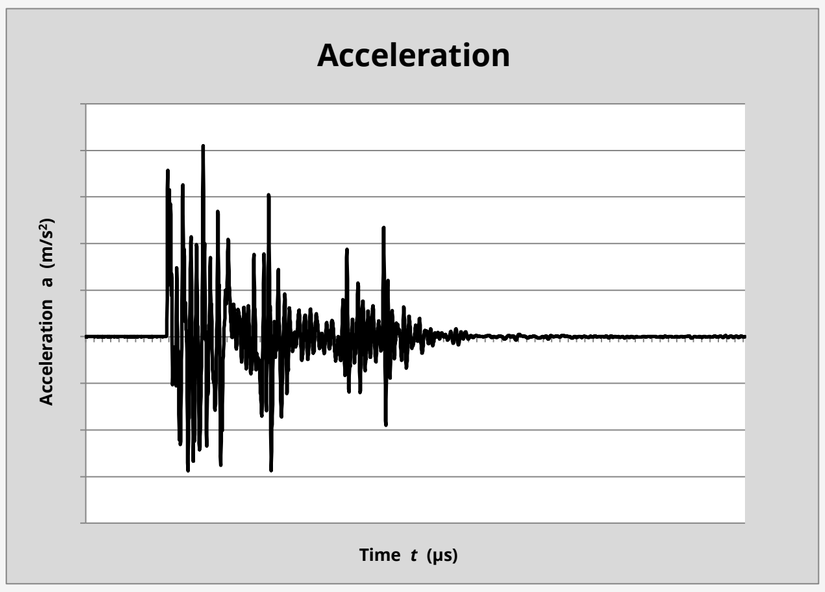
F Force
d_r Diameter of rod

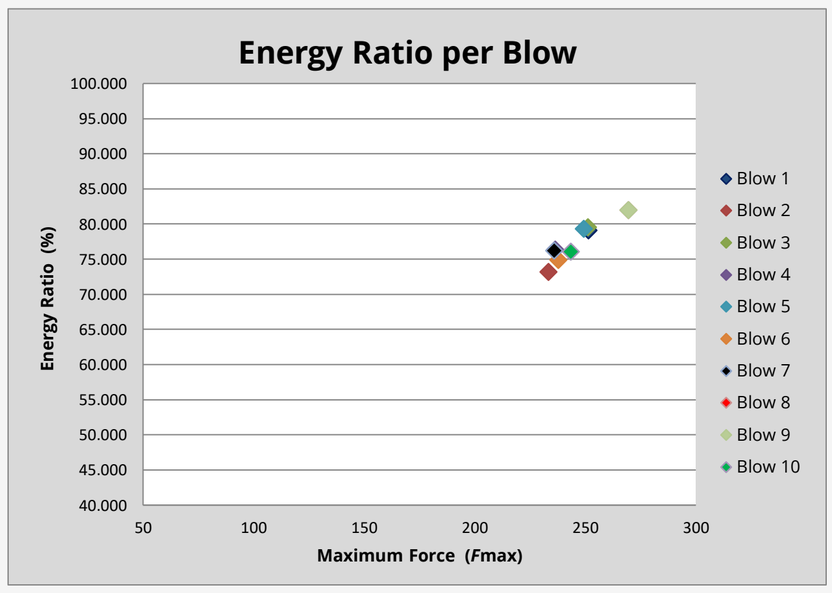
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
16/11/2018	16/11/2019	305









Observations:
1.

E_{meas} =	**0.367** kN-m	
E_{theor} =	**0.473** kN-m	

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **77.57%**

© Copyright 2018

Equipe SPT Analyzer Operators: **AF**

Prepared by:	21/11/2018	**Checked by:**	21/11/2018	**Date:**	**21/11/2018**

© Copyright 2018 **Equipe Group**, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

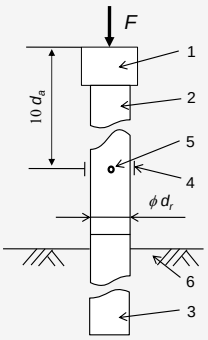
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Client		S M ASSOCIATES
Test No		EQU1944
Test Depth (m)		8.67
Mass of the hamn	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



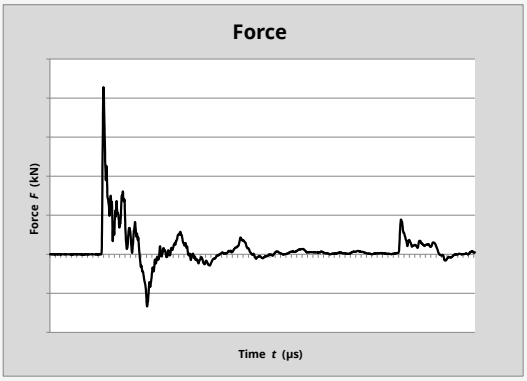
Key

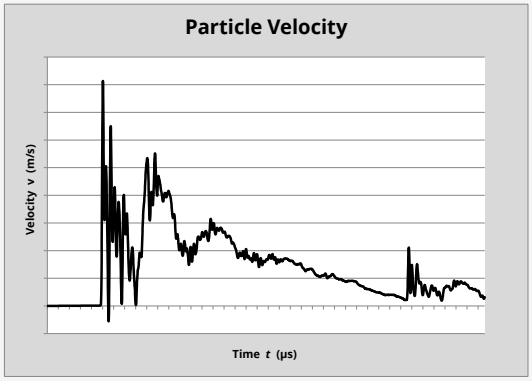
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

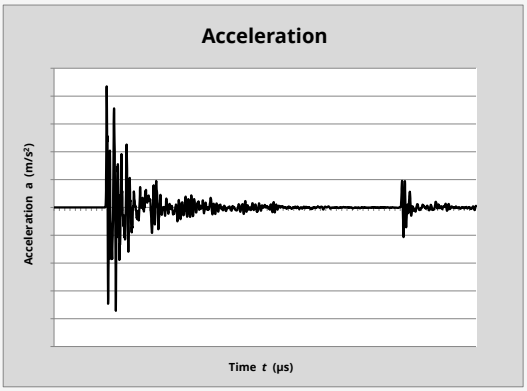
F Force
d_r Diameter of rod

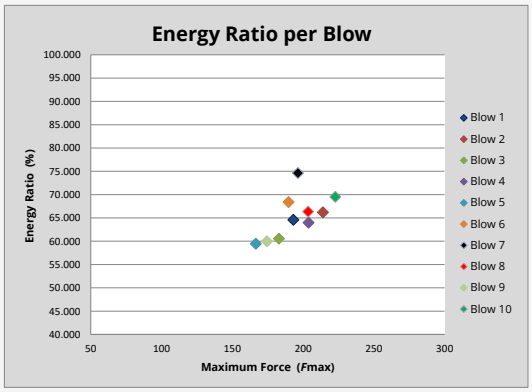
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
08/12/2017	08/12/2018	EQU1642









Observations:
1.

E_{meas} =	**0.308** kN-m	
E_{theor} =	**0.473** kN-m	

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **65.12%**

© Copyright 2017

Equipe SPT Analyzer Operators: JML

Prepared by:	11/12/2017	**Checked by:**	11/12/2017	**Date:**	11/12/2017

© Copyright 2017 **Equipe Group**, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

Soils Limited
Geotechnical & Environmental Consultants

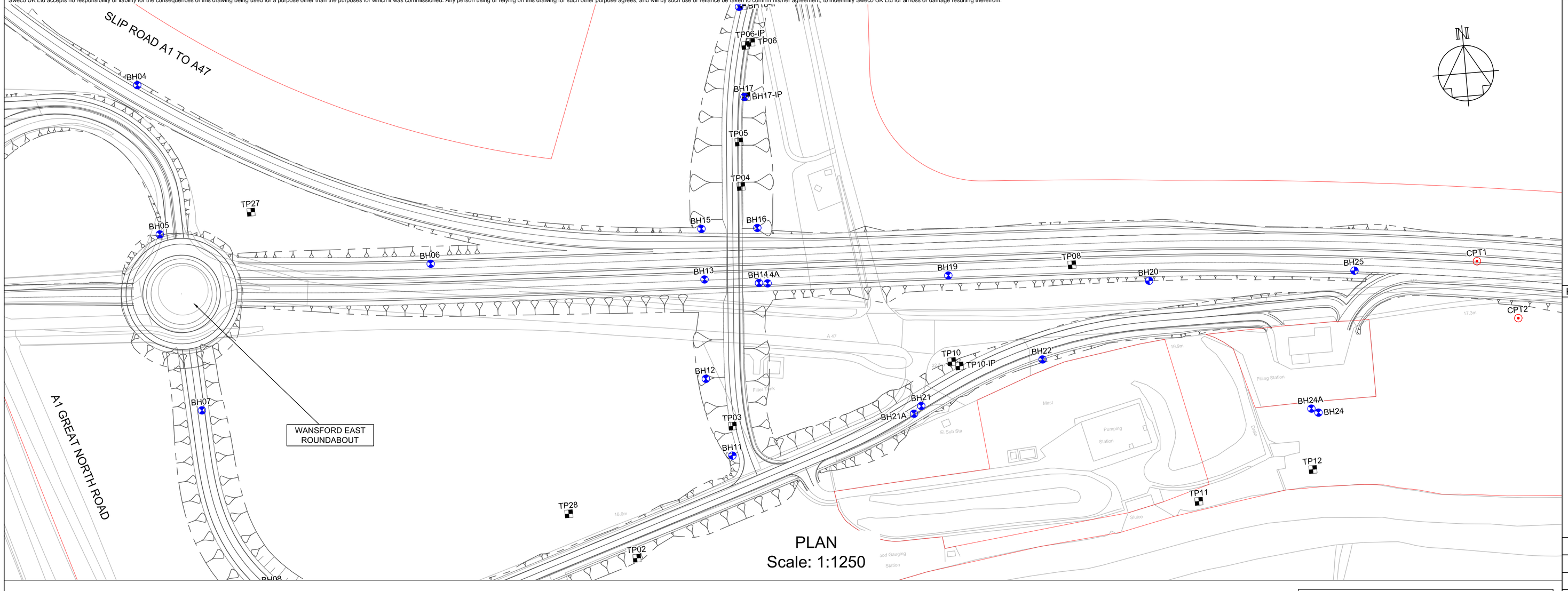
Newton House
Cross Road, Tadworth
Surrey KT20 5SR

T 01737 814221

[redacted]

Appendix C. Geological Long Sections

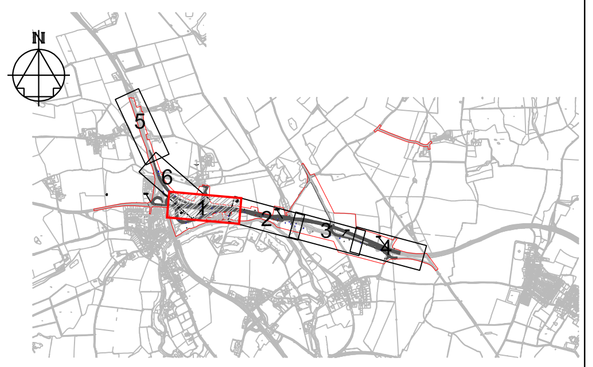
This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT

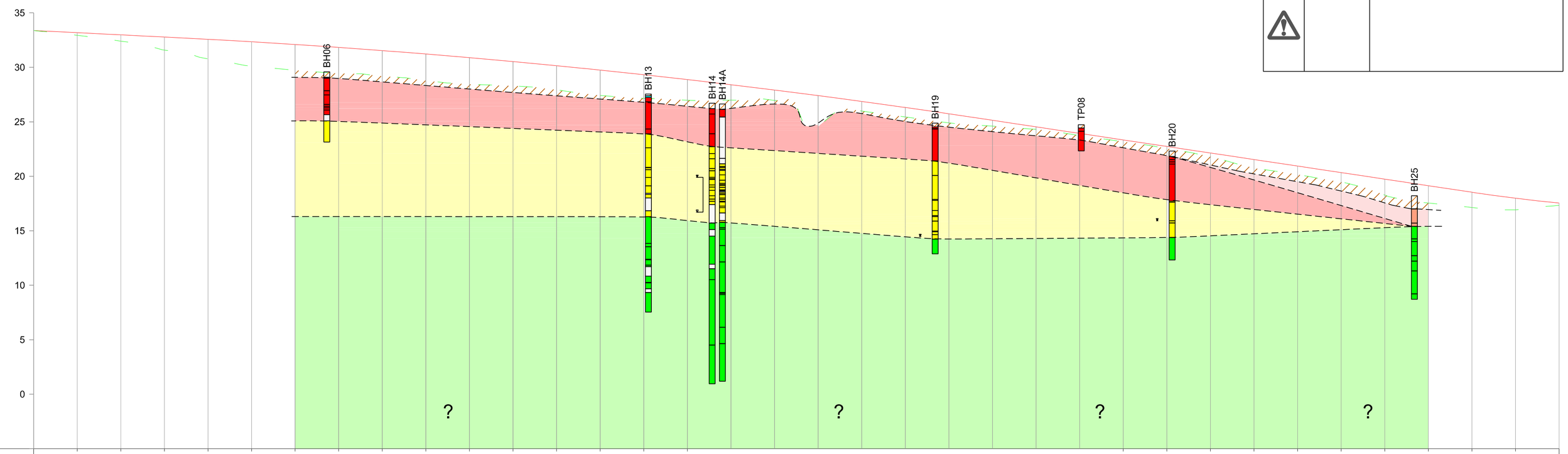


KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS



DATUM RL -5.0

CHAINAGE	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700
DESIGN LEVELS	33.379	33.179	32.979	32.779	32.574	32.347	32.099	31.829	31.536	31.222	30.886	30.527	30.147	29.745	29.320	28.874	28.406	27.916	27.404	26.869	26.313	25.735	25.138	24.538	23.938	23.338	22.738	22.138	21.538	20.938	20.338	19.738	19.138	18.538	17.986	17.542
EXISTING LEVELS	33.374	32.940	32.398	31.581	30.778	30.115	29.729	29.434	29.186	28.772	28.437	28.298	27.937	27.414	27.155	26.982	26.993	26.966	24.652	25.984	25.447	24.905	24.600	24.310	23.735	23.177	22.551	21.811	20.762	20.158	19.473	18.275	17.550	17.137	16.925	17.338

PROFILE
Scale: 1:1250 H, 1:250 V

1:1250 0 62.5m 125m

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Issue for Stage Approval	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
GEOLOGICAL LONGSECTIONS
PLANS & PROFILES
SHEET 1 OF 6

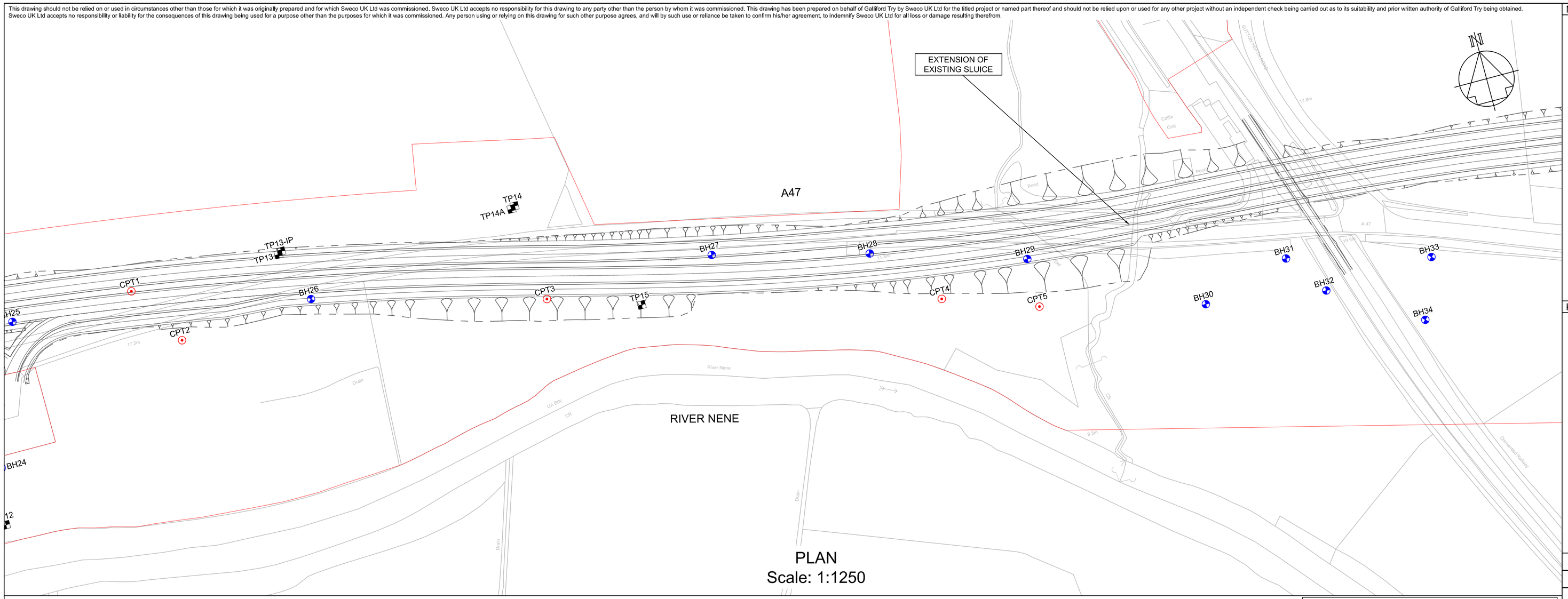
SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30010

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

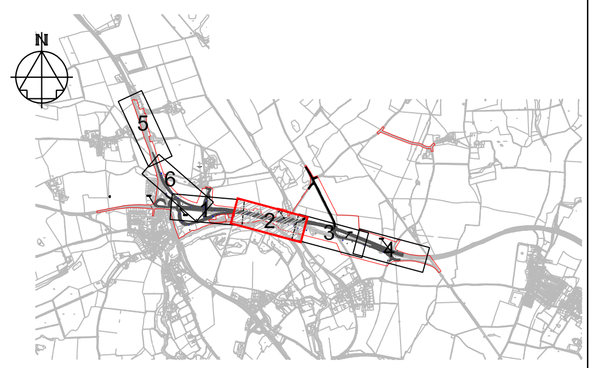
This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT

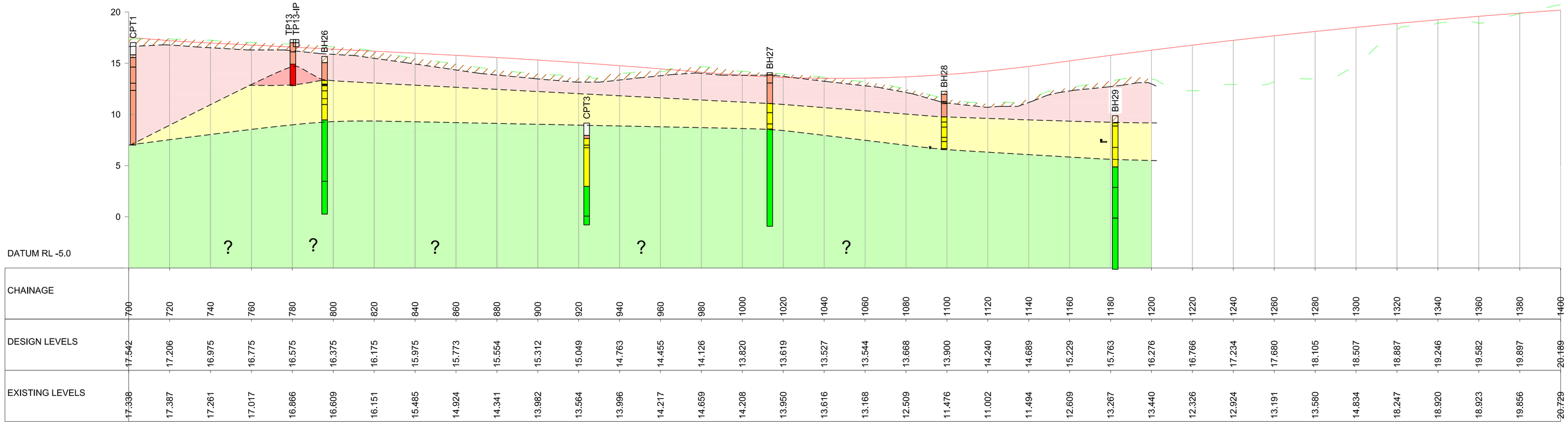


KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS



CHAINAGE	DESIGN LEVELS	EXISTING LEVELS
700	17.542	17.338
720	17.206	17.387
740	16.975	17.261
760	16.775	17.017
780	16.575	16.866
800	16.375	16.609
820	16.175	16.151
840	15.975	15.485
860	15.773	14.924
880	15.554	14.341
900	15.312	13.962
920	15.049	13.564
940	14.763	13.996
960	14.455	14.217
980	14.126	14.659
1000	13.820	14.208
1020	13.619	13.950
1040	13.527	13.616
1060	13.544	13.168
1080	13.668	12.509
1100	13.900	11.476
1120	14.240	11.002
1140	14.689	11.494
1160	15.229	12.609
1160	15.763	13.267
1200	16.276	13.440
1220	16.766	12.326
1240	17.234	12.924
1260	17.680	13.191
1280	18.105	13.580
1300	18.507	14.834
1320	18.887	18.247
1340	19.246	18.920
1360	19.582	18.923
1380	19.897	19.856
1400	20.189	20.729

PROFILE
Scale: 1:1250 H, 1:250 V

1:1250 0 62.5m 125m

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
GEOLOGICAL LONGSECTIONS
PLANS & PROFILES
SHEET 2 OF 6

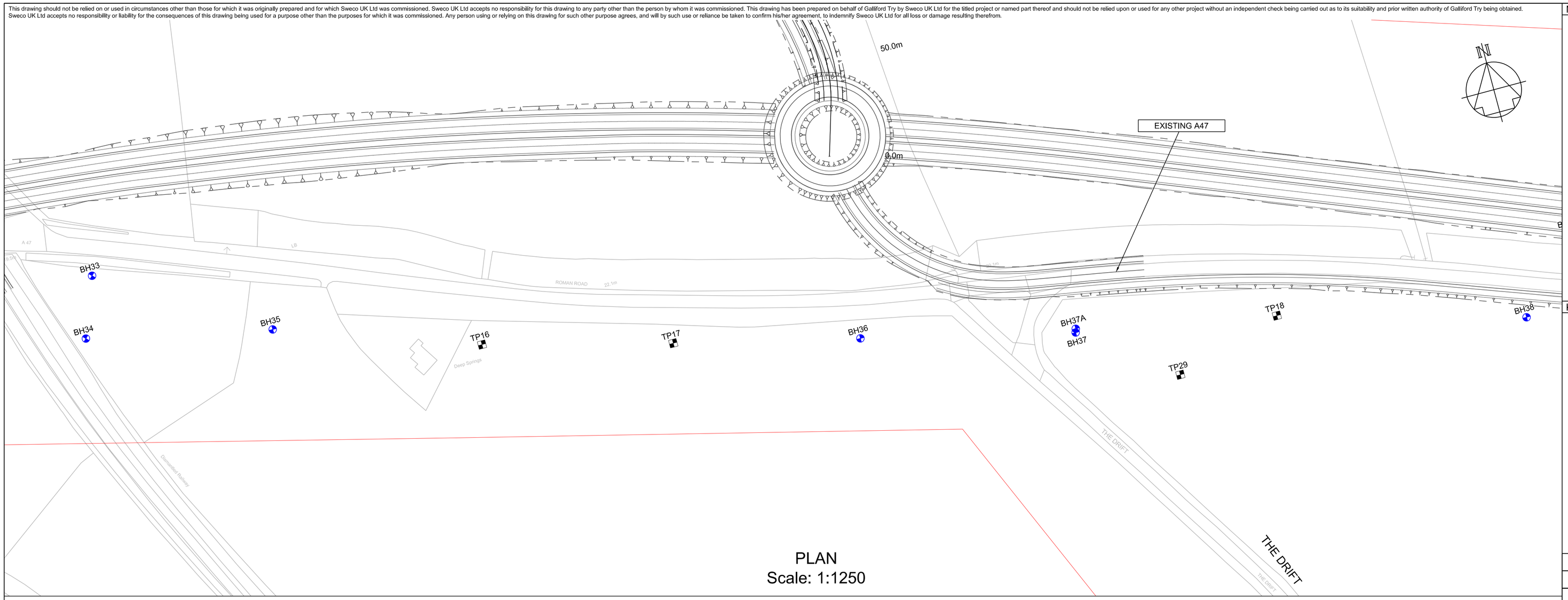
SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30011

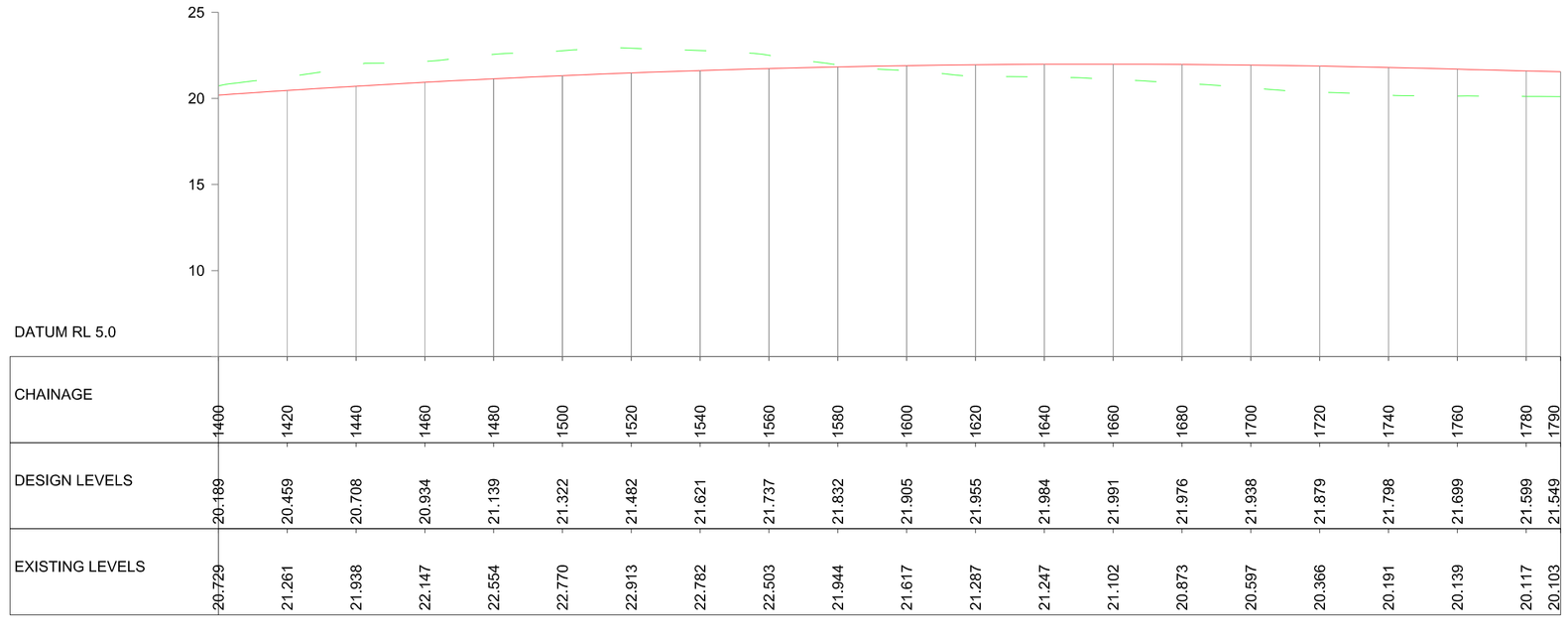
© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.

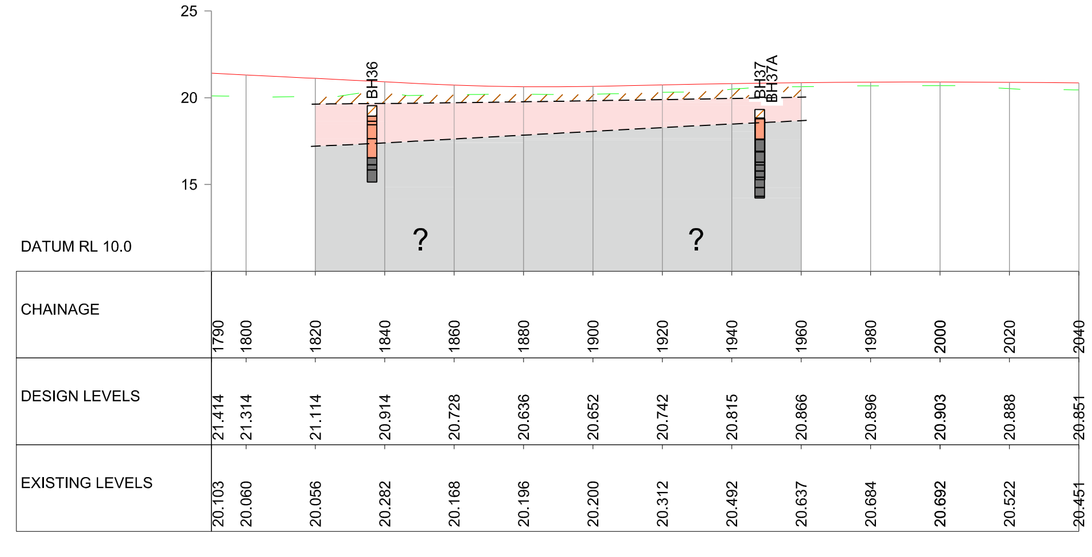


PLAN
Scale: 1:1250

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS



PROFILE
Scale: 1:1250 H, 1:250 V



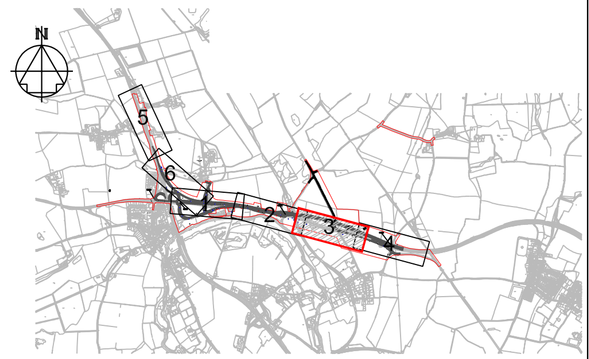
PROFILE
Scale: 1:1250 H, 1:250 V

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

1:1250 0 62.5m 125m

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

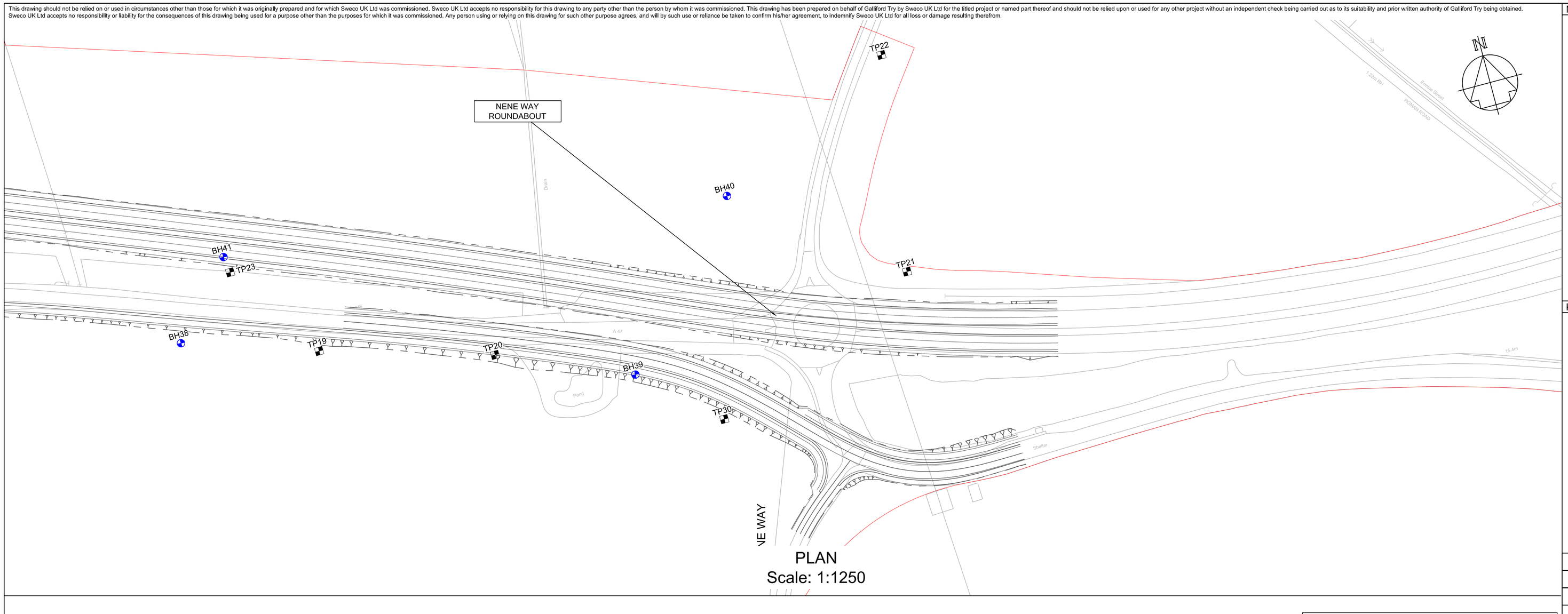
DRAWING TITLE
GEOLOGICAL LONGSECTIONS
PLANS & PROFILES
SHEET 3 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

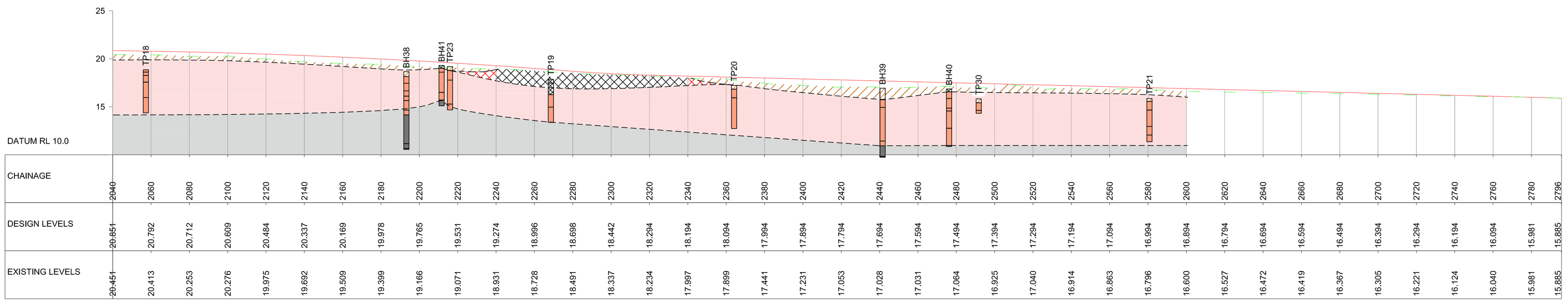
DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30012

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

TOPSOIL
MADE GROUND
HEAD
ALLUVIUM
RIVER TERRACE DEPOSITS
RUTLAND FORMATION
LINCOLNSHIRE LIMESTONE FORMATION
GRANTHAM FORMATION
LIAS GROUP
ASSUMED ZONES OF CORE LOSS



CHAINAGE	2040	2060	2080	2100	2120	2140	2160	2180	2200	2220	2240	2260	2280	2300	2320	2340	2360	2380	2400	2420	2440	2460	2480	2500	2520	2540	2560	2580	2600	2620	2640	2660	2680	2700	2720	2740	2760	2780	2796
DESIGN LEVELS	20.851	20.792	20.712	20.609	20.484	20.337	20.169	19.978	19.765	19.531	19.274	18.996	18.698	18.442	18.294	18.194	18.094	17.994	17.894	17.794	17.694	17.594	17.494	17.394	17.294	17.194	17.094	16.994	16.894	16.794	16.694	16.594	16.494	16.394	16.294	16.194	16.094	15.981	15.885
EXISTING LEVELS	20.451	20.413	20.253	20.276	19.975	19.692	19.509	19.399	19.166	19.071	18.931	18.728	18.491	18.337	18.234	17.997	17.899	17.441	17.231	17.053	17.028	17.031	17.064	16.925	17.040	16.914	16.863	16.796	16.600	16.527	16.472	16.419	16.367	16.305	16.221	16.124	16.040	15.981	15.885

PROFILE
Scale: 1:1250 H, 1:250 V

1:1250 0 62.5m 125m

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

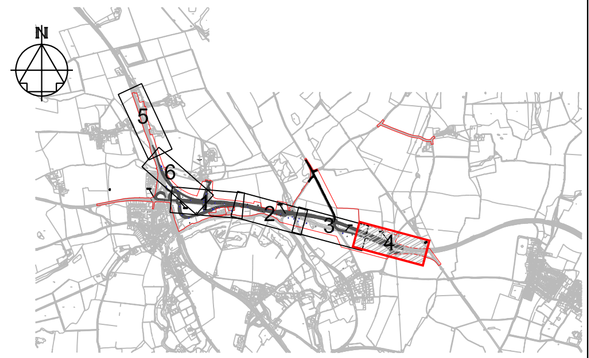
TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

	HAZARD REF	BRIEF HAZARD DESCRIPTION
⚠		

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

EXISTING GROUND LEVEL
PROPOSED GROUND LEVEL
GROUND WATER STRIKE

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

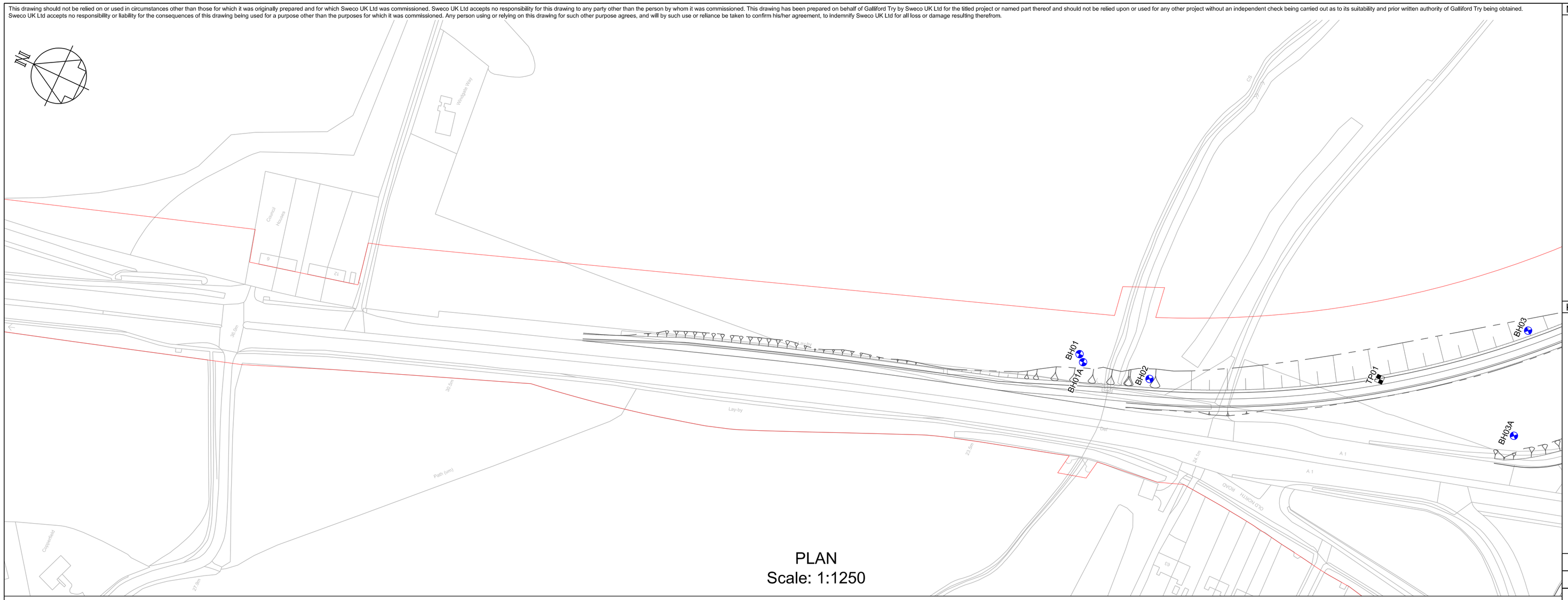
DRAWING TITLE
GEOLOGICAL LONGSECTIONS
PLANS & PROFILES
SHEET 4 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30013

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS

IMPORTANT

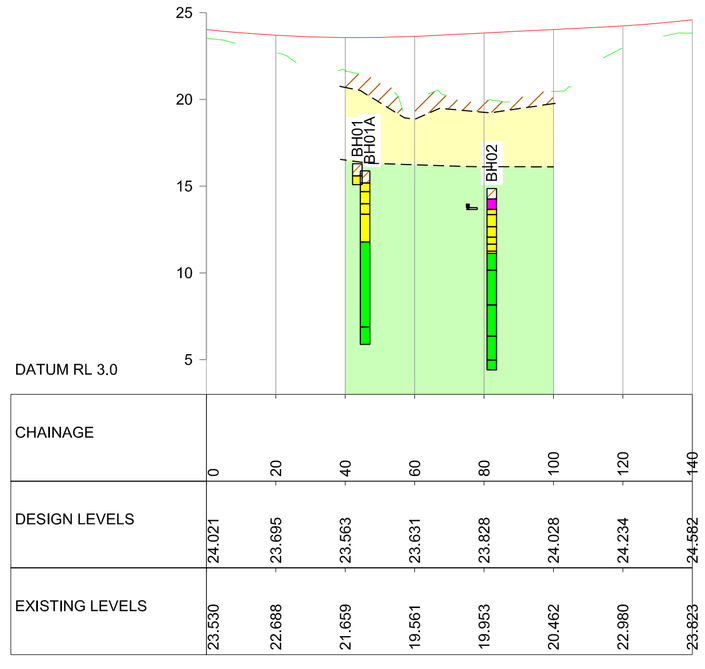
SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER
DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

	HAZARD REF	BRIEF HAZARD DESCRIPTION
⚠		

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

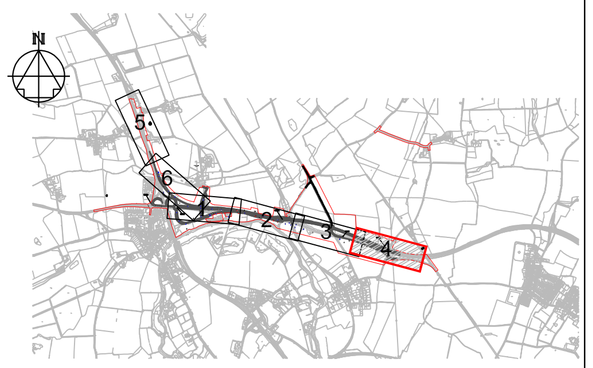


PROFILE
Scale: 1:1250 H, 1:250 V

1:1250 0 62.5m 125m

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

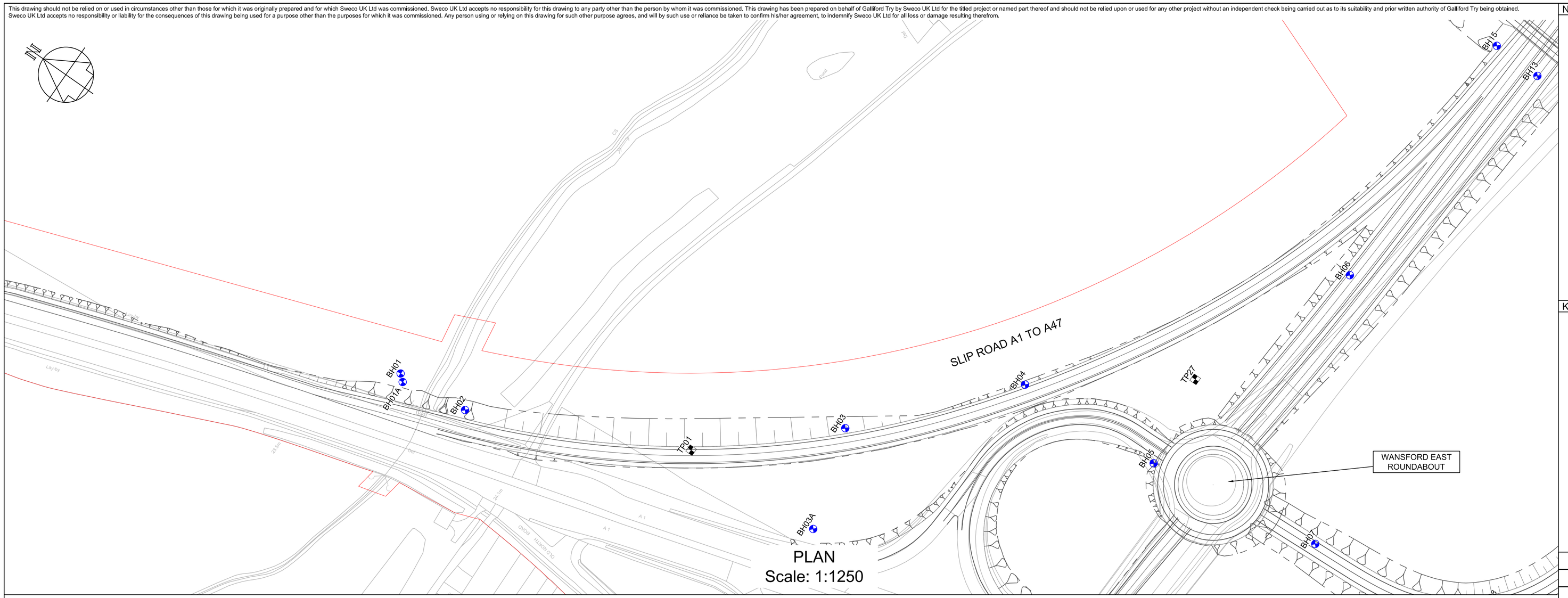
DRAWING TITLE
GEOLOGICAL LONGSECTIONS
PLANS & PROFILES
SHEET 5 OF 6

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

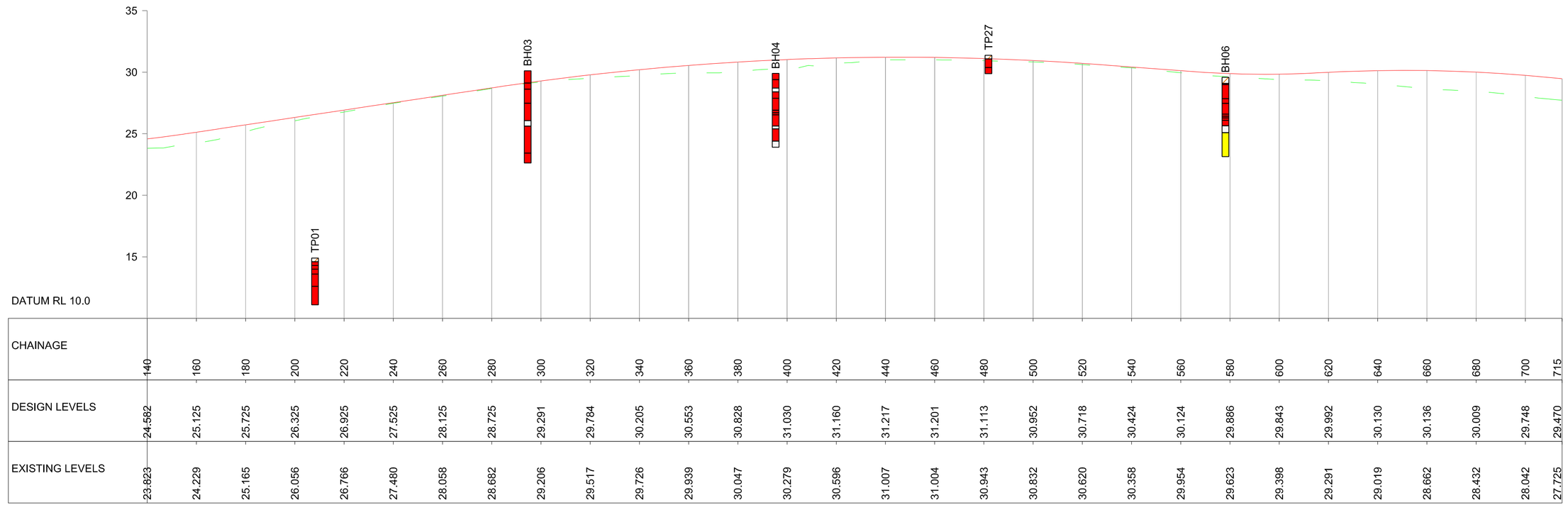
DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30014

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS



CHAINAGE	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	715
DESIGN LEVELS	24.562	25.125	25.725	26.325	26.925	27.525	28.125	28.725	29.291	29.764	30.205	30.553	30.828	31.030	31.160	31.217	31.201	31.113	30.952	30.718	30.424	30.124	29.886	29.843	29.992	30.130	30.136	30.009	29.748	29.470
EXISTING LEVELS	23.823	24.229	25.165	26.056	26.766	27.480	28.058	28.682	29.206	29.517	29.726	29.939	30.047	30.279	30.596	31.007	31.004	30.943	30.832	30.620	30.358	29.954	29.623	29.398	29.291	29.019	28.662	28.432	28.042	27.725

PROFILE
Scale: 1:1250 H, 1:250 V

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

	HAZARD REF	BRIEF HAZARD DESCRIPTION
⚠		

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
GEOLOGICAL LONGSECTIONS
PLANS & PROFILES
SHEET 6 OF 6

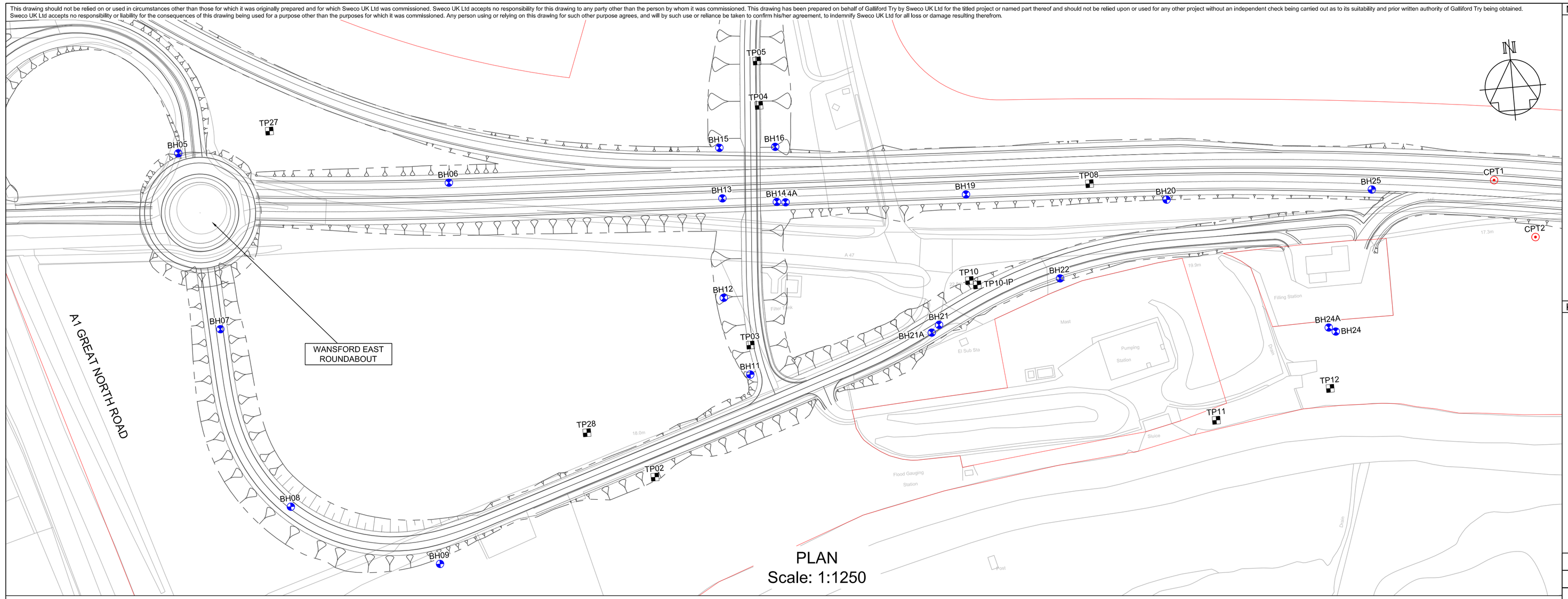
SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

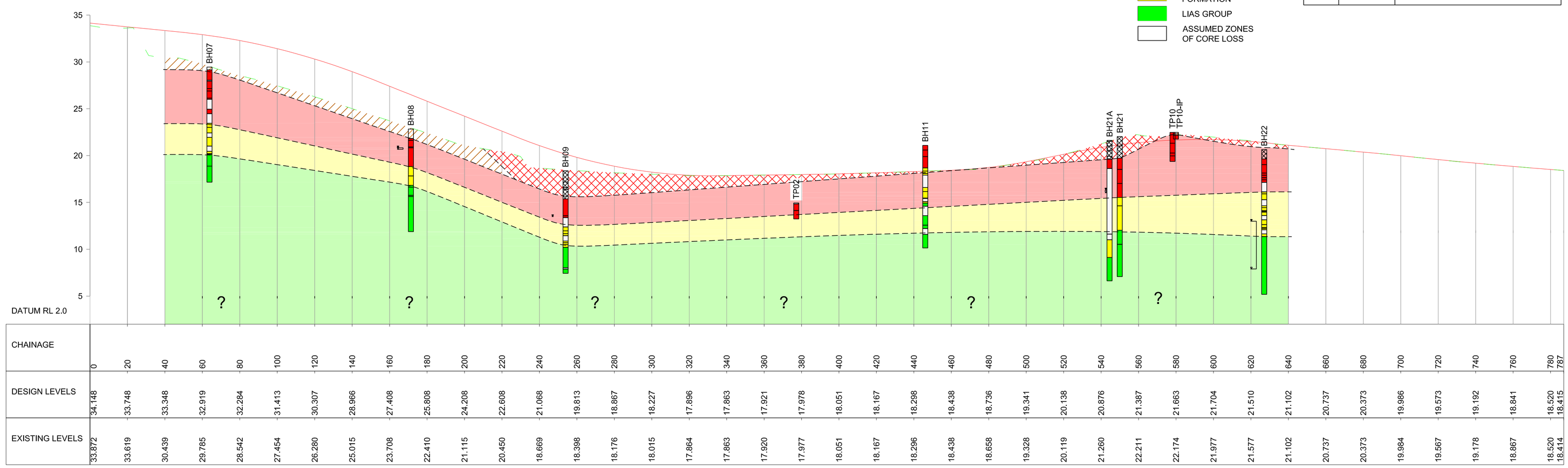
DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30015

1:1250 0 62.5m 125m

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250



PROFILE
Scale: 1:1250 H, 1:250 V

1:1250 0 62.5m 125m

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

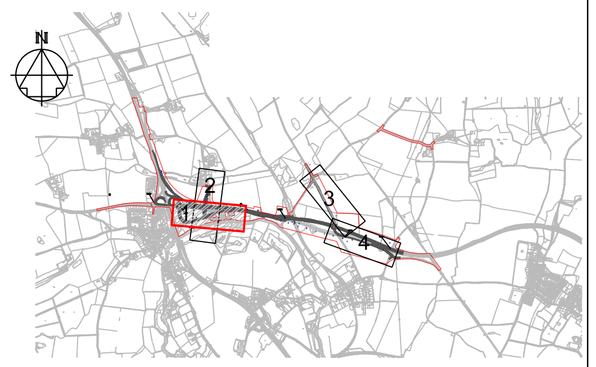
TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

EXISTING GROUND LEVEL
PROPOSED GROUND LEVEL
GROUND WATER STRIKE

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
GEOLOGICAL LONGSECTIONS
SIDEROADS PLANS & PROFILES
SHEET 1 OF 4

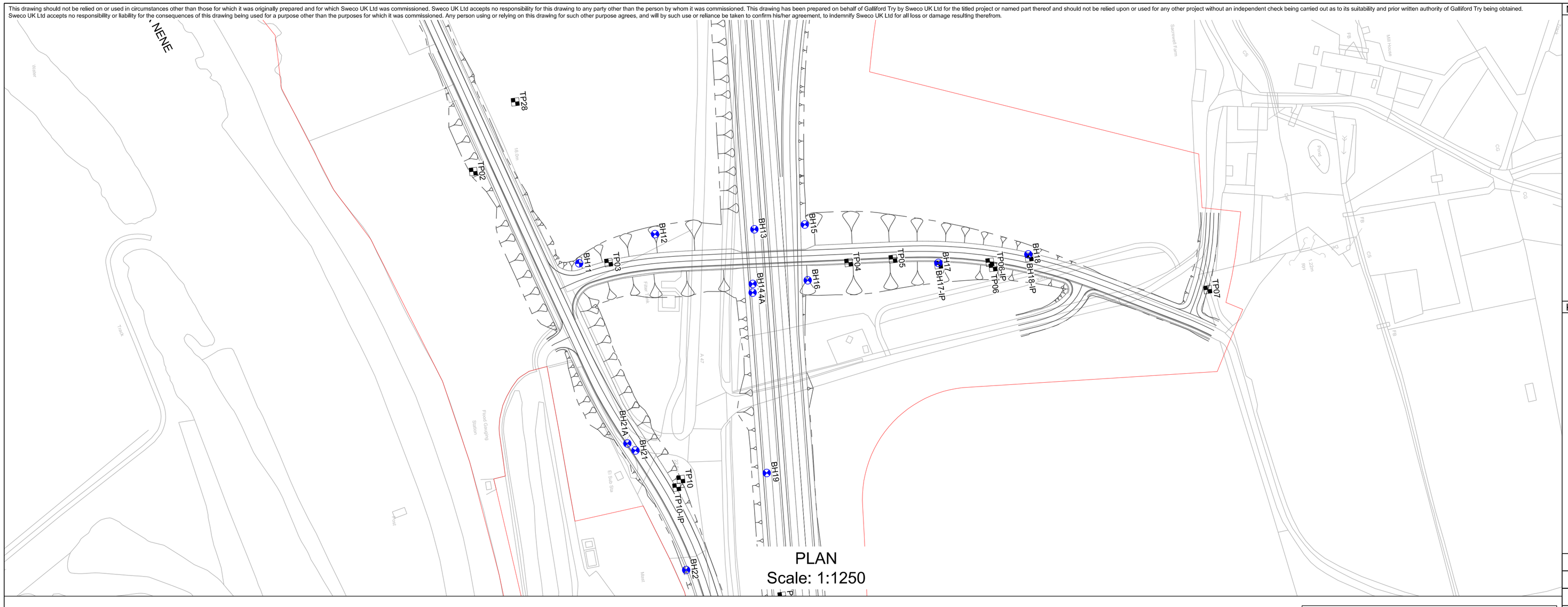
SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30016

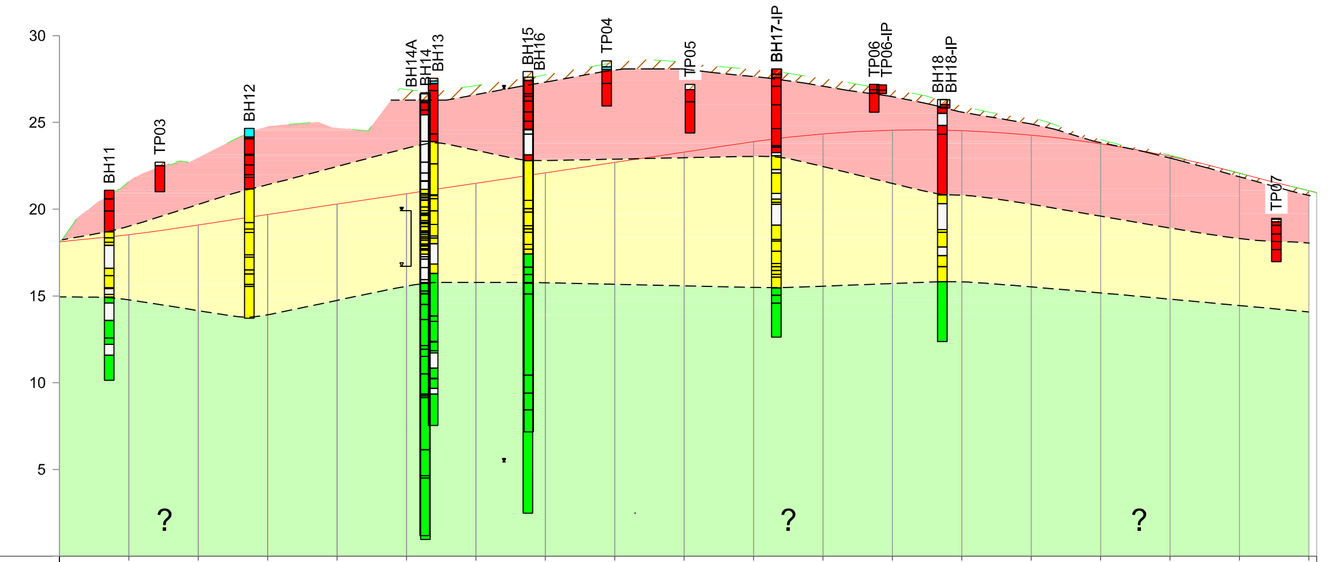
© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS



DATUM RL 0.0

CHAINAGE	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	382
DESIGN LEVELS	18.320	18.725	19.293	19.893	20.493	21.093	21.693	22.293	22.893	23.493	24.090	24.537	24.749	24.725	24.466	23.972	23.242	22.277	21.264	21.151
EXISTING LEVELS	18.350	21.808	23.171	24.971	24.885	27.099	27.324	27.941	28.642	28.669	28.242	27.747	27.078	26.163	25.425	24.212	23.313	22.277	21.264	21.151

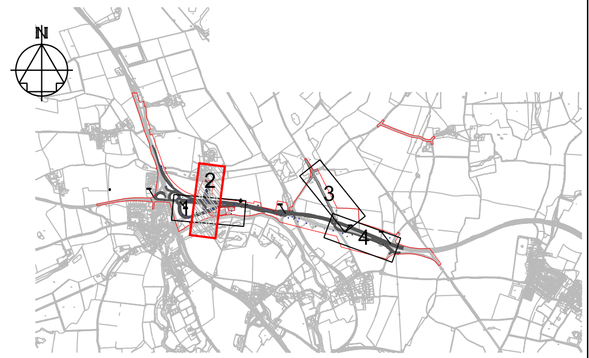
PROFILE
Scale: 1:1250 H, 1:250 V

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

1:1250 0 62.5m 125m

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

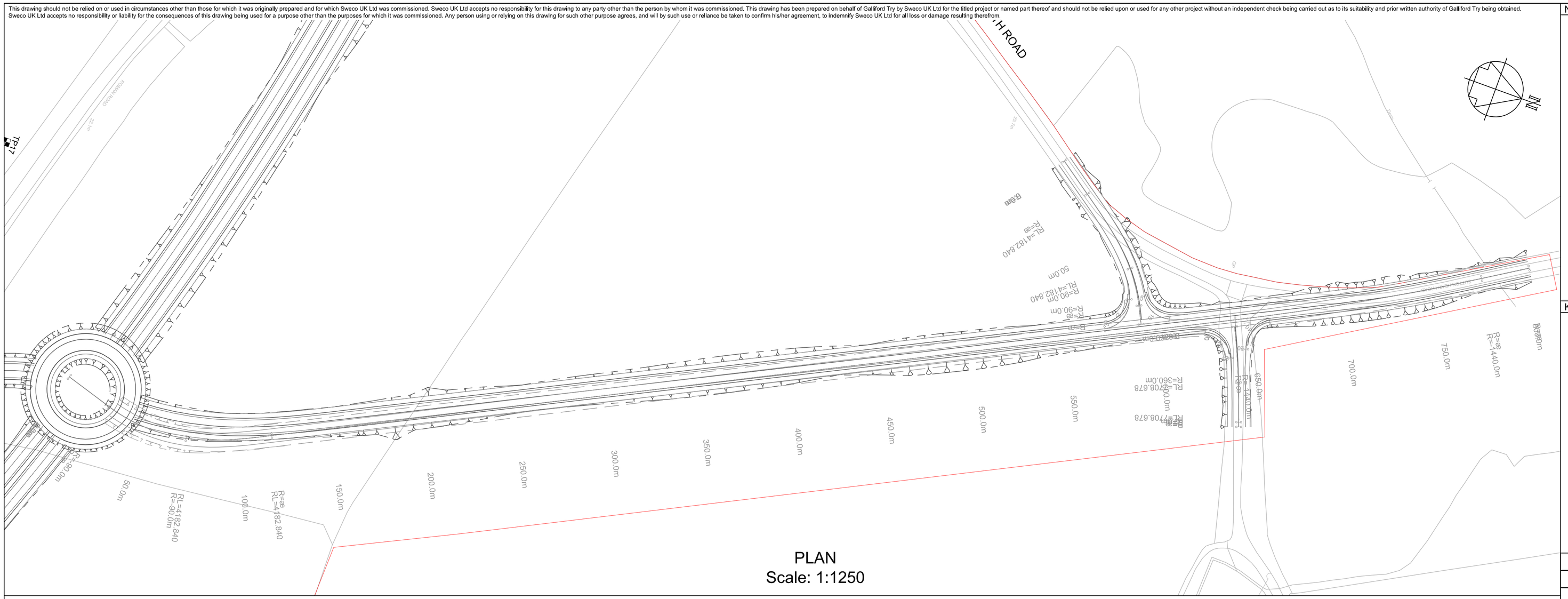
DRAWING TITLE
GEOLOGICAL LONGSECTIONS
SIDEROADS PLANS & PROFILES
SHEET 2 OF 4

SUITABILITY
SUITABLE FOR REVIEW & COMMENT

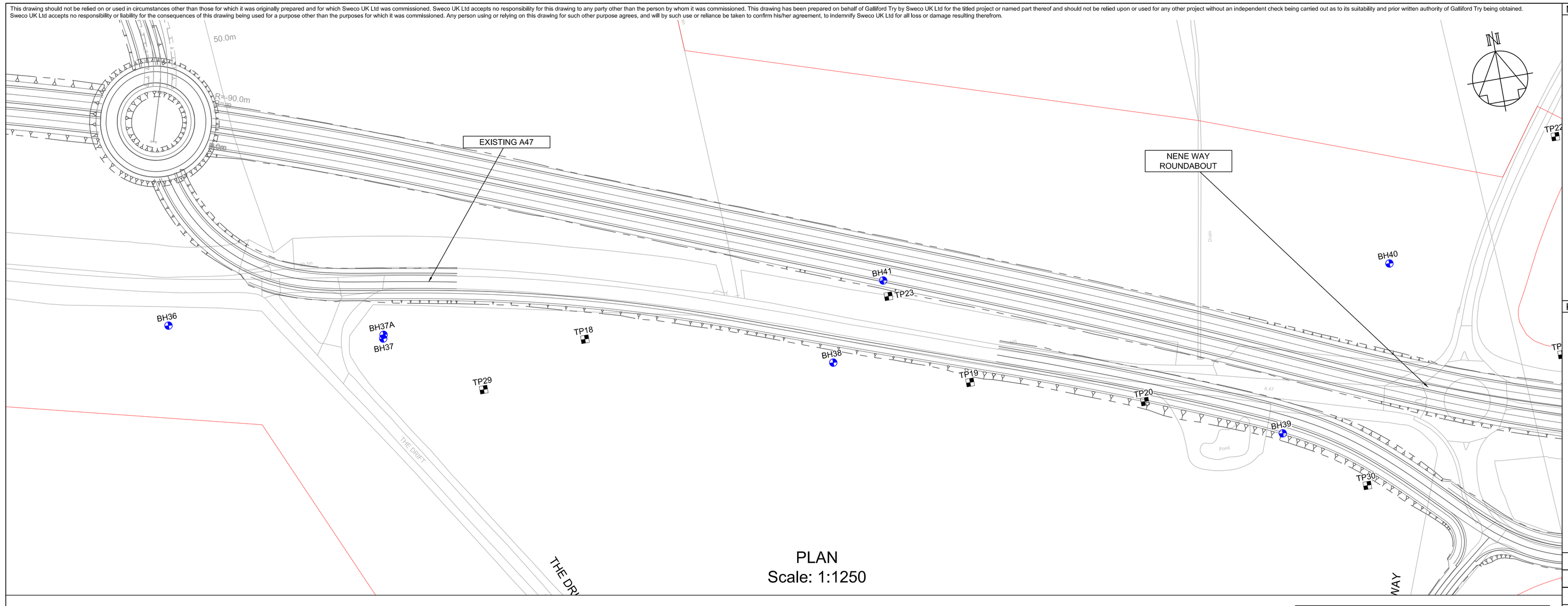
SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30017

This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.


H ROAD
TP17
R=90.0m
RL=4182.840
50.0m
100.0m
150.0m
200.0m
250.0m
300.0m
350.0m
400.0m
450.0m
500.0m
550.0m
600.0m
650.0m
700.0m
750.0m
R=1440.0m
R=90.0m
RL=4182.840
50.0m
R=90.0m
RL=4182.840
R=90.0m
RL=4182.840
50.0m
R=90.0m
RL=4182.840
R=90.0m
RL=4182.840
R=90.0m
RL=4182.840

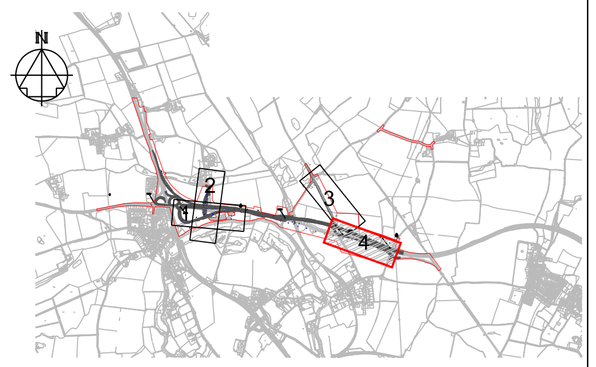
This drawing should not be relied on or used in circumstances other than those for which it was originally prepared and for which Sweco UK Ltd was commissioned. Sweco UK Ltd accepts no responsibility for this drawing to any party other than the person by whom it was commissioned. This drawing has been prepared on behalf of Galliford Try by Sweco UK Ltd for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Galliford Try being obtained. Sweco UK Ltd accepts no responsibility or liability for the consequences of this drawing being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on this drawing for such other purpose agrees, and will by such use or reliance be taken to confirm his/her agreement, to indemnify Sweco UK Ltd for all loss or damage resulting therefrom.



PLAN
Scale: 1:1250

NOTES

1: SIDESLOPES: 1:3 CUT, 1:2.5 FILL, 1:2 FILL AT SCHEDULED MONUMENT, SUBJECT TO GEOTECHNICAL INPUT



KEY TO SYMBOLS

- CABLE PERCUSSIVE BOREHOLE
- ROTARY CORED BOREHOLE
- TRIAL PIT
- CONE PENETRATION TEST

- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- GROUND WATER STRIKE

REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
P01	09/07/20	Review for comment	GW	EW	MS
P02	02/10/20	First Issue	OT	EWat	MSan
P03	16/10/20	For Review and Issue	OT	MSan	MSan
P04	26/11/20	Vertical scale bar added	OT	MSan	MSan

- TOPSOIL
- MADE GROUND
- HEAD
- ALLUVIUM
- RIVER TERRACE DEPOSITS
- RUTLAND FORMATION
- LINCOLNSHIRE LIMESTONE FORMATION
- GRANTHAM FORMATION
- LIAS GROUP
- ASSUMED ZONES OF CORE LOSS

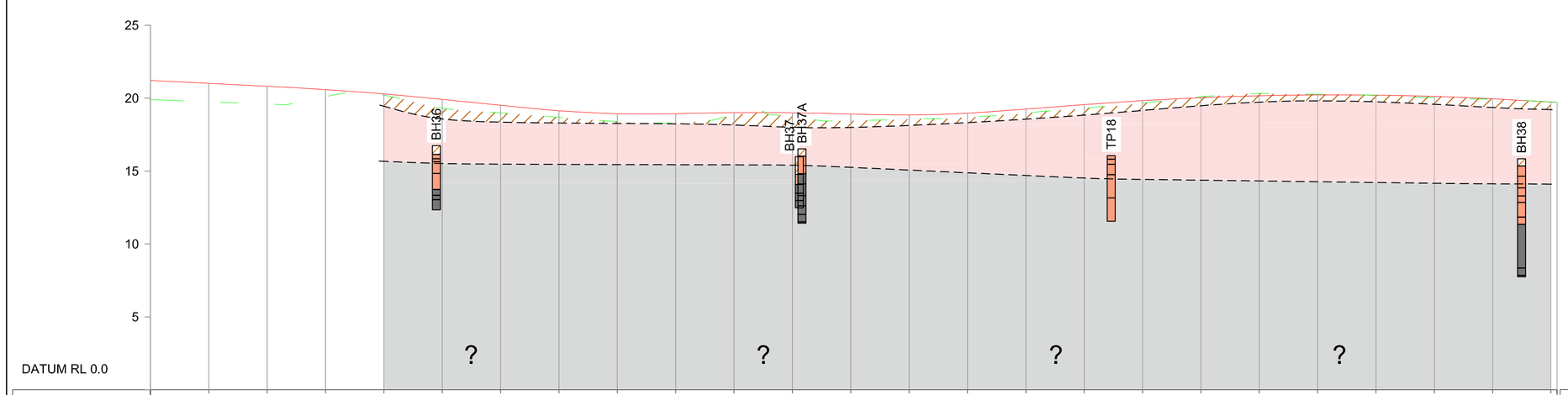
IMPORTANT

SAFETY, HEALTH & ENVIRONMENTAL INFORMATION

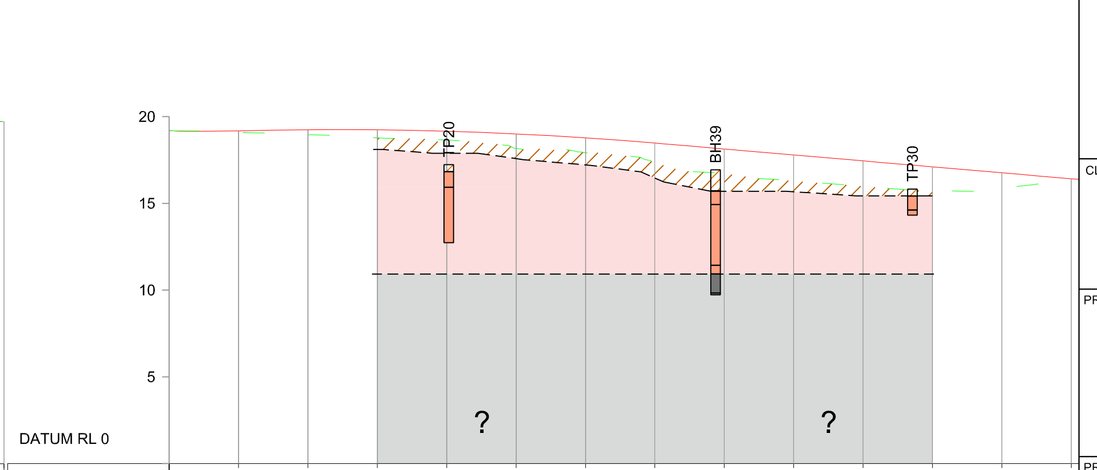
TO BE READ IN CONJUNCTION WITH HAZARD REGISTER DOC. REF: Requires updating.

HAZARD REF AND BRIEF DESCRIPTION OF HAZARD:-

HAZARD REF	BRIEF HAZARD DESCRIPTION



CHAINAGE	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	492
DESIGN LEVELS	21.415	21.215	21.015	20.787	20.487	20.115	19.715	19.340	19.140	19.140	19.204	19.195	19.115	19.051	19.171	19.456	19.756	20.030	20.233	20.364	20.421	20.406	20.318	20.157	19.969	19.922
EXISTING LEVELS	20.103	19.941	19.798	20.306	20.410	19.501	19.194	18.884	18.593	18.495	19.027	18.954	18.653	18.753	18.886	19.158	19.494	19.852	20.294	20.528	20.471	20.393	20.233	20.116	19.937	19.922



CHAINAGE	0	20	40	60	80	100	120	140	160	180	200	220	240	260
DESIGN LEVELS	19.182	19.180	19.244	19.236	19.155	19.001	18.775	18.476	18.133	17.790	17.447	17.103	16.760	16.417
EXISTING LEVELS	19.182	19.097	18.959	18.777	18.644	18.155	17.922	17.318	16.719	16.288	15.982	15.743	15.848	16.336

PROFILE
Scale: 1:1250 H, 1:250 V

1:1250 0 62.5m 125m

© Crown copyright and database rights 2020 Ordnance Survey 100030649. Use of this data is subject to terms and conditions.

DESIGNER
SWECO

CONTRACTOR
GallifordTry

CLIENT
highways england

PROJECT TITLE
A47 WANSFORD TO SUTTON DUALLING

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
GEOLOGICAL LONGSECTIONS
SIDEROADS PLANS & PROFILES
SHEET 4 OF 4

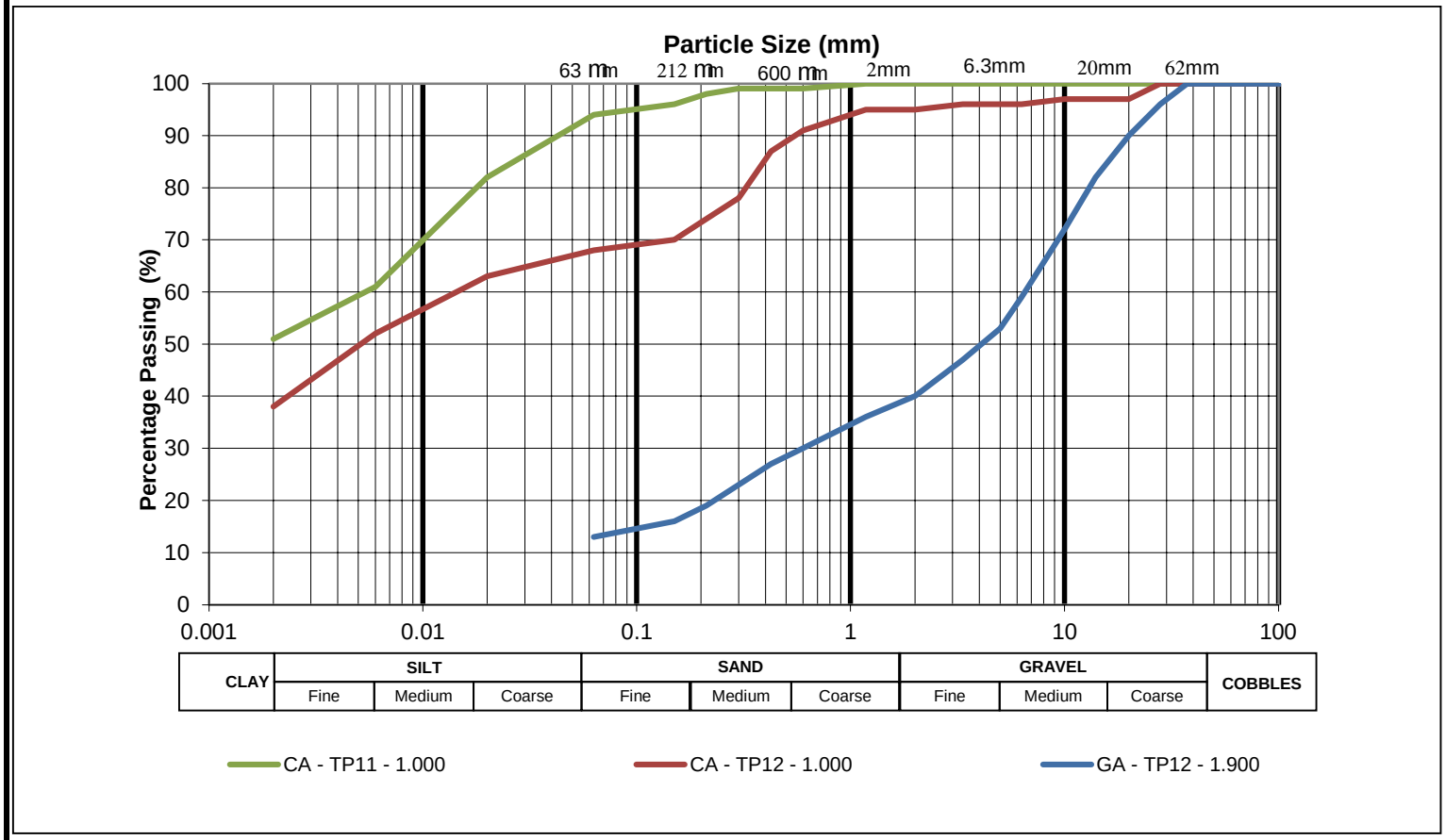
SUITABILITY
SUITABLE FOR REVIEW & COMMENT

SHEET SIZE	SCALE	STATUS	REVISION
A1	1:1250	S3	P04

DRAWING NUMBER
HE551494-GTY-HGT-000-DR-CE-30019

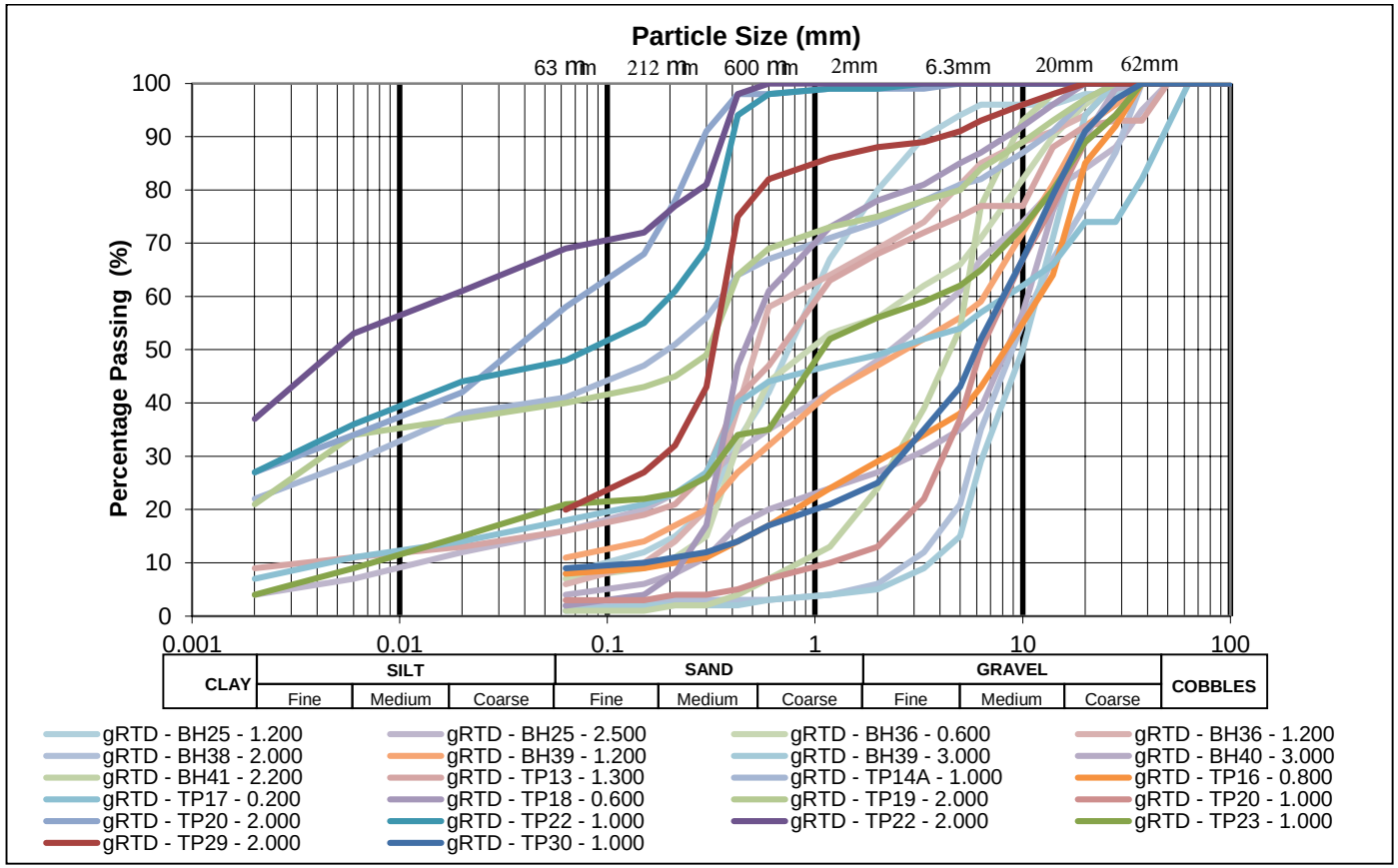
Appendix D. Geotechnical Figures

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive and granular Alluvium (CA and GA)	



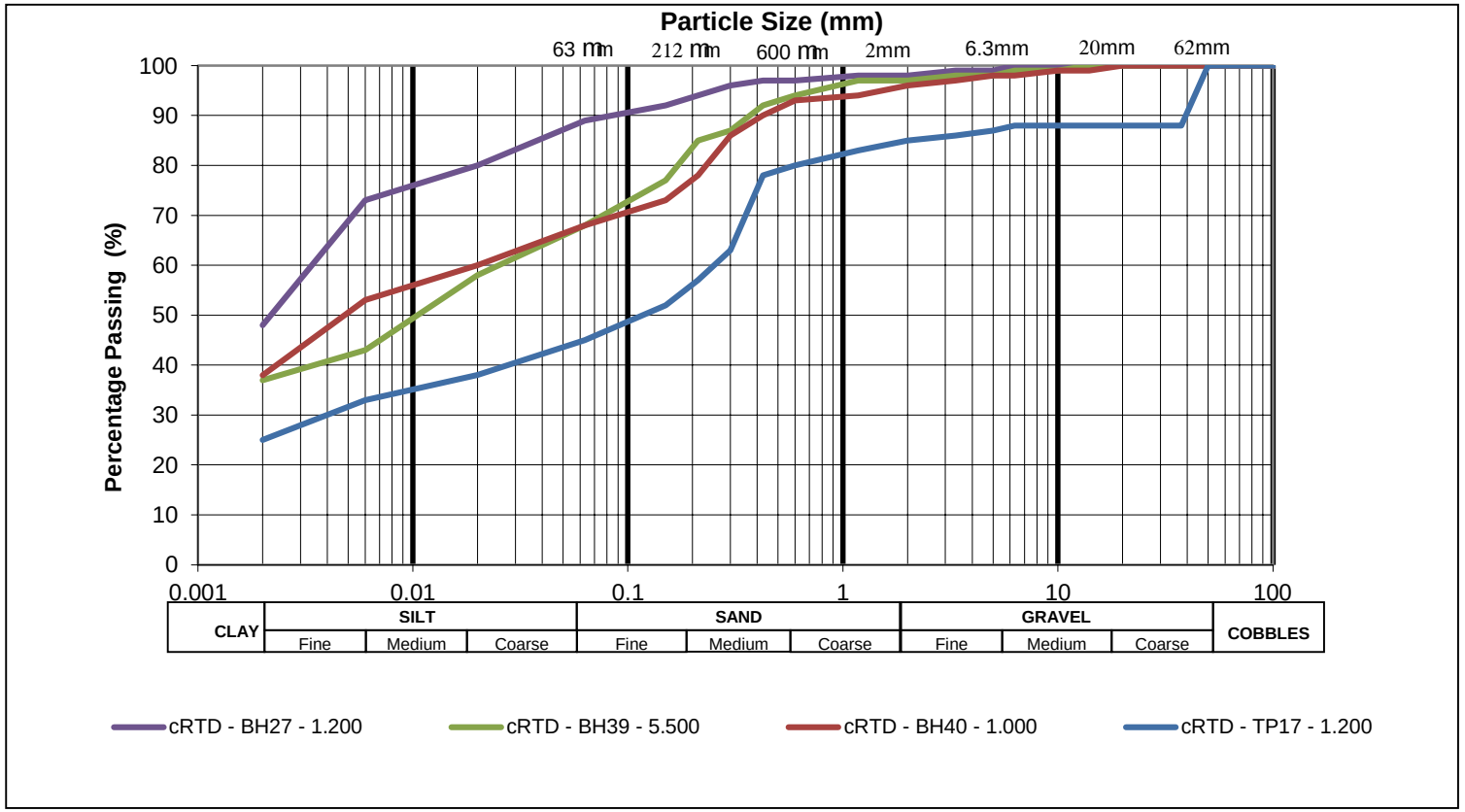
Date Reported:	17/06/2020	Figure Number:	1

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: granular River Terrace Deposits (gRTD)	



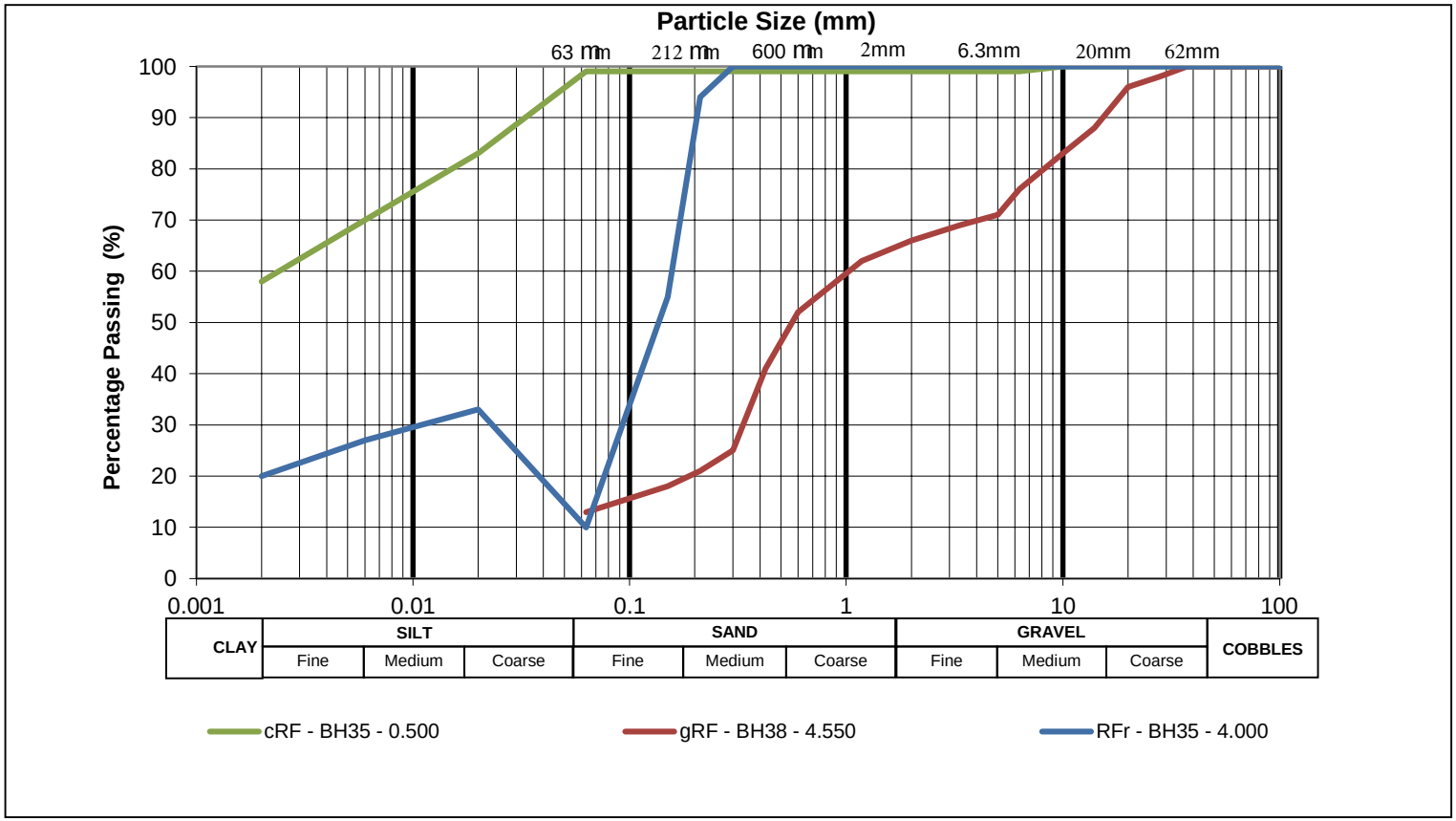
Date Reported:	17/06/2020	Figure Number:	**2**

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive River Terrace Deposits	



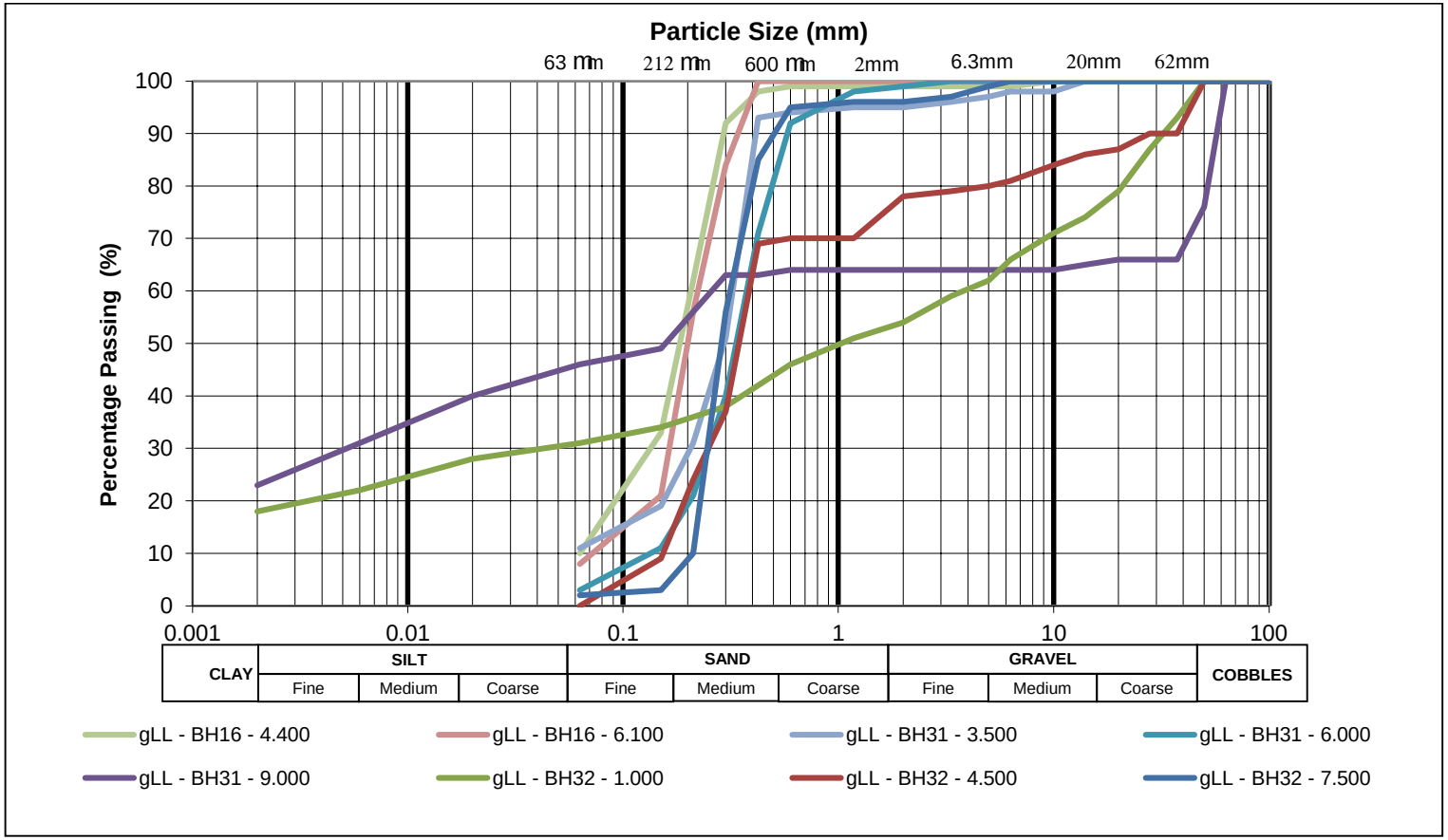
Date Reported:	17/06/2020	Figure Number:	3

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive, granular and rock Rutland Formation (cRF, gRF and RFr)	



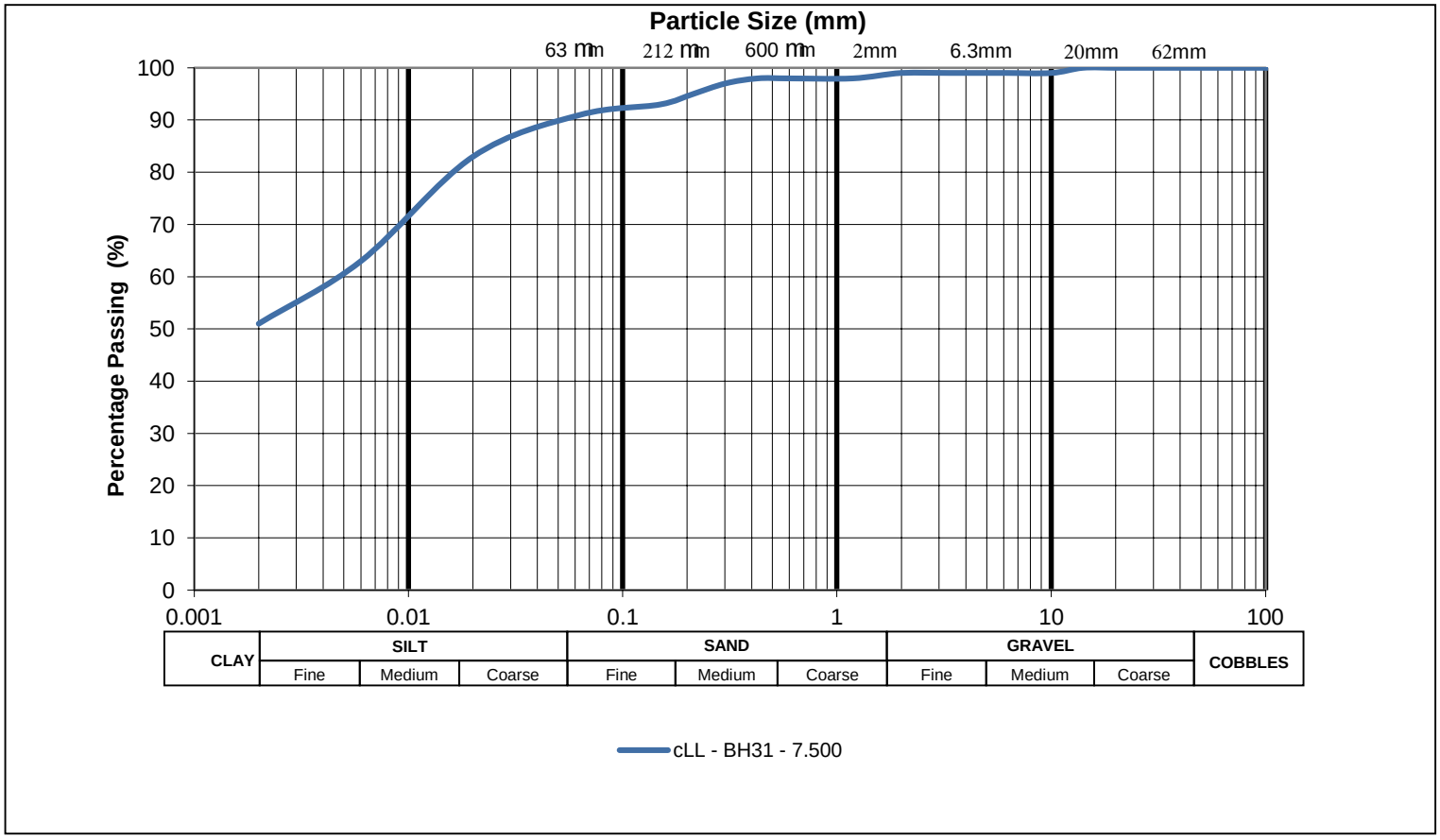
Date Reported:	17/06/2020	Figure Number:	4

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: granular Lincolnshire Limestone Formation (gLL)	



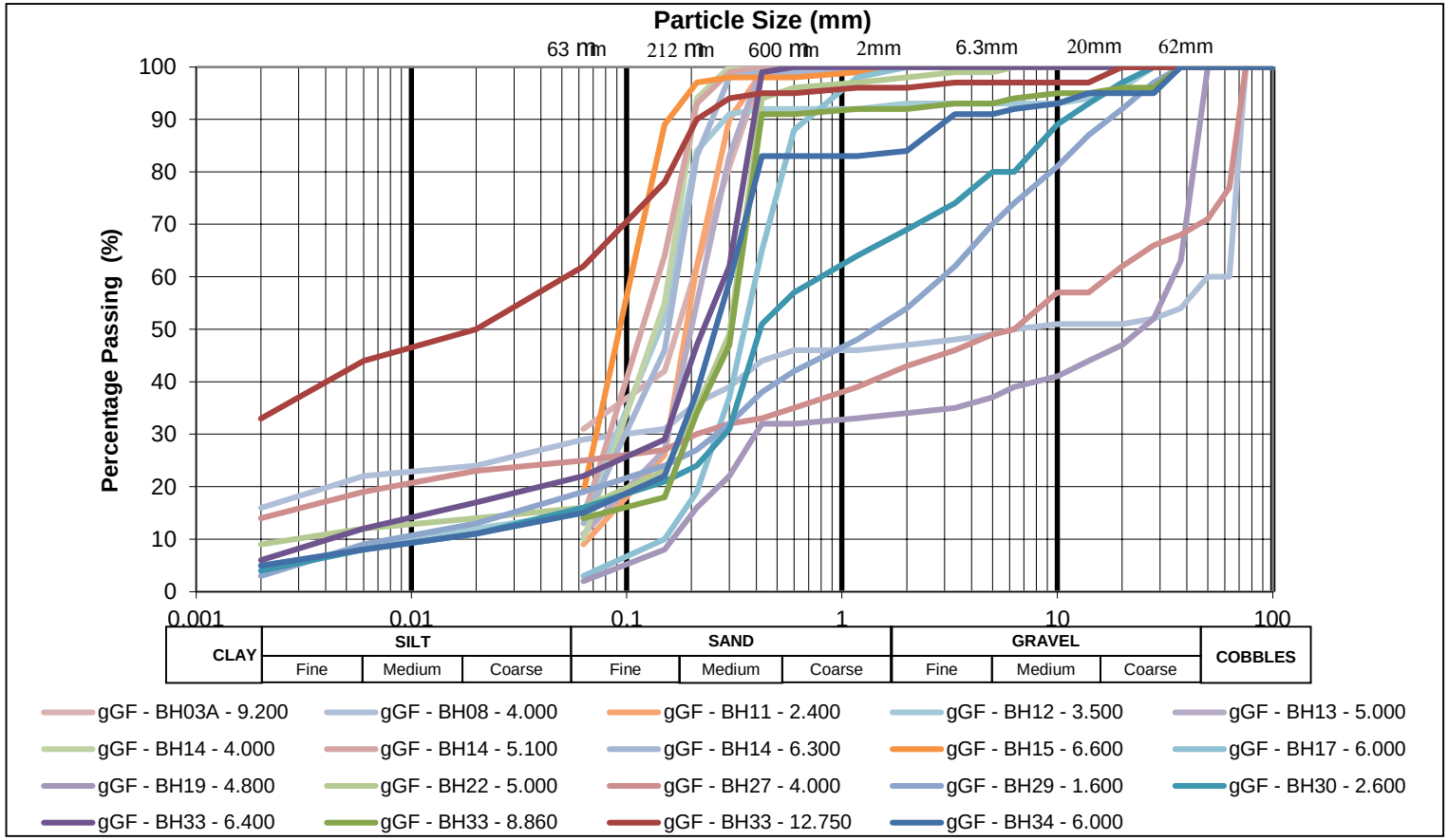
Date Reported:	17/06/2020	Figure Number:	**5**

SWECO	Particle Size Distribution	
Project ID: A47 Wansford to Sutton	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive Lincolnshire Limestone Formation (cLL)	



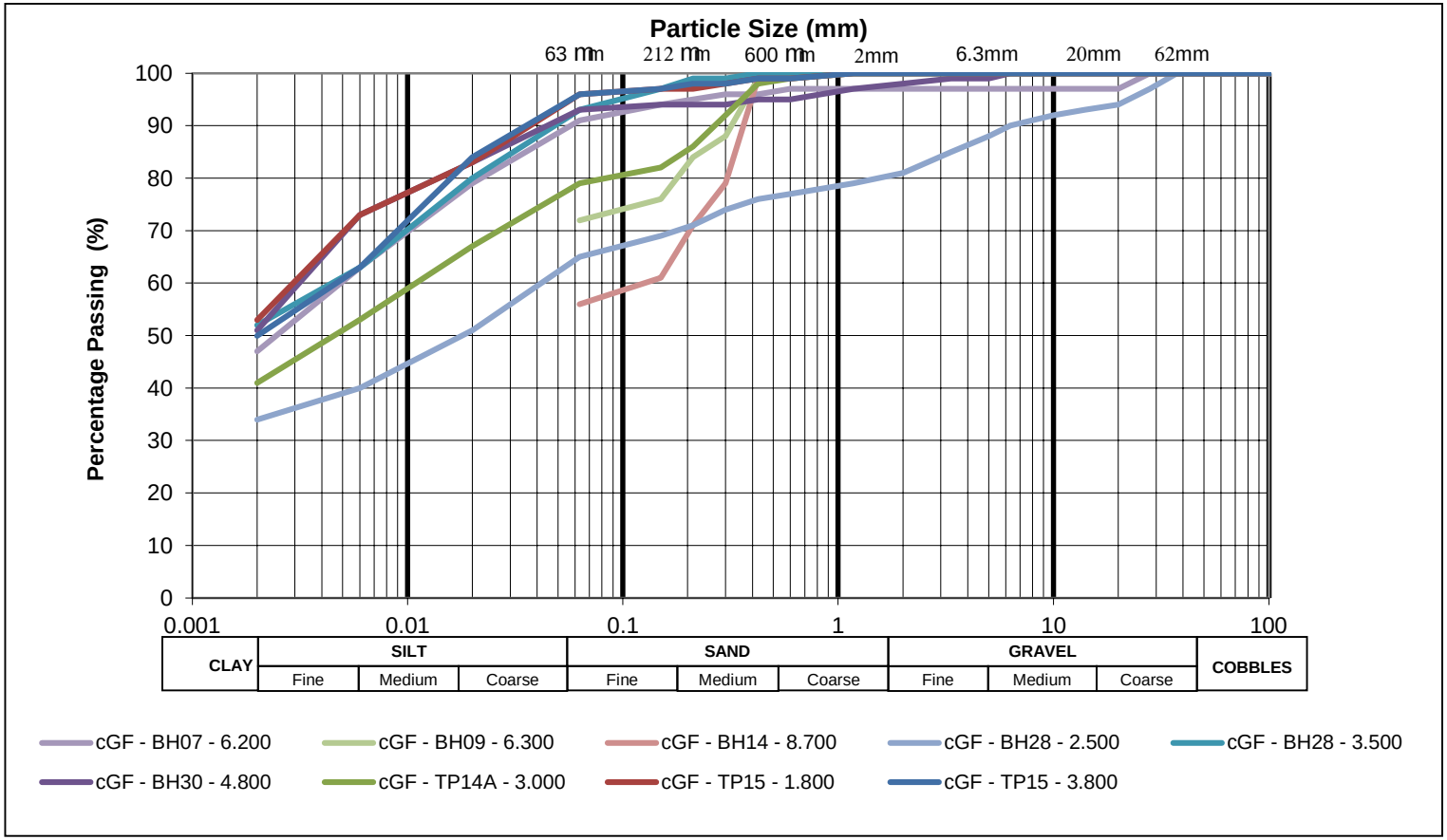
Date Reported:	17/06/2020	Figure Number:	**6**

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: granular Grantham Formation (gGF)	



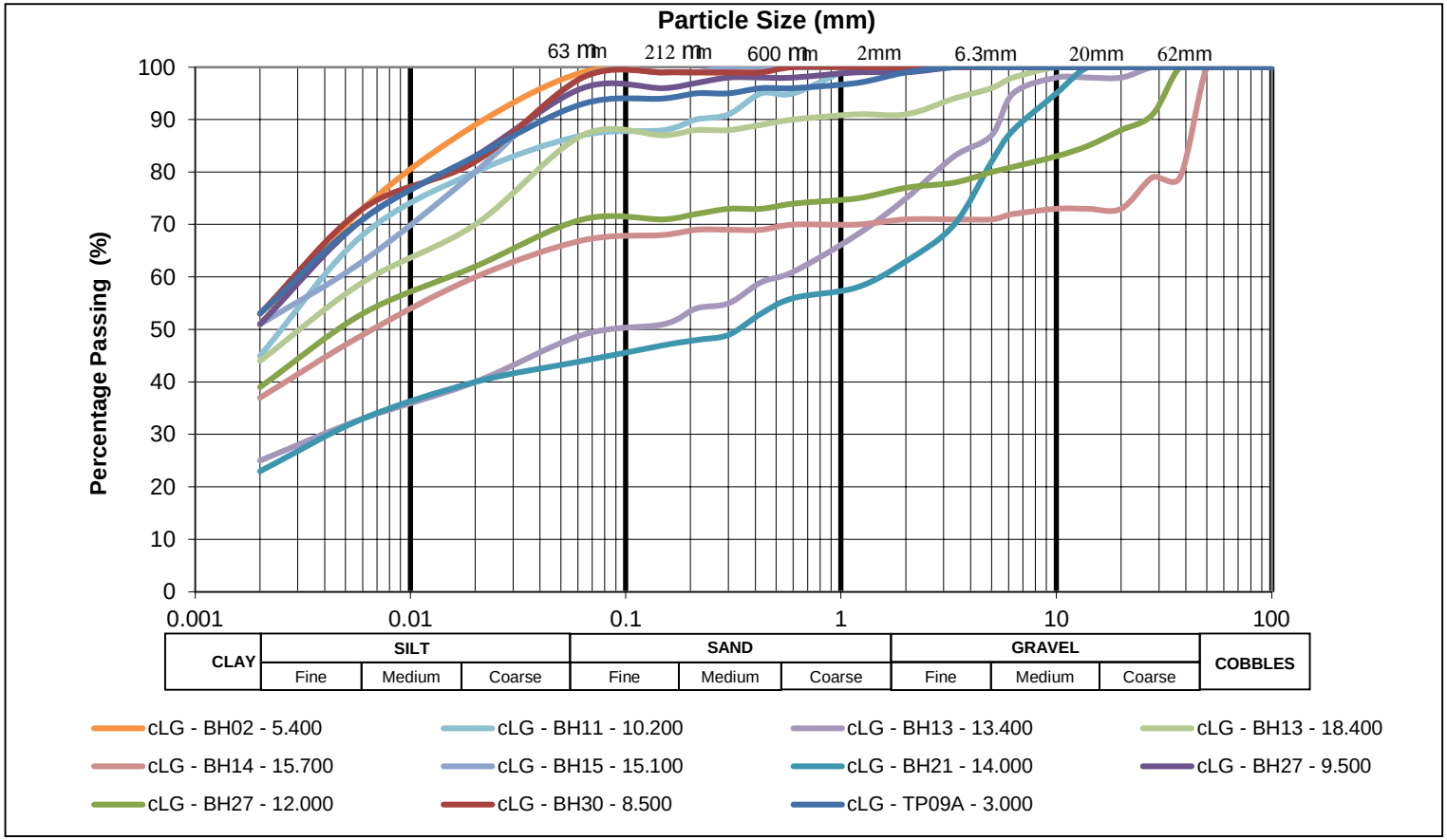
Date Reported:	17/06/2020	Figure Number:	7

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive Grantham Formation (cGF)	



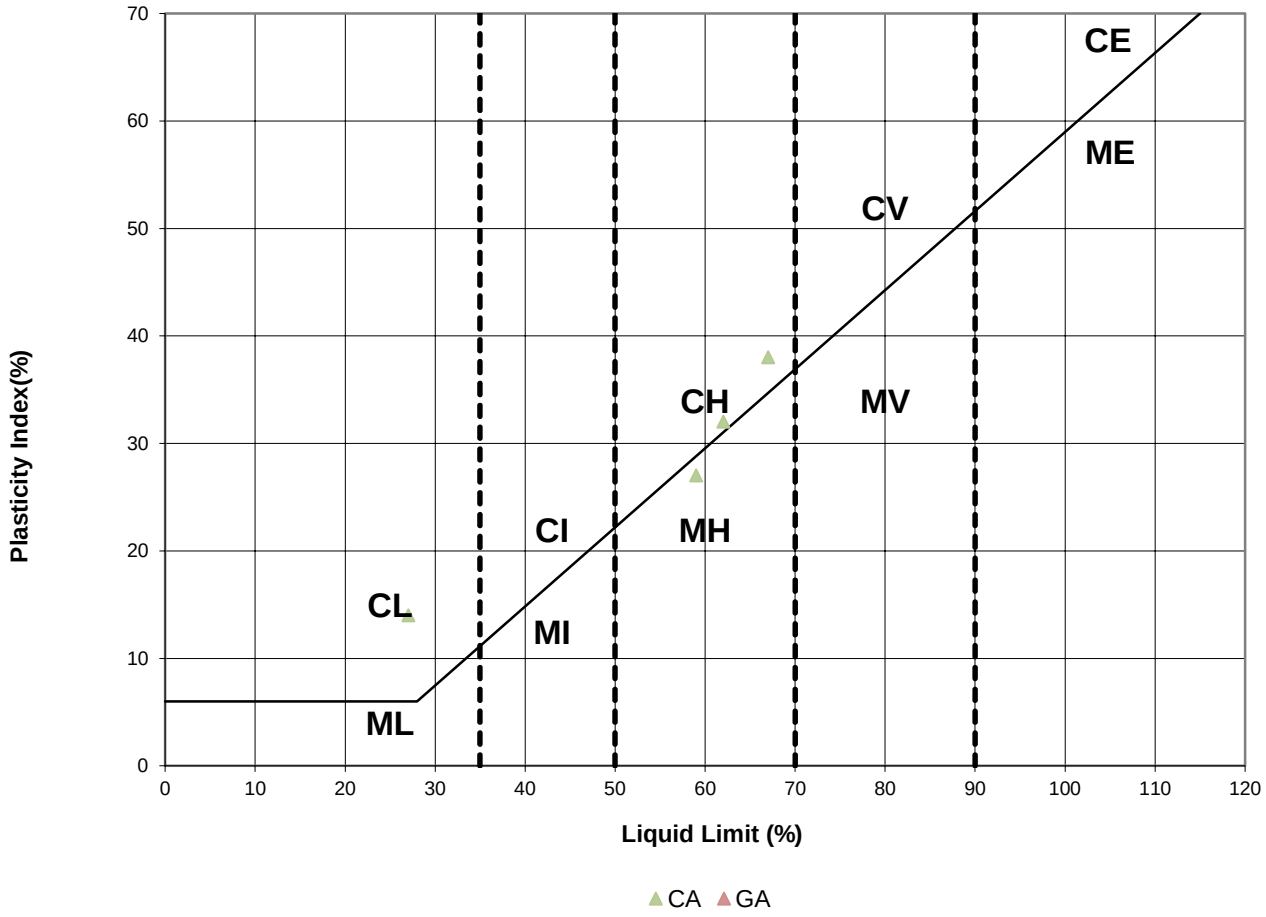
Date Reported:	17/06/2020	Figure Number:	**8**

SWECO	Particle Size Distribution	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive Lias Group (cLG)	



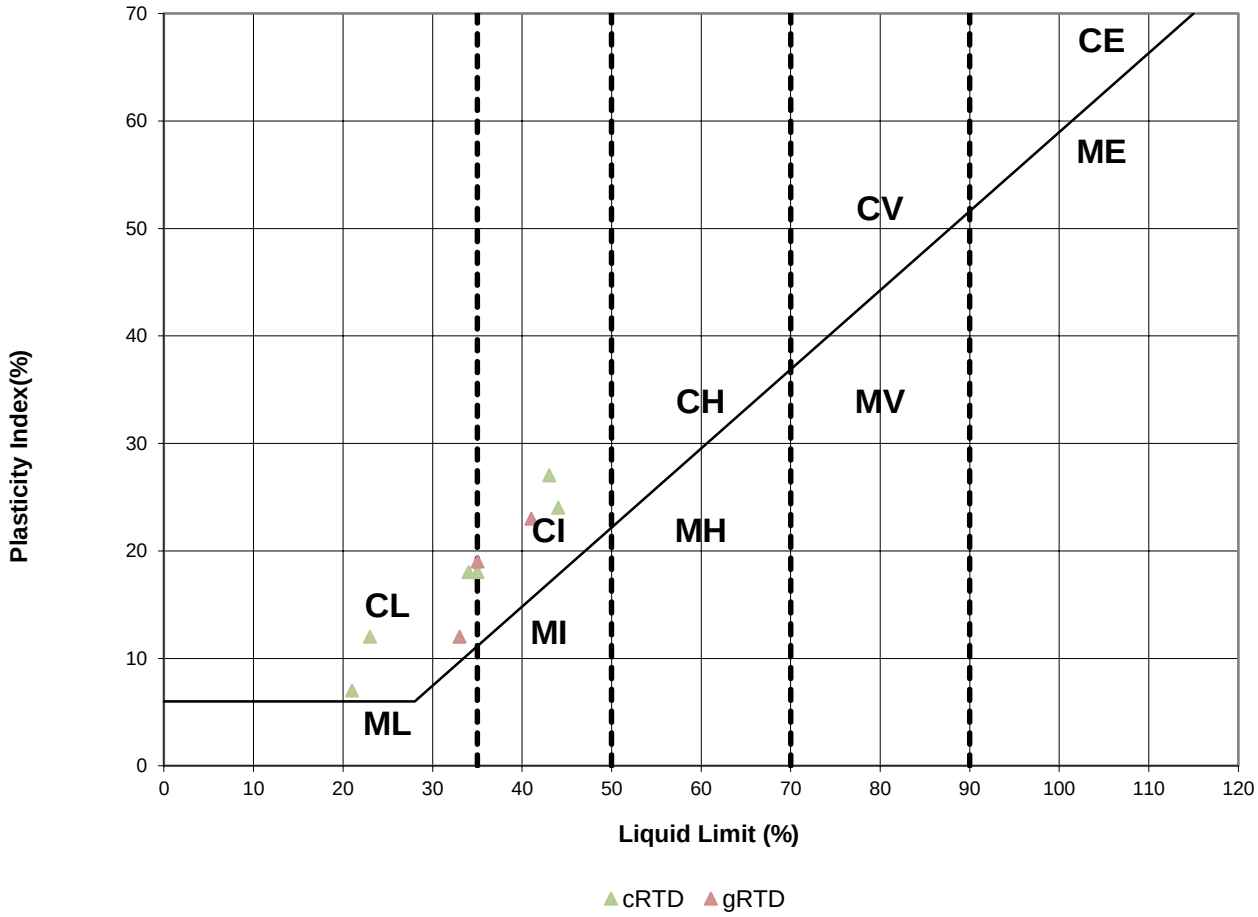
Date Reported:	17/06/2020	Figure Number:	**9**

SWECO	A Line Plot				
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular Alluvium (CA and GA)		



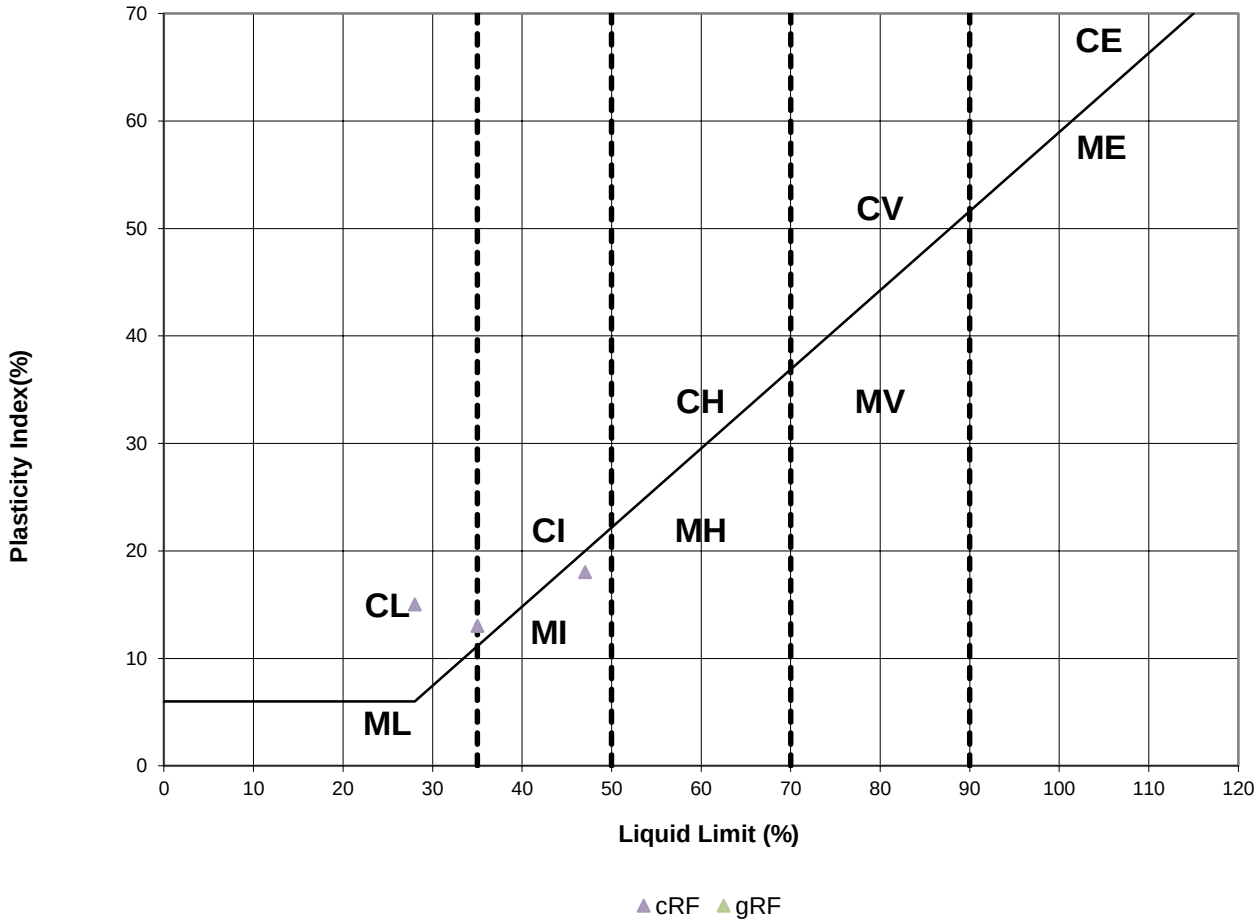
Date Reported:	05/06/2020	Figure Number:	**10**

SWECO	A Line Plot				
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular River Terrace Deposits (cRTD and gRTD)		



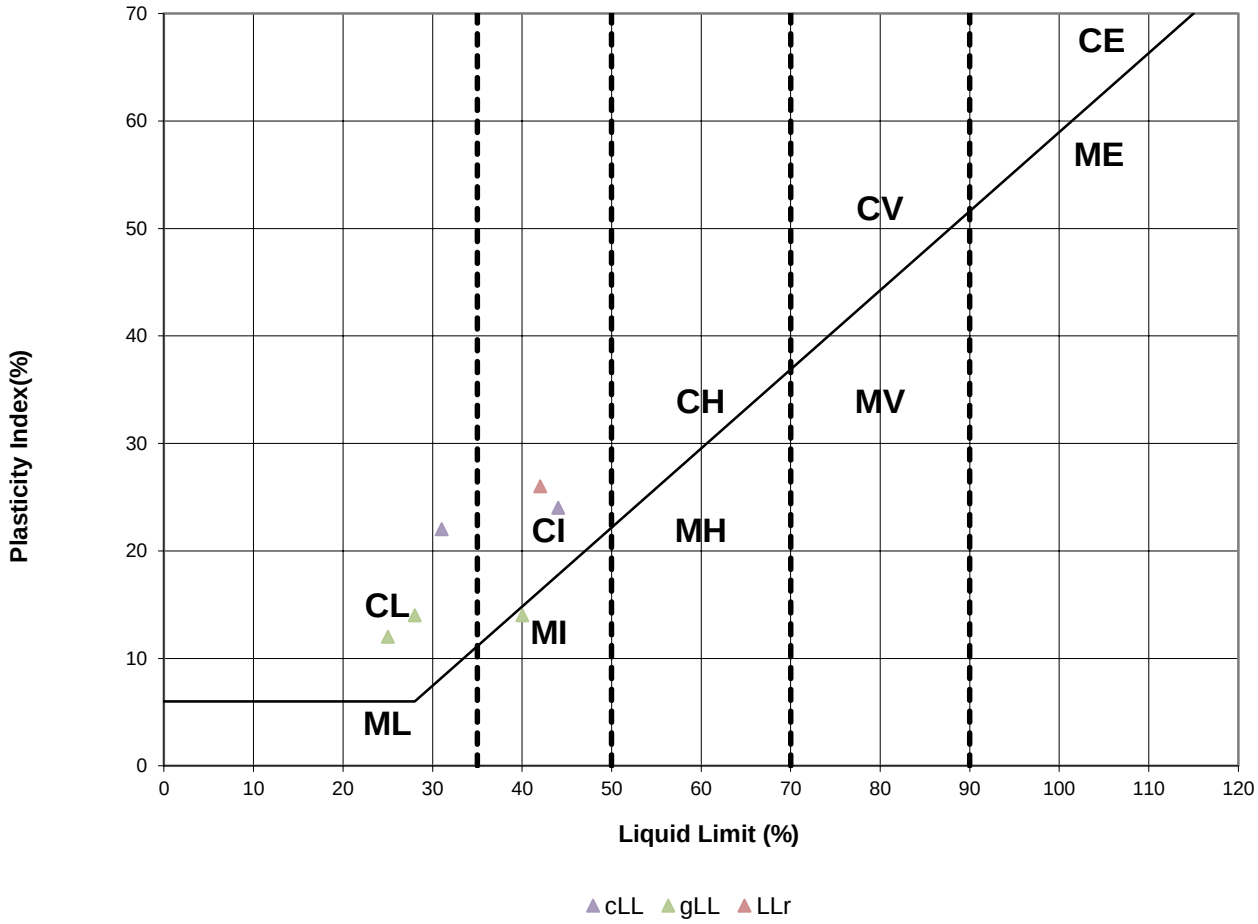
Date Reported:	05/06/2020	Figure Number:	**11**

SWECO	A Line Plot				
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular Rutland Formation (cRF and gRF)		



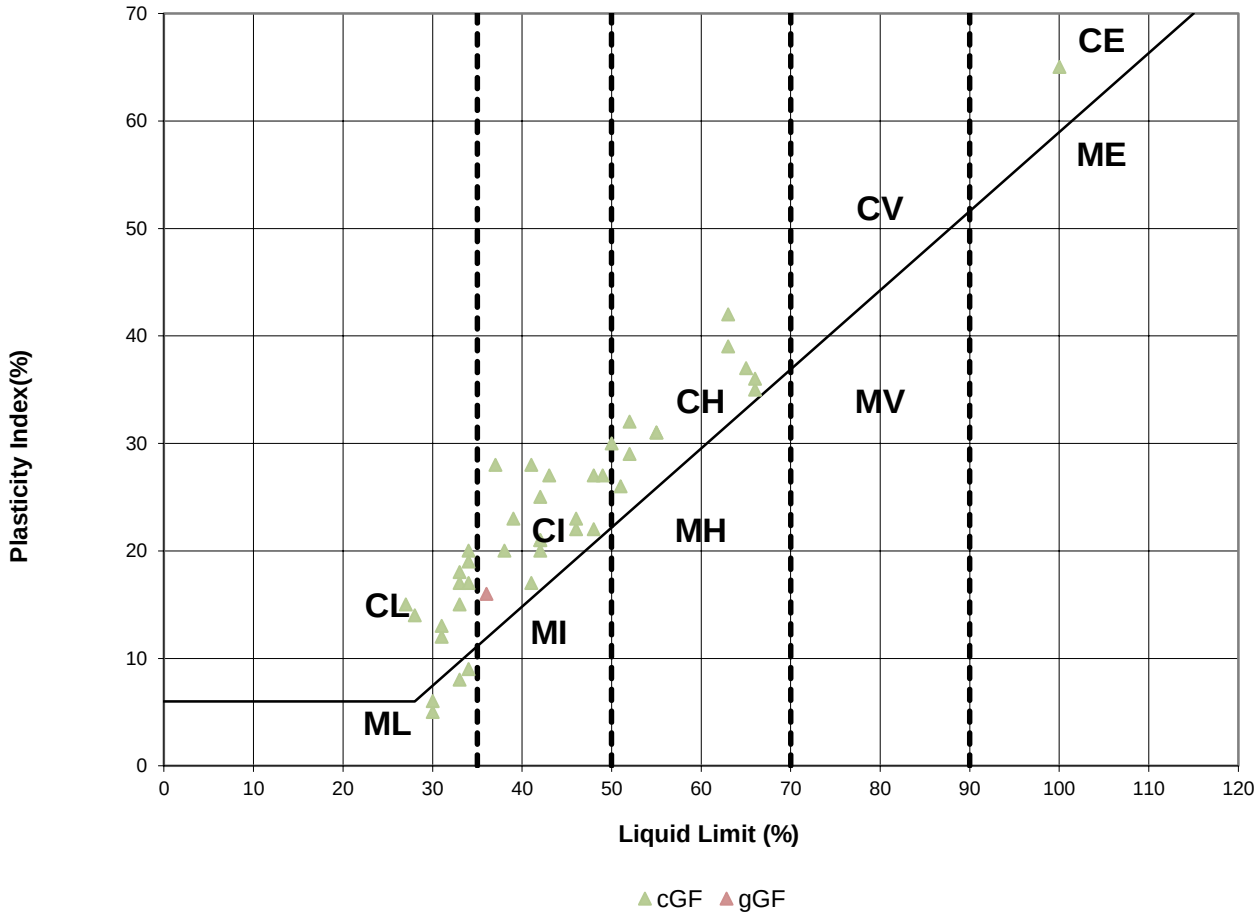
Date Reported:	05/06/2020	Figure Number:	**12**

SWECO	A Line Plot				
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive, granular and rock Lincolnshire Limestone Formation (cLL, gLL and LLr)		



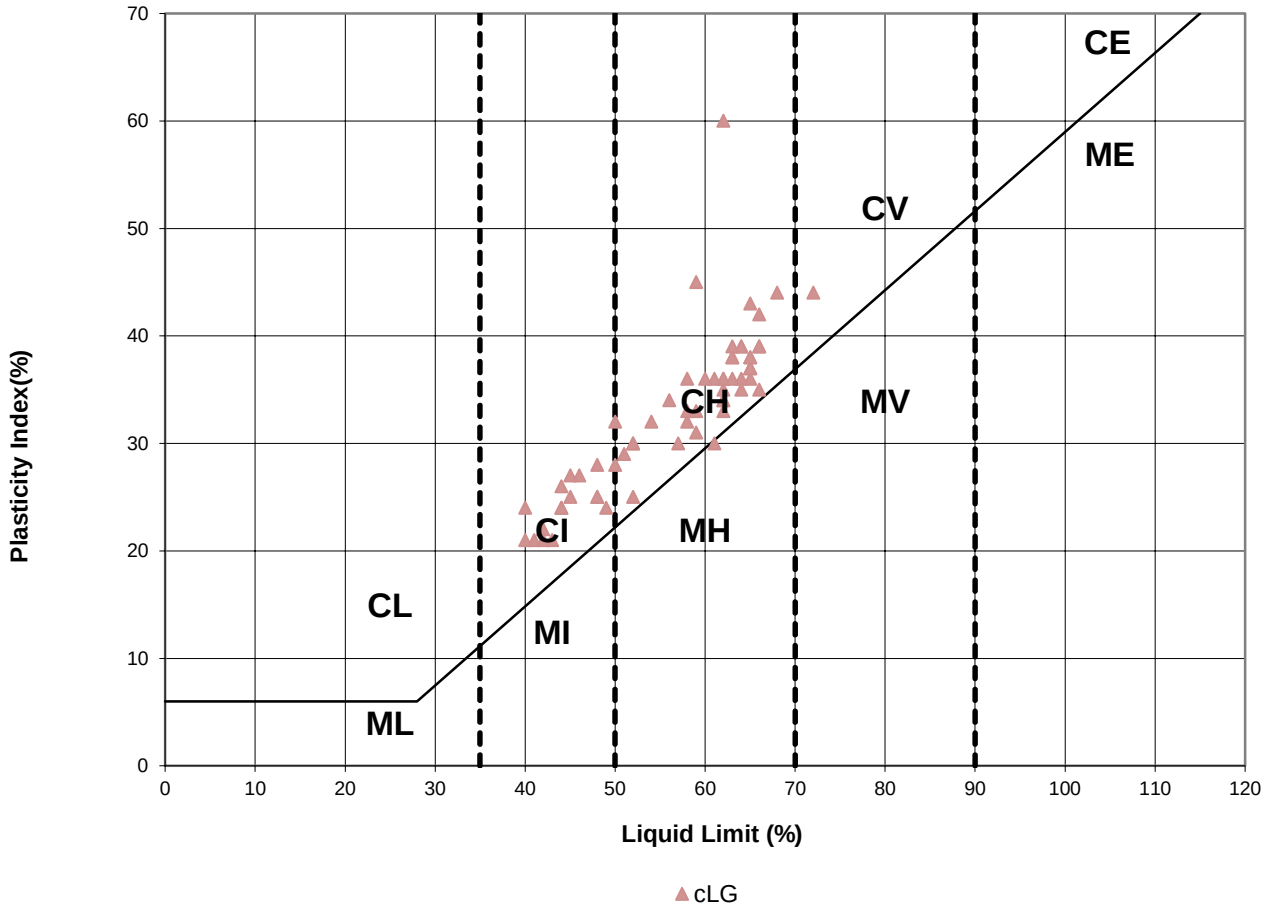
Date Reported:	05/06/2020	Figure Number:	**13**

SWECO	A Line Plot				
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular Grantham Formation (cGF and gGF)		



Date Reported:	05/06/2020	Figure Number:	**14**

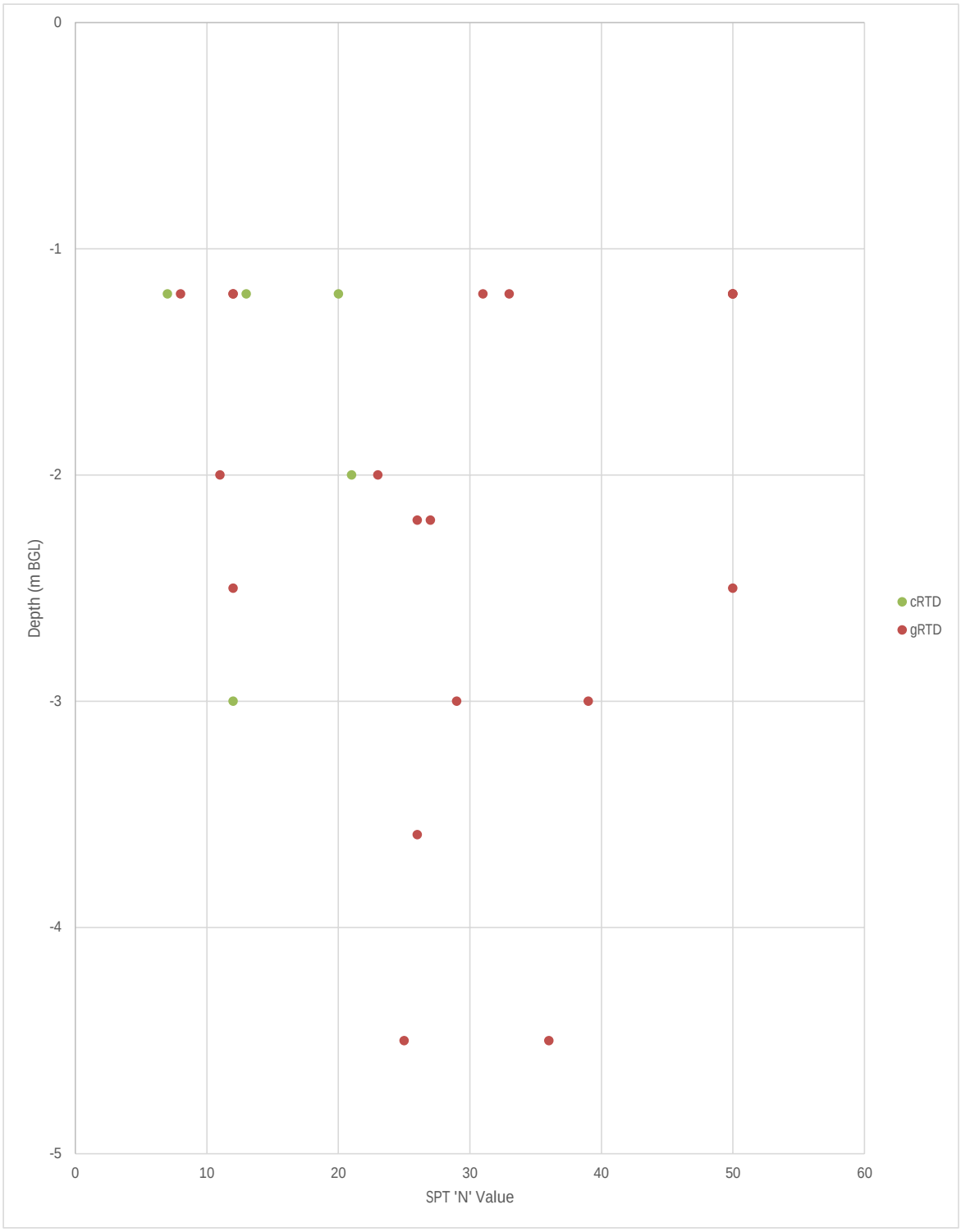
SWECO	A Line Plot				
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive Lias Group (cLG)		



Date Reported:	05/06/2020	Figure Number:	15

SWECO	SPT N Value vs Depth (m BGL)	

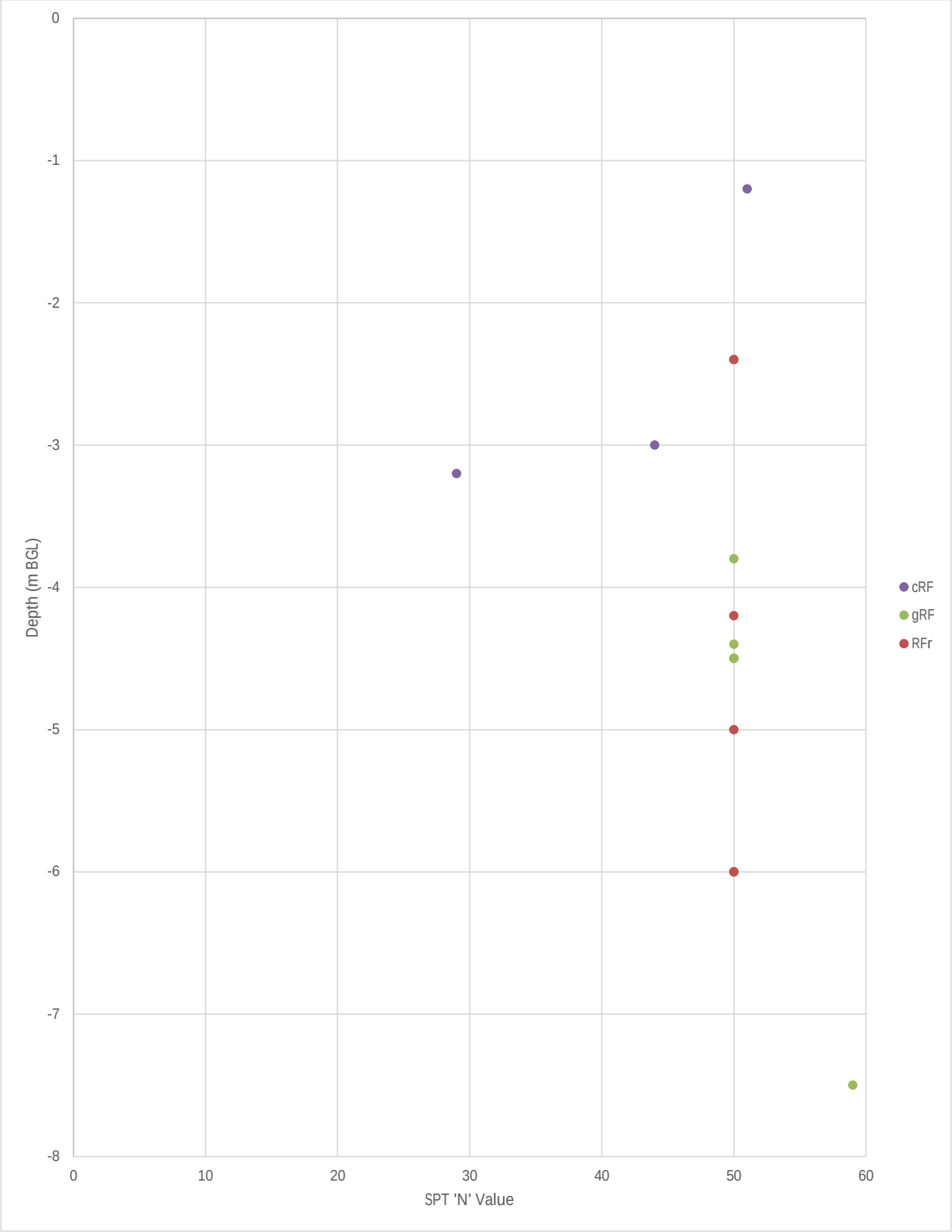
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular River Terrace Deposits (cRTD and gRTD)		



Date Reported:	05/06/2020	Figure Number:	**16**

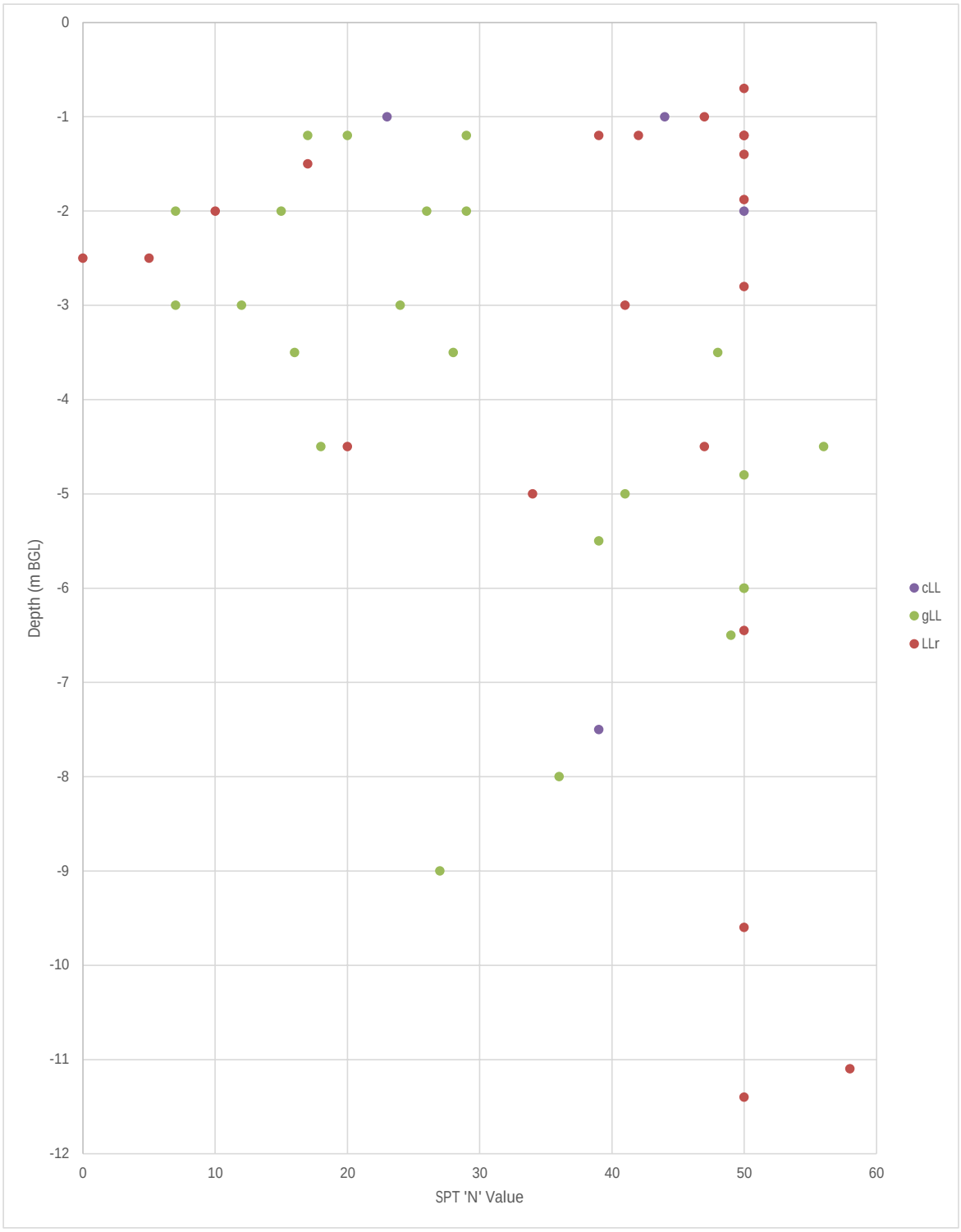
SWECO	SPT N Value vs Depth (m BGL)	

Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited	
Client: Highways England Company Limited	Strata: cohesive, granular and rock Rutland Formation (cRF, gRF and RFr)		



Date Reported: 05/06/2020 Figure Number: **17**

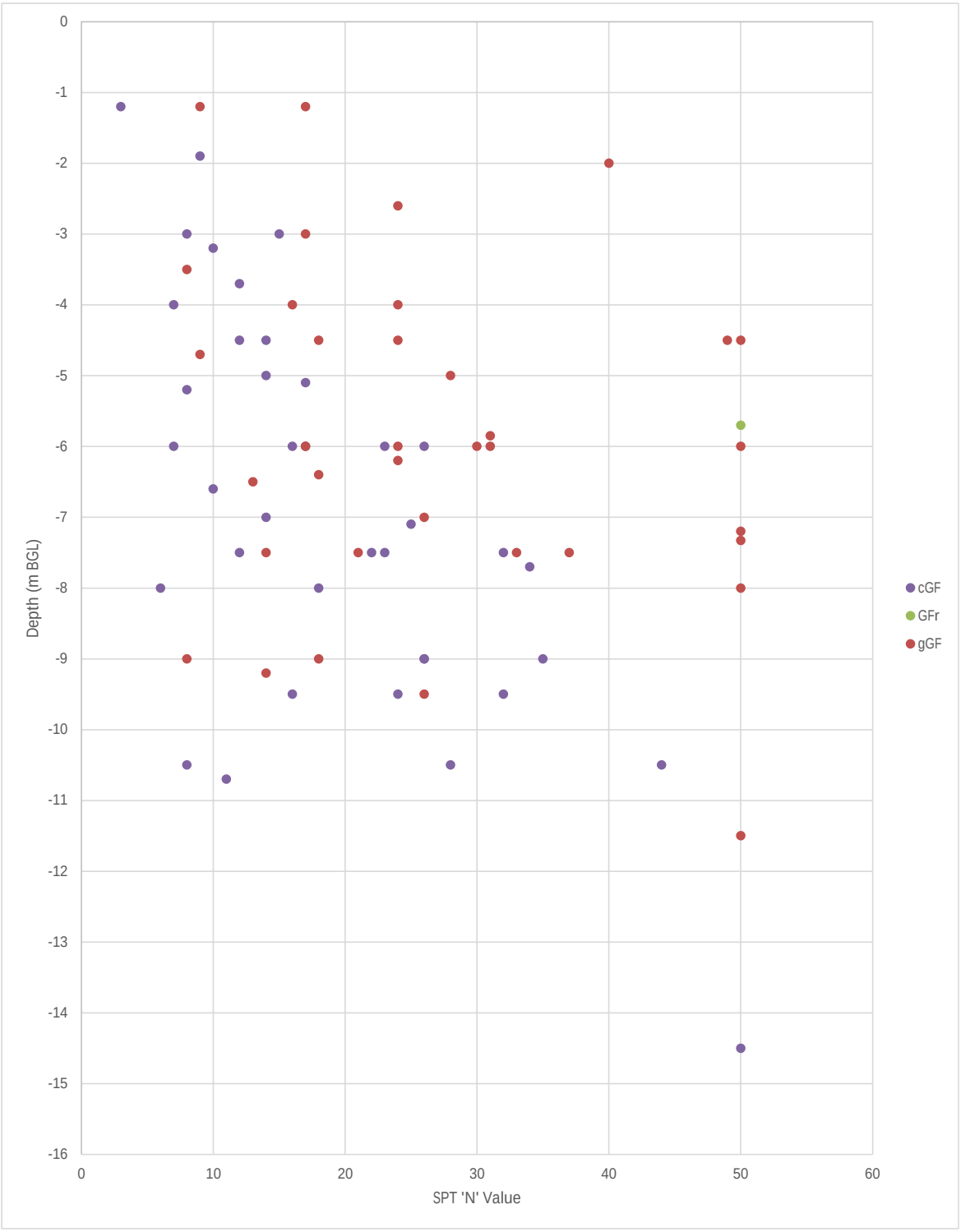
SWECO	SPT N Value vs Depth (m BGL)	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive, granular and rock Lincoln Limestone Formation (cLL, gLL and LLr)	



Date Reported:	05/06/2020	Figure Number:	**18**

SWECO	SPT N Value vs Depth (m BGL)	

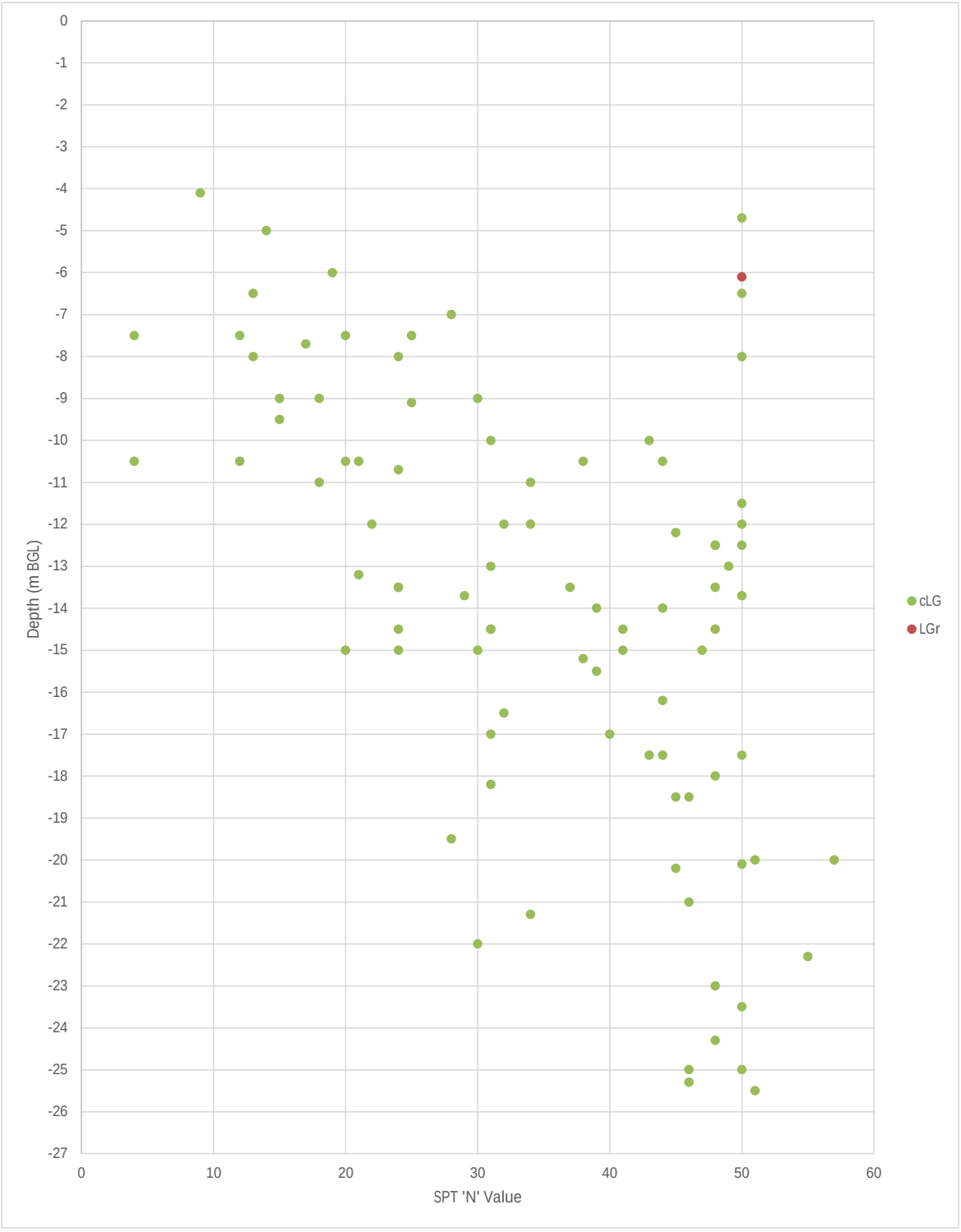
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	A47 Wansford to Sutton		



Date Reported:	05/06/2020	Figure Number:	**19**

SWECO	SPT N Value vs Depth (m BGL)	

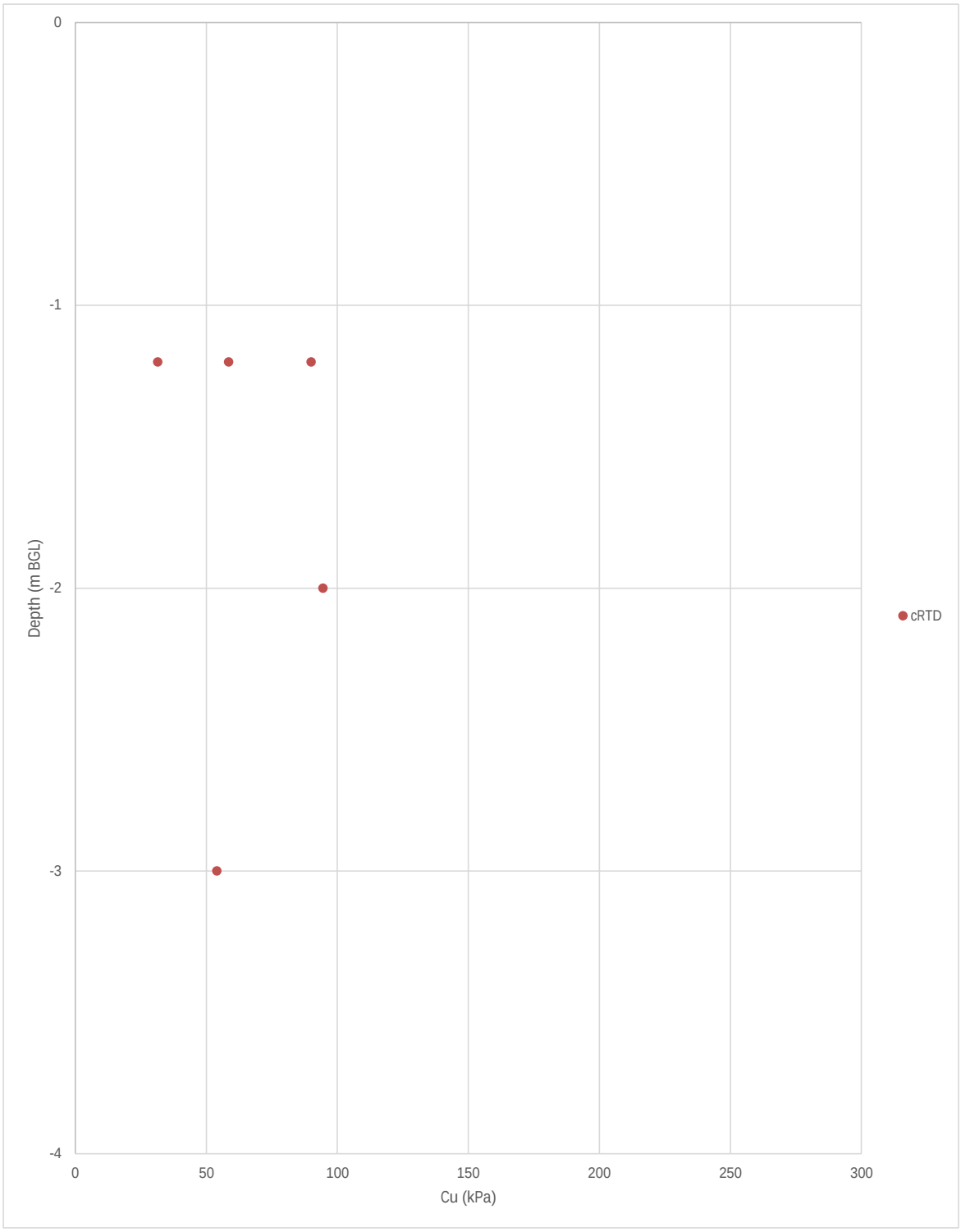
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata:	cohesive and rock Lias Group (cLG and LGr)



Date Reported:	05/06/2020	Figure Number:	**20**

SWECO	Cu (kPa) vs Depth (m BGL)	

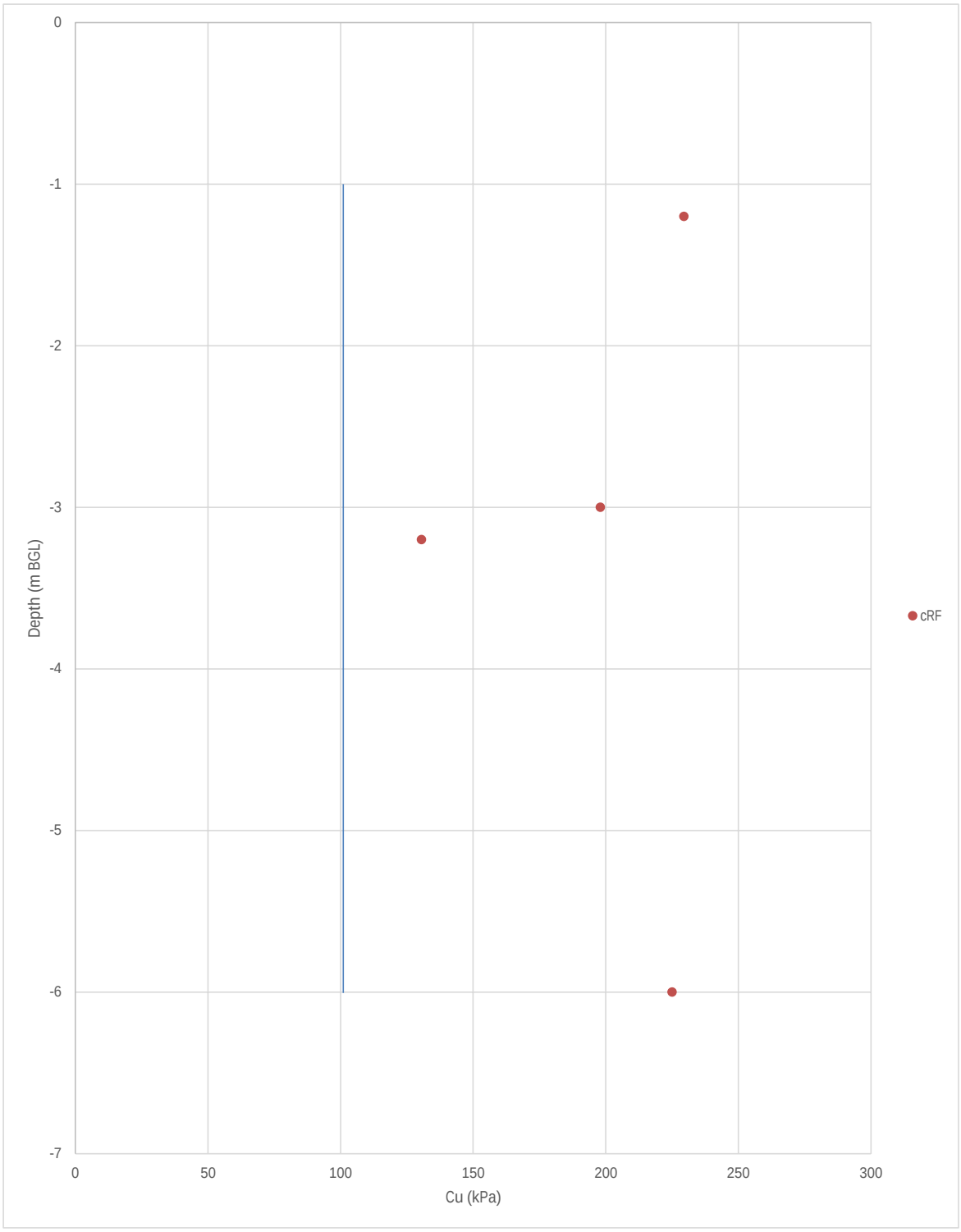
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesivve River Terrace Deposits		



Date Reported:	05/06/2020	Figure Number:	**21**

SWECO	Cu (kPa) vs Depth (m BGL)	

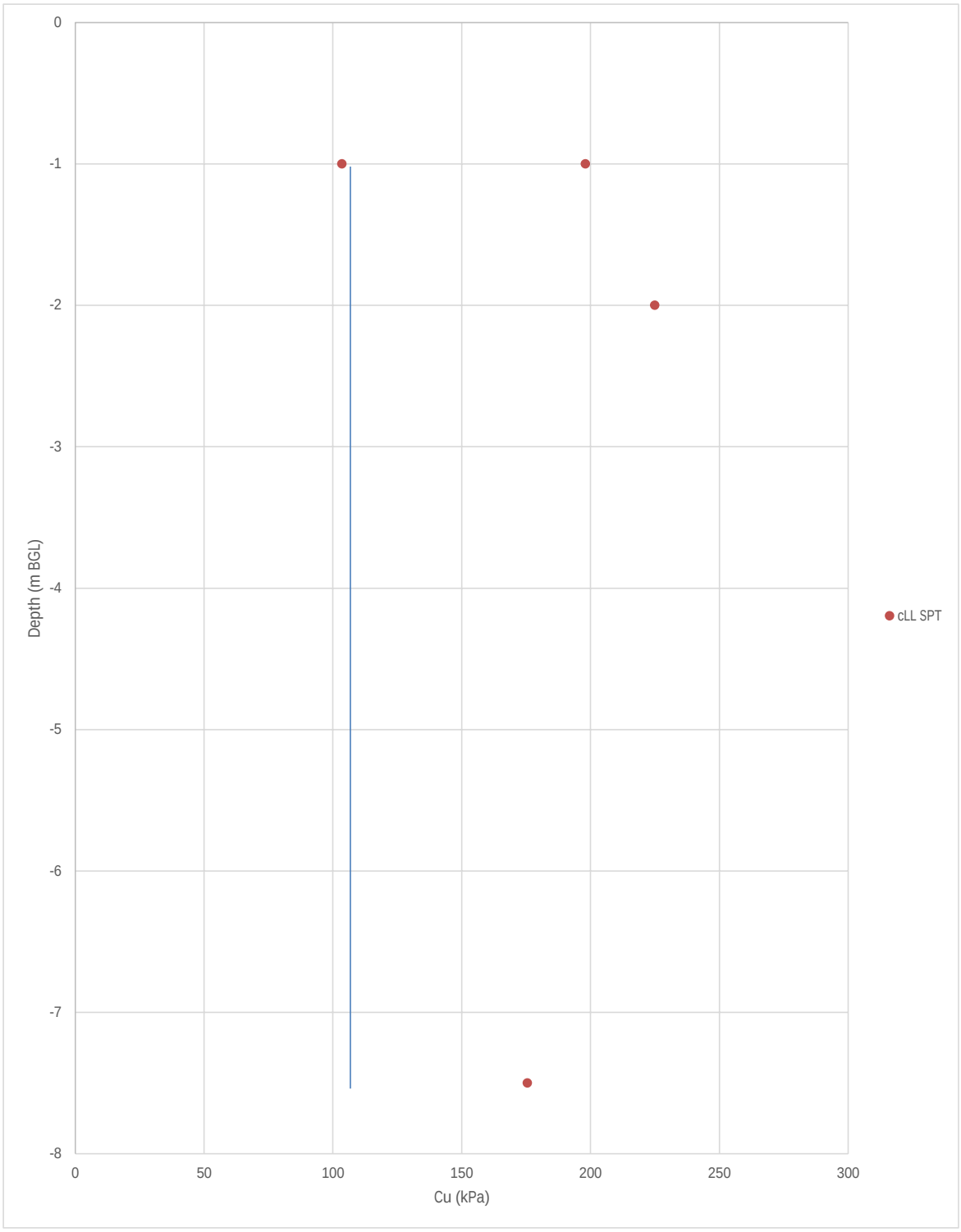
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited	
Client: Highways England Company Limited	Strata: cohesive Rutland Formation (cRF)		



Date Reported: 05/06/2020 Figure Number: **22**

SWECO	Cu (kPa) vs Depth (m BGL)	

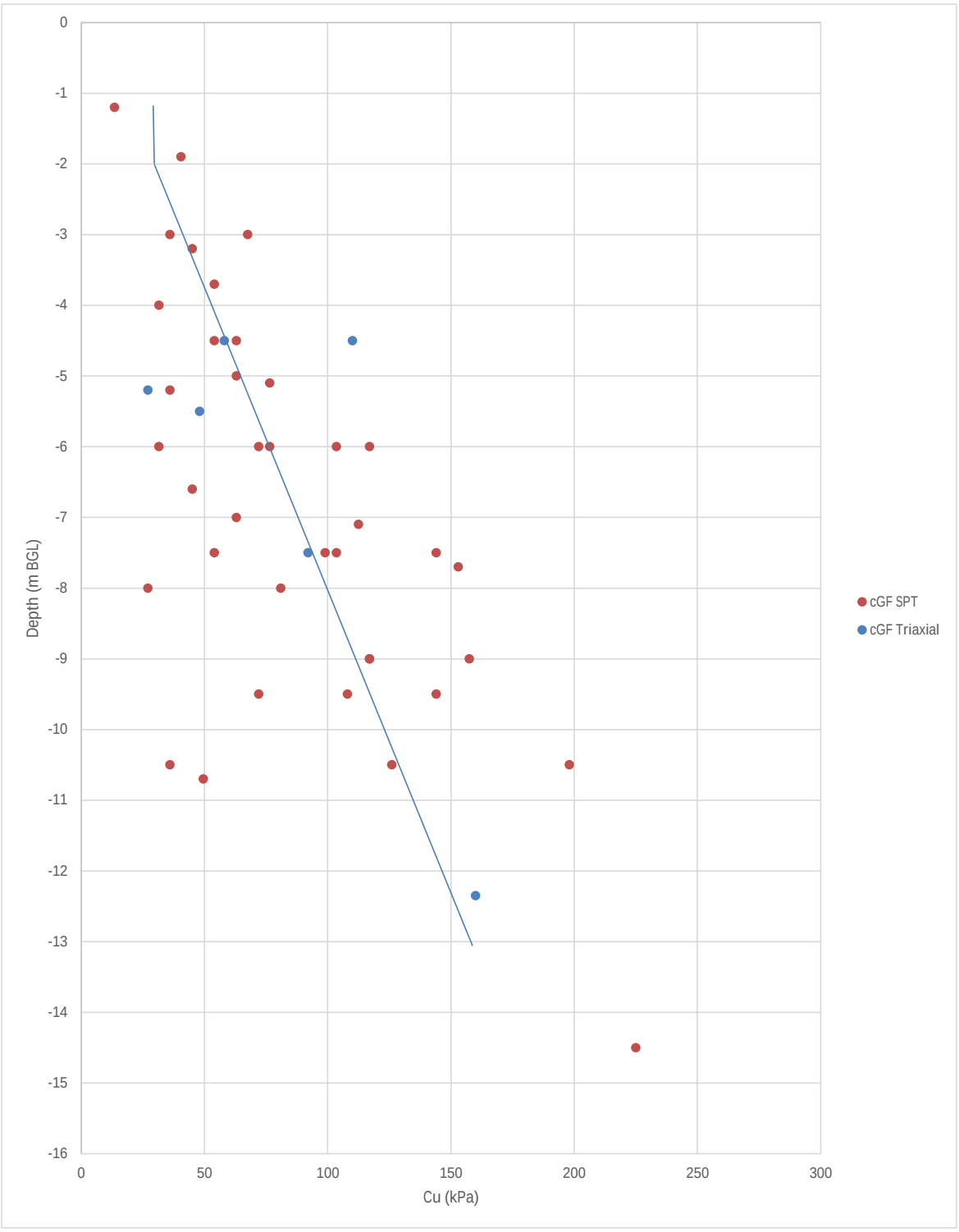
Project ID: 64201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive Lincolnshire Limestone Formation (cLL)	



Date Reported: 05/06/2020 Figure Number: **23**

SWECO	Cu (kPa) vs Depth (m BGL)	

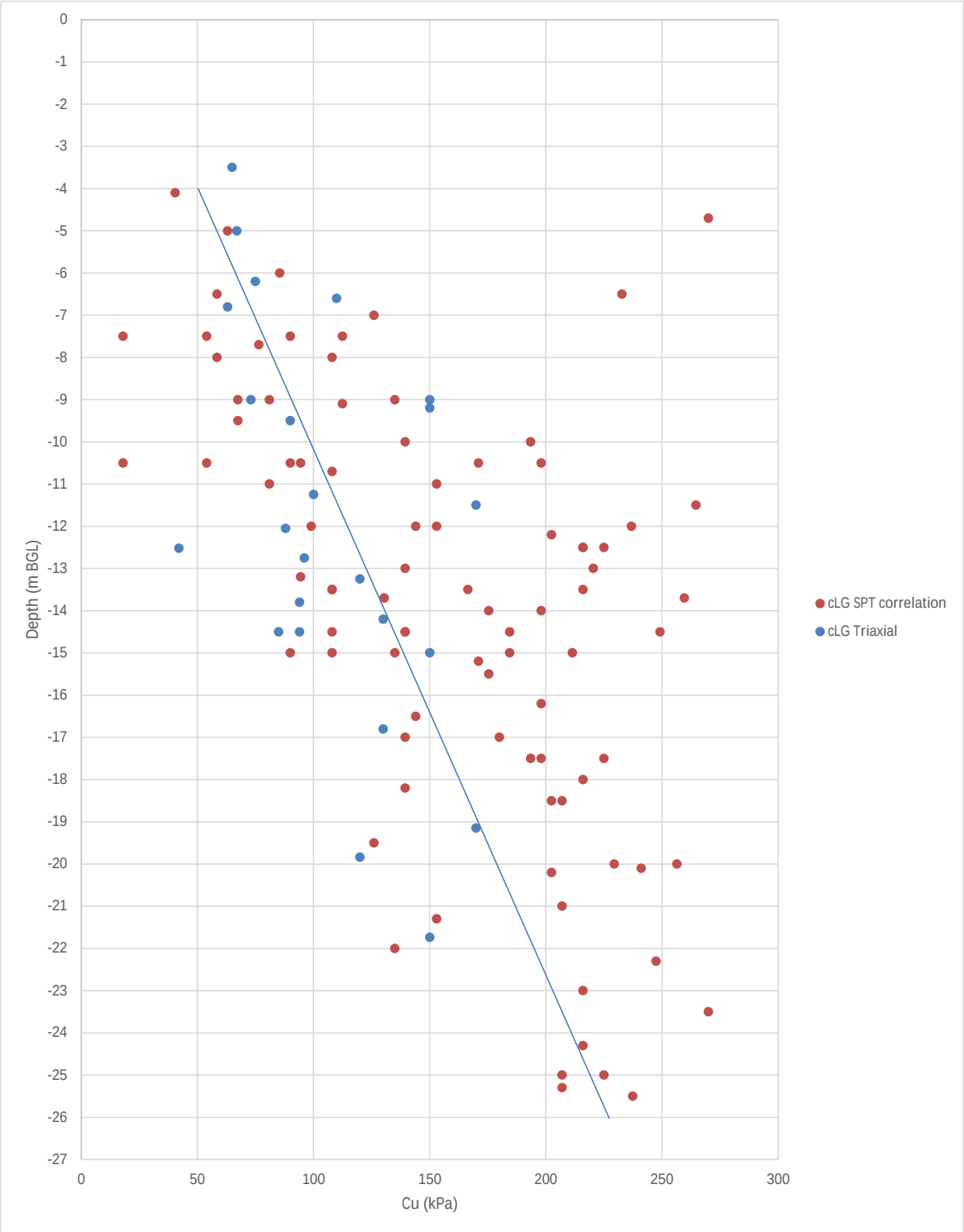
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive Grantham Formation (cGF)		



Date Reported:	05/06/2020	Figure Number:	**24**

SWECO	Cu (kPa) vs Depth (m BGL)	

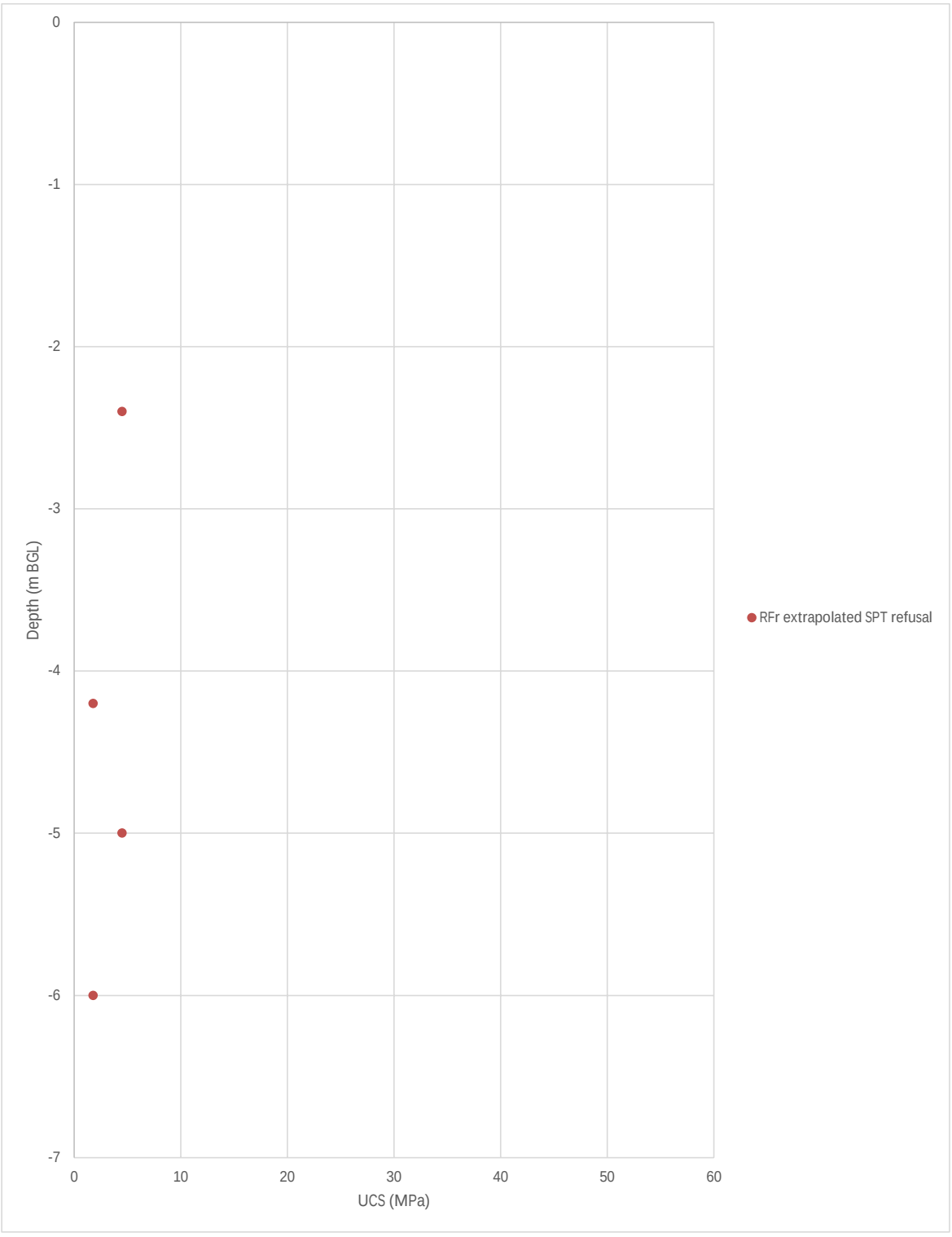
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata:	cohesive Lias Group (cLG)



Date Reported:	05/06/2020	Figure Number:	**25**

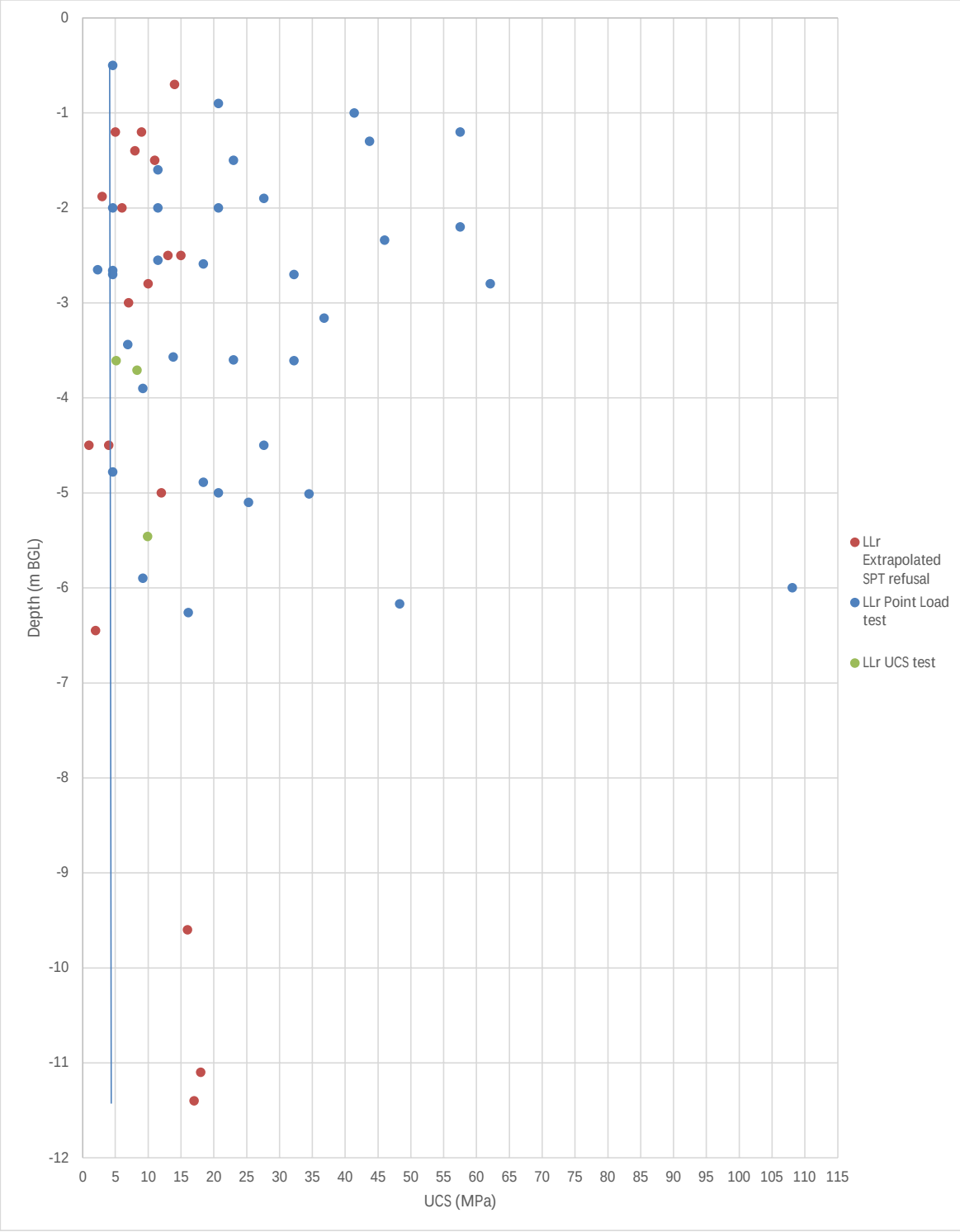
SWECO	UCS (MPa) vs Depth (m BGL)	

Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited	
Client: Highways England Company Limited	Strata: Rutland Formation rock (RFr)		



Date Reported: 05/06/2020 Figure Number: **26**

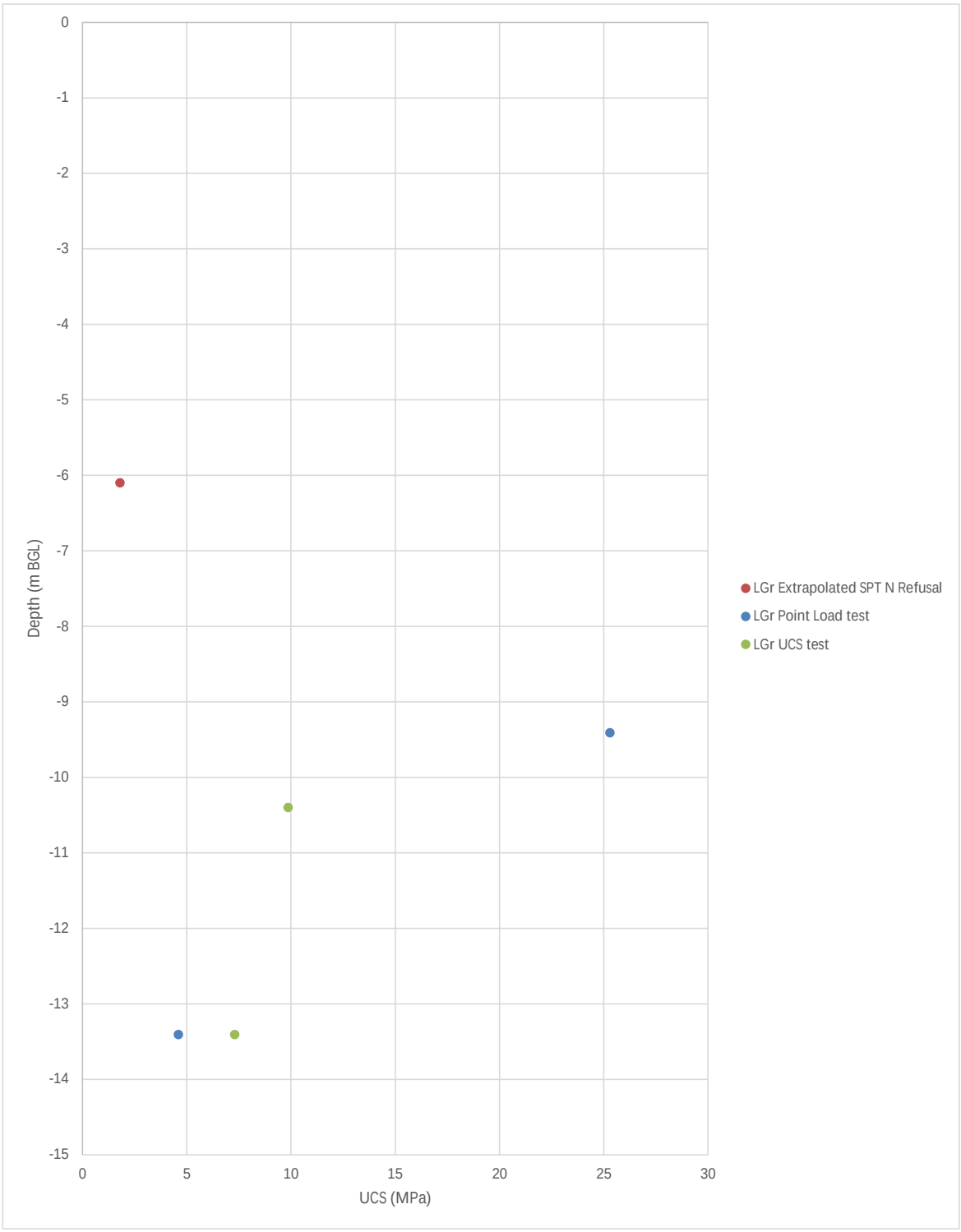
SWECO	UCS (MPa) vs Depth (m BGL)	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: Lincolnshire Limestone rock (LLr)	



Date Reported:	05/06/2020	Figure Number:	**27**

SWECO	UCS (MPa) vs Depth (m BGL)	

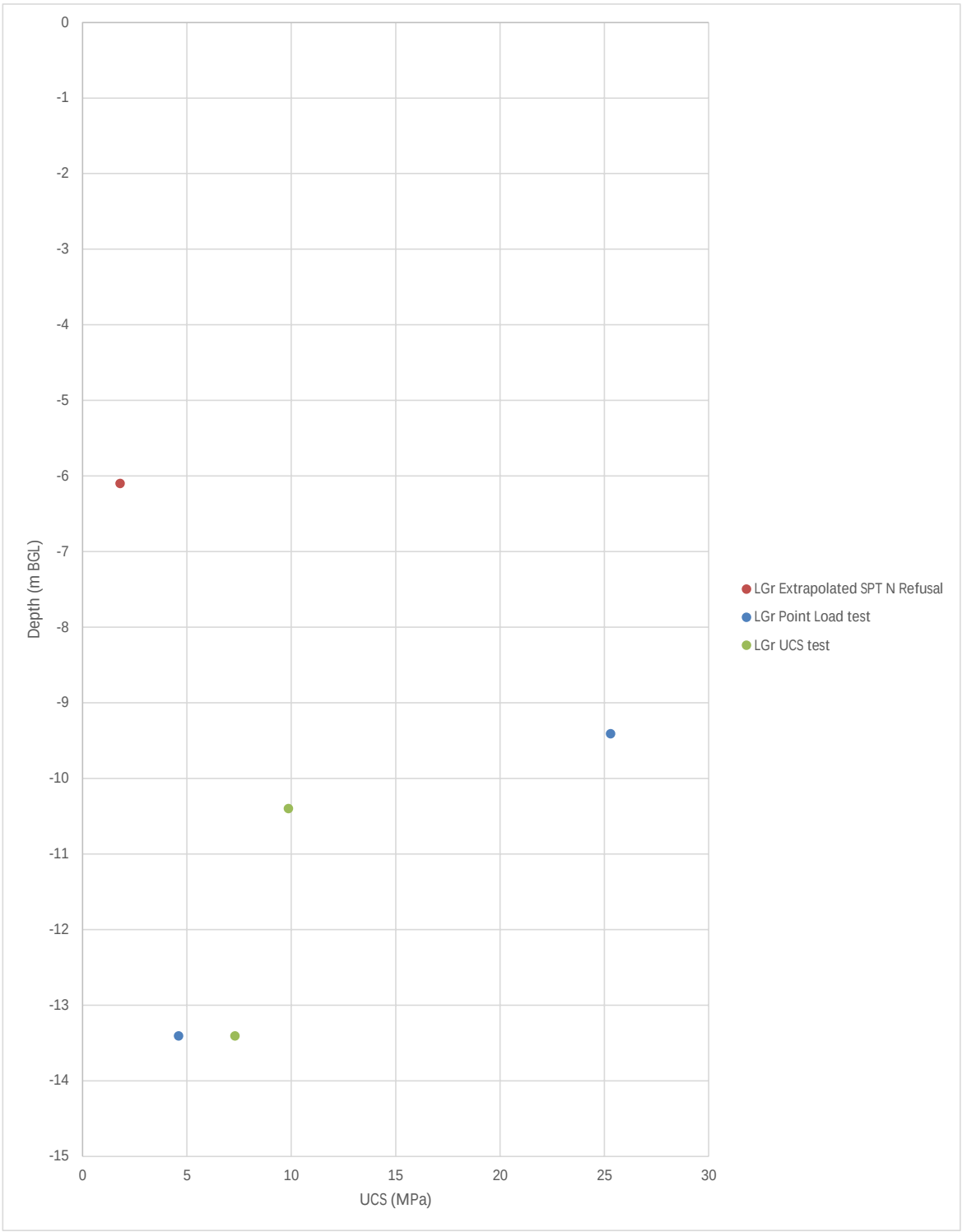
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	Lias Group rock (LGr)		



Date Reported:	05/06/2020	Figure Number:	**28**

SWECO	UCS (MPa) vs Depth (m BGL)	

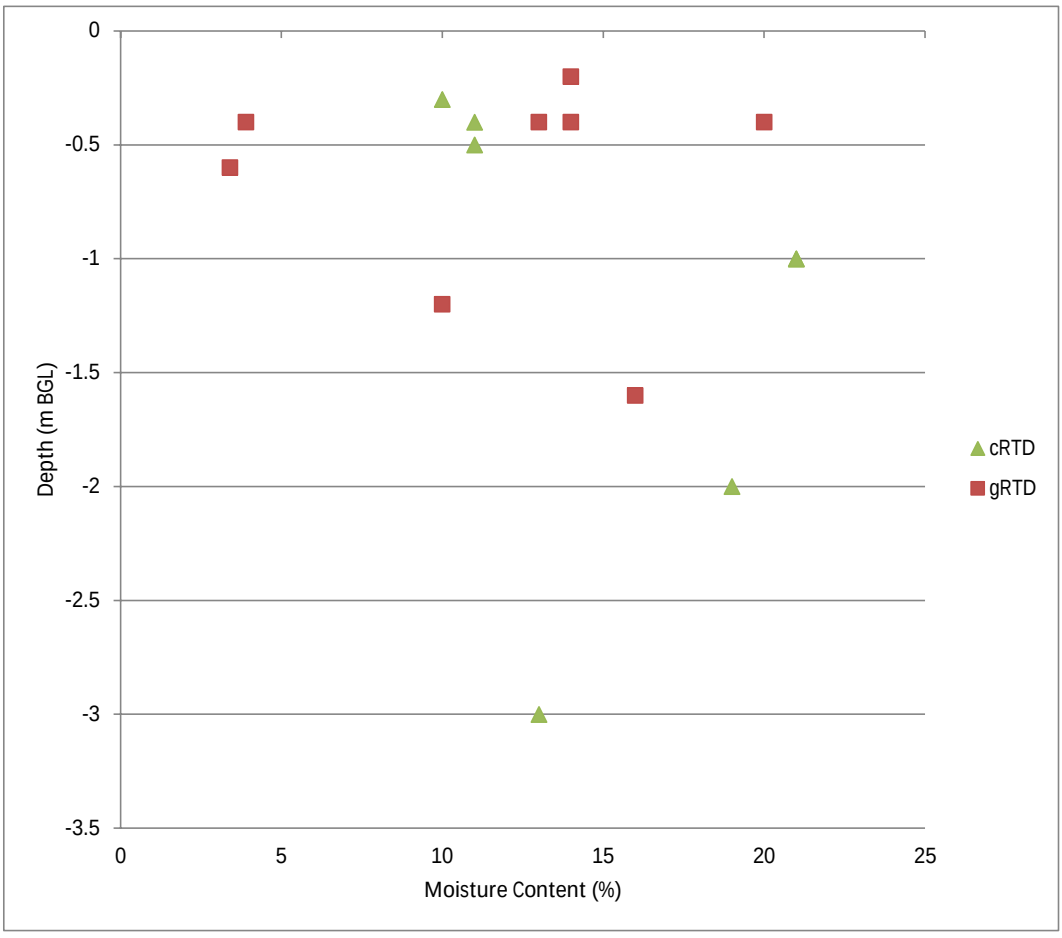
Project ID:	65201442	Project Title: A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	Lias Group rock (LGr)	



Date Reported:	05/06/2020	Figure Number:	**29**

Moisture Content

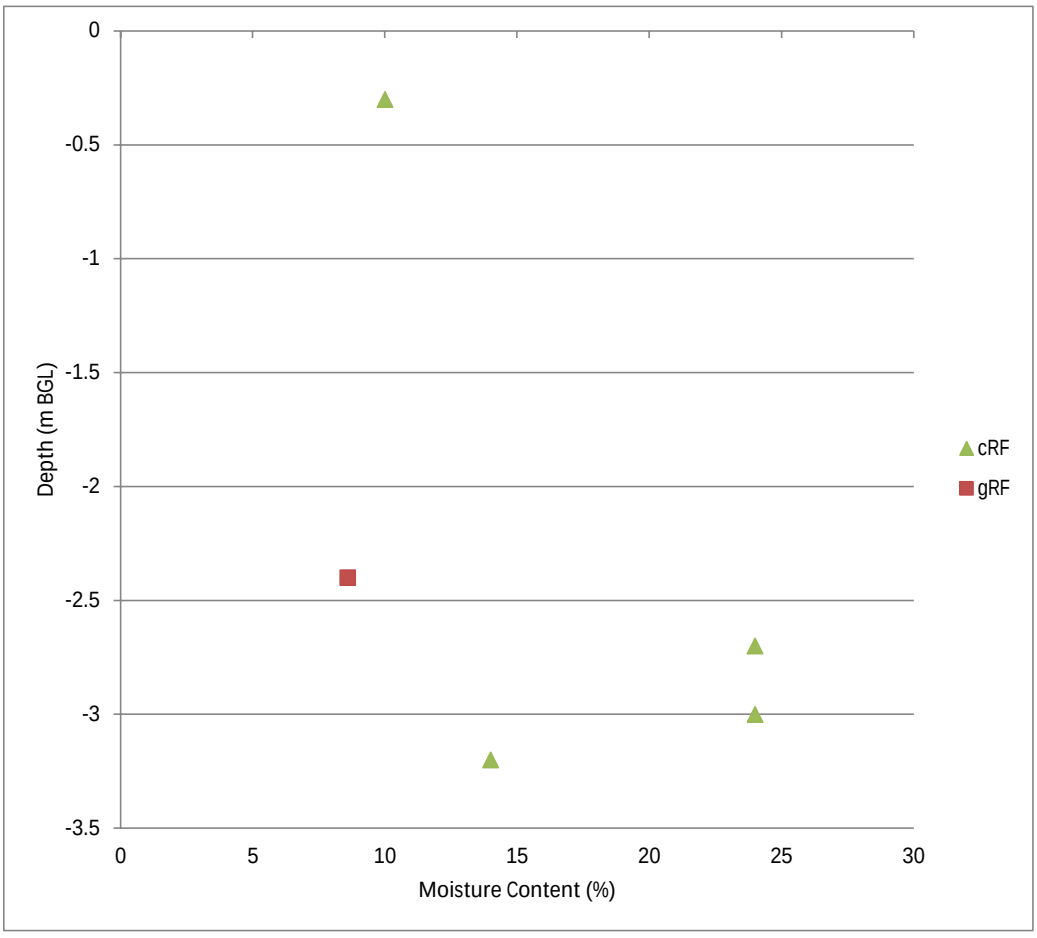
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular River Terrace Deposits (cRTD and gRTD)		



Date Reported:	05/06/2020	Figure Number:	**30**

Moisture Content

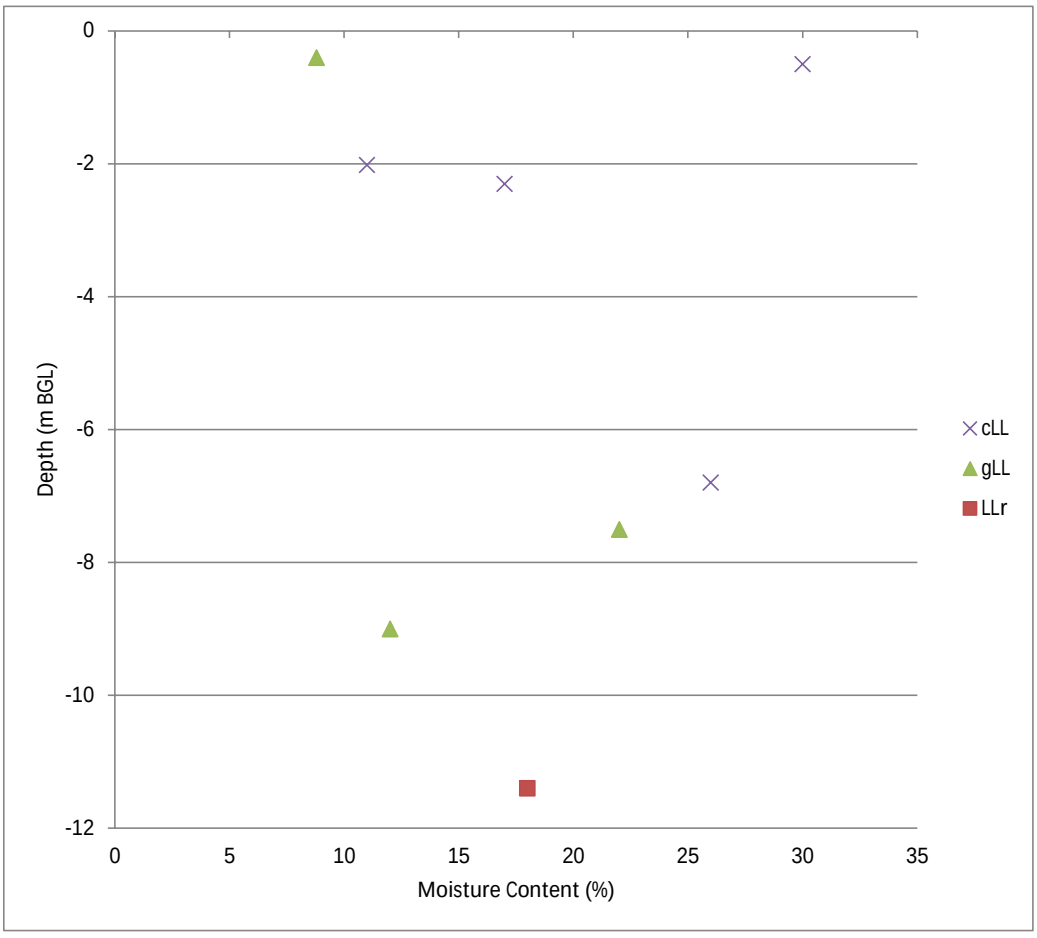
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive and granular Rutland Formation (cRF and gRF)		



Date Reported	05/06/2020	Figure Number:	**31**

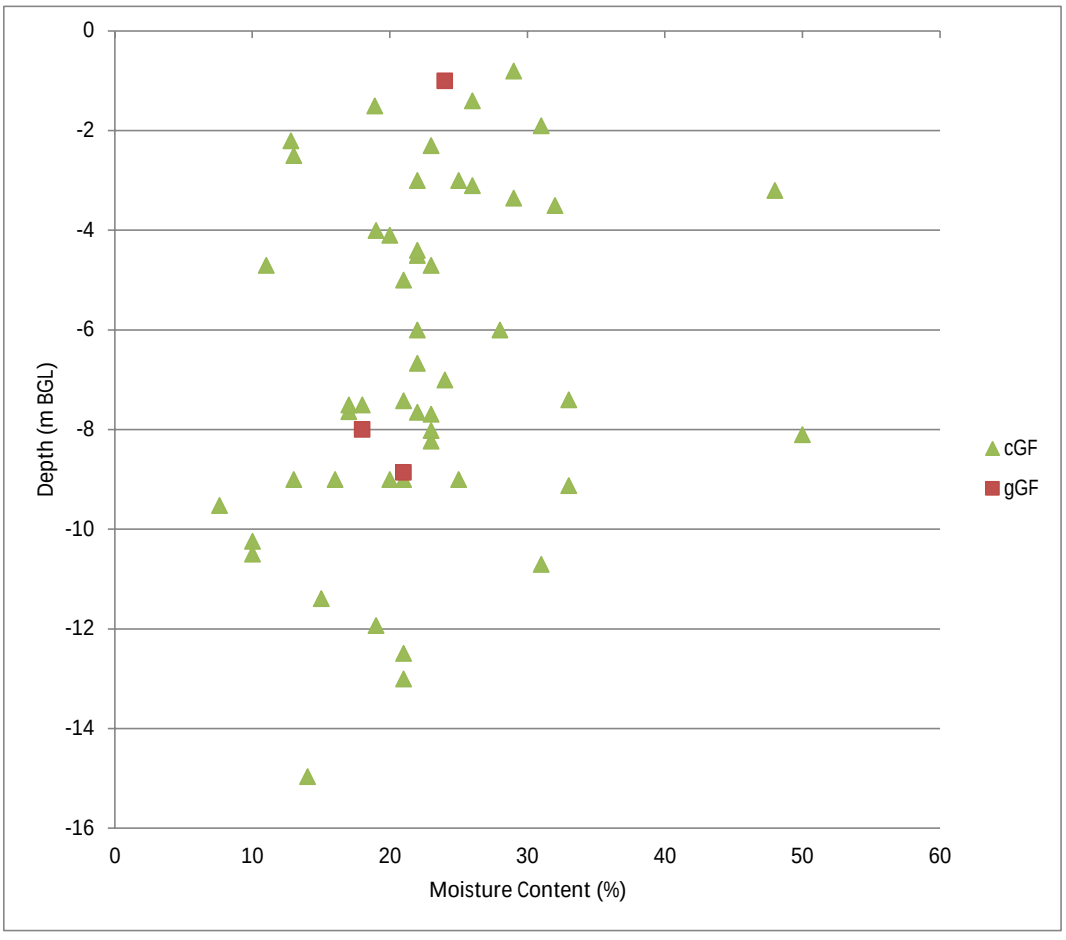
Moisture Content

Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Strata:	cohesive, granular and rock Lincolnshire Limestone (cLL, gLL and LLr)		



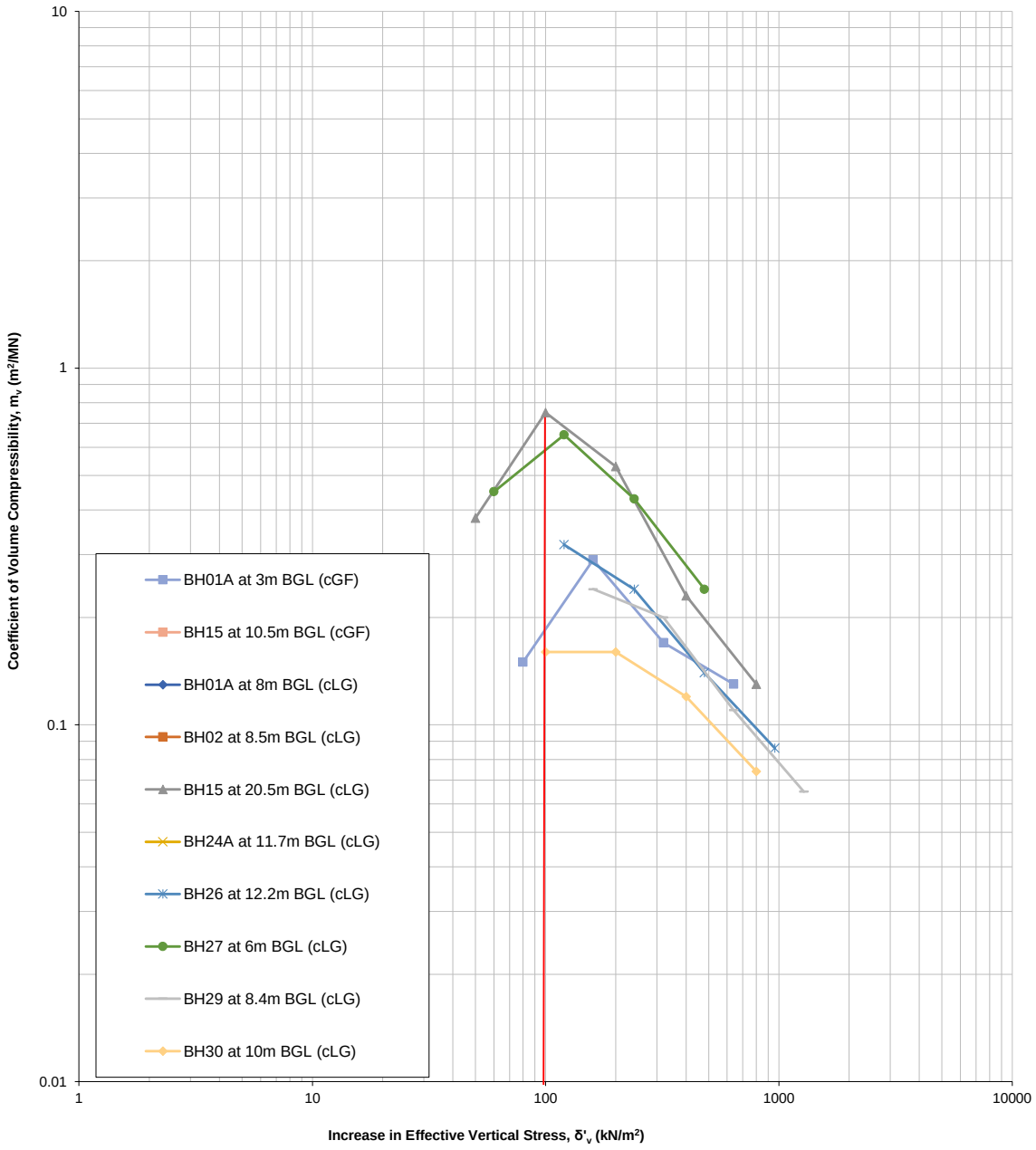
Date Reported	05/06/2020	Figure Number:	**32**

SWECO		Moisture Content			
Project ID:	65201442	Project Title:	A47 Wansford to Sutton	Contractor:	Soils Limited
Client:	Highways England Company Limited	Location:	cohesive and granular Grantham Formation (cGF and gGF)		



Date Reported:	05/06/2020	Figure Number:	**33**

SWECO	Oedometer	
Project ID: 65201442	Project Title: A47 Wansford to Sutton	Contractor: Soils Limited
Client: Highways England Company Limited	Strata: cohesive Grantham Formation, cohesive Lias Group	



Date Reported:	**05/06/2020**	Figure Number:	**34**

Appendix E. Hierarchy of Screening Criteria for Generic Quantitative Risk Assessment

Hierarchy of Screening Criteria for Generic Quantitative Risk Assessment

1. OVERVIEW OF GENERIC SOIL SCREENING GUIDELINE VALUES

1.1 Introduction

In order to put the chemical analysis results for the site into context, the data has initially been assessed in relation to several sets of legislative guidelines and other criteria, commonly used for the assessment of land contamination. This is undertaken in consideration of the conceptual model for the site which establishes the pathways and receptors which are applicable.

This approach constitutes a Generic Quantitative Risk Assessment (GQRA). A GQRA may typically involve a site investigation to gather information on the type, levels and extent of contamination present, with comparison against generic assessment criteria (GAC) for various site use scenarios and environmental receptors. Assessment criteria may also take account of specific exposure pathways.

The background and hierarchy to the assessment criteria which have been used to undertake a GQRA in this report are described below. Assessment criteria are now available covering different levels of risk for both planning and Part 2A assessments.

In order to reflect the current site use, all available soil analysis results have been screened against GAC for a commercial land use.

1.2 Land Quality Management (LQM) GAC 2009

In July 2009 LQM published GAC for approximately 80 chemicals or groups of chemicals. These were generated using the updated CLEA framework and the CLEA software (v1.04). GAC were generated for the standard CLEA land uses using an SOM content of 1%, 2.5% and 6%. Transparent explanation of the GAC generation process including all chemical input parameters is provided within the LQM Report.

1.3 The EIC/AGS/CL:AIRE GAC 2010

In January 2010 Contaminated Land: Applications in Real Environments (CL:AIRE) in association with The Environmental Industries Commission (EIC) and The Association of Geotechnical and Geoenvironmental Specialists (AGS) published GAC for 35 contaminants.

GACs for the 35 contaminants were generated using CLEA v1.06 for the three standard CLEA land uses (residential with consumption of homegrown produce, commercial and allotments) as well as residential without consumption of homegrown produce. The GACs have been generated using an SOM content of 1%, 2.5% and 6%.

The methodology and supporting information for the EIC/AGS GACs is fully documented in the report published by CL:AIRE.

1.4 Category 4 Screening Levels 2014

In March 2014 CL:AIRE published Category 4 Screening Levels (C4SLs) for six contaminants in a project backed by DEFRA. These C4SLs describe low levels of harm which is in contrast to the minimal risk levels described by SGVs.

The underlying assumptions describing the exposure scenarios have been updated from those detailed in the SGV reports such as those describing inhalation rates in line with new research. In addition the toxicological data for the six contaminants was reviewed and updated where deemed appropriate.

C4SL have been primarily derived to provide screening criteria for Part 2A assessments. Soils with concentrations below the C4SL cannot be determined under Part 2A as contaminated land.

Currently C4SLs have been derived for: arsenic, benzene, benzo(a)pyrene, cadmium, chromium and lead at an SOM of 6%. They are published for the following land use scenarios:

- Residential (with and without homegrown produce)
- Allotments
- Commercial.

They also include two new land use scenarios both based on public open space (POS).

Sweco have produced Sweco C4SL (SC4SL) for the six contaminants at SOMs of 1% and 2.5%.

1.5 LQM Suitable For Use Levels (S4UL) 2015

In January 2015 LQM published Suitable for Use Levels (S4ULs) for a total of 89 chemicals or groups of chemicals which represent a minimal level of risk (equivalent to risk levels used in the derivation of SGVs). These were generated using the updated scenarios found in the C4SL framework, revisions to chemical data and updated toxicological data where available and generated using the CLEA software (v1.06). Transparent explanation of the S4UL generation process including all chemical input parameters is provided within the LQM Report.

The new S4ULs have been published for five types of land use as follows;

- Residential (with and without consumption of homegrown produce)
- Allotments
- Commercial
- Public Open Space – Parks
- Public Open Space – Residential

All S4ULs are generated based on a standard soil type defined as a sandy loam with a soil organic matter (SOM) content of 1%, 2.5% and 6%.

1.6 Sweco Suitable For Use Criteria (SS4UL)

A series of generic assessment criteria have been generated by Sweco using CLEA (v1.07) for the standard land uses as defined by the CLEA framework for all contaminants for which SGV and associated TOX reports have been published.

The SOM parameter is used to predict the level of sorption that will occur between the contaminant and soil particles. It affects the potential mobility of contaminants and therefore influences the predicted exposure by humans to a particular contaminant. Amending the SOM is therefore reflected in either an increase or decrease of the generic screening criteria.

The use of generic assessment criteria generated using SOM concentrations of 1% and 2.5% should be considered where site specific assessment (i.e. analytical results for fraction / total organic carbon) has identified soil conditions that are better characterised by an organic content which is below the 6% assumed in the published SGVs.

1.7 Hierarchy of Generic Assessment Criteria

In all cases, a GAC is only used where the conceptual model for the site indicates that it would be appropriate to use criteria derived for the five standard land uses.

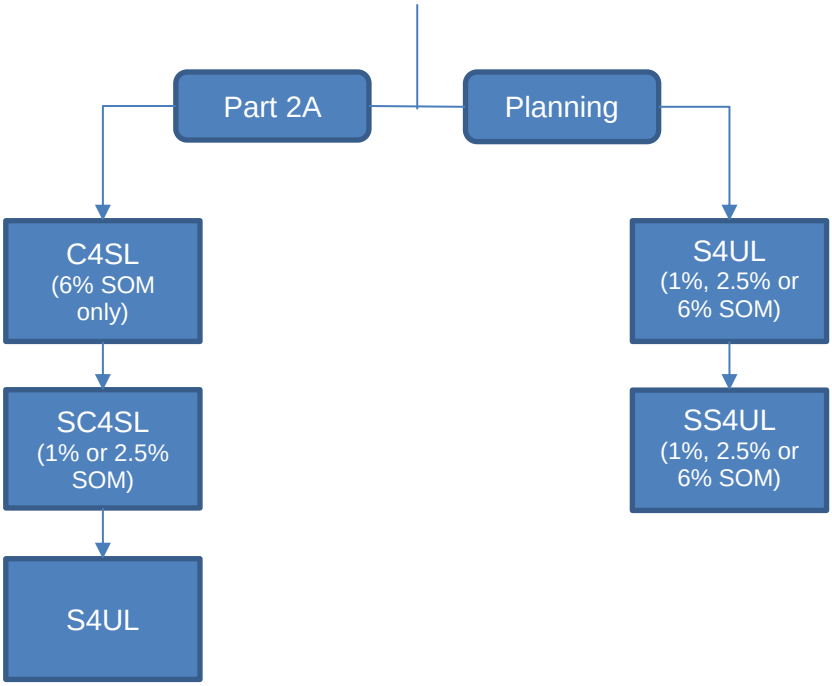
The C4SL for benzo(a)pyrene uses a surrogate for all PAHs and similarly the S4UL also have benzo(a)pyrene as a surrogate for coal tar which can be used as an alternative approach to screening against individual PAHs. The S4ULs also have assessment criteria for individual PAHs and Sweco have adopted the approach of screening against both the surrogate and individual PAHs for completeness.

When deriving the assessment criteria some criteria are derived at a concentration greater than the chemicals' theoretical solubility limit. The S4ULs are presented in the LQM 2015 report with both the solubility limited value and the human health risk criteria. These solubility limited criteria are indicative of the presence of free product and do not present a concentration where human health risk may necessary occur. In these cases Sweco have taken the human health derived criteria as the assessment criteria with the exception of where free product is present.

Similarly when the vapour saturation limit has been exceeded Sweco have taken the human health derived value as the assessment criteria rather than the vapour saturation limited criteria.

The selection of the appropriate criteria for the assessment is made based on both the end use and the regime (planning or Part 2A) under which the assessment is designed to perform. The choice of criteria are shown in Figure 1.

Figure 1: GQRA Assessment Criteria Choice Flowchart



Notes:

Category 4 Screening Levels (C4SLs)
The lead C4SL is currently used for both Part 2A and Planning scenarios. The remaining five C4SLs are used for a Part 2A assessment approach. C4SLs have been produced for 6% SOM only.

Sweco Category 4 Screening Levels (SC4SLs)
Sweco calculated C4SL for the six contaminants at 1% and 2.5% SOM to be used where the use of the C4SL for 6% SOM would not be appropriate.

Suitable for Use Levels (S4ULs)
These are used where S4ULs have been published. Based on recorded site conditions the most appropriate S4ULs based on an SOM of 1%, 2.5% or 6% are selected.

Sweco Generic Assessment Criteria (SS4ULs)
For contaminants not included in the S4ULs or C4SLs the SS4ULS will be utilised.

Based on recorded site conditions the most appropriate Sweco SS4UL based on an SOM of 1%, 2.5% or 6% are selected.

Extractable Petroleum Hydrocarbons (EPH)
The EPH chemical analysis completed as part of the Sweco Limited soil sampling exercise has been reported in carbon band ranges, for example EPH >C_{10}-C_{20}, inclusive of both aliphatic and aromatic compounds. The most conservative assessment criteria within the relevant carbon band range for either aliphatic or aromatic has been selected from the available GAC as the assessment criteria for each reported EPH carbon band.

Total Mercury
No assessment screening criteria is currently available for concentrations of total mercury measured in soil, with S4UL available for elemental mercury, methyl mercury and inorganic mercury.

The concentrations of total mercury in soils reported by the laboratory have been screened against assessment criteria for elemental mercury as the most conservative criteria

Cyanide

The assessment criteria for free and complex cyanide has been derived for an acute exposure scenario based on a single dose of soil ingested by a three year old female child. The criteria have been derived outside of the CLEA model utilising data and methodology produced by the Environment Agency TOX reports and CLEA regime.

The TDI has been sourced from the DEFRA and Environment Agency R &D TOX 5[1] report on inorganic cyanide.

The three year old child has been chosen as the receptor as this is taken to be the youngest age a child will be able to be independent from their parents i.e. mobile enough to leave their protection and therefore access and consume a source of cyanide. The body weight used is sourced from Technical Review 1[2], Environment Agency, 2009 and is the mean body weight for a three year old female child.

A single 5g dose has been used which approximates to a teaspoon of soil.
These criteria are used in both the Part 2A and planning assessments.

Dioxins and Furans

Dioxins and furans are assessed on a site specific basis using the Environment Agency's worksheets.

2. SOIL LEACHABILITY AND GROUNDWATER

Leachability analysis provides an indication of the potential for contaminants to be mobilised from soil through leaching and impact groundwater quality beneath the site. Two types of assessment have been undertaken on the groundwater and leachability analysis results, firstly relating to the potential impact on groundwater quality and secondly the potential impact on surface water quality.

The impact on groundwater quality has been assessed through the use of UK Drinking Water Standards (DWS) which are documented in The Water Supply (Water Quality) Regulations 2016. Where an appropriate UK DWS is not available, the World Health Organisation (WHO) guidelines for drinking water quality (2011) have been used.

Potential impacts on surface water quality which may occur through a linkage between groundwater on the site and a nearby surface water course are assessed through comparison to the environmental quality standards (EQS) presented in parts 1, 2 and 3 of Schedule 3 of The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. In the absence of these numbers, the 2004 EQS criteria have been used.

3. REFERENCES

- Science Report Final SC050021/SR2. Human Health Toxicological Assessment of Contaminants in Soil. Environment Agency. January 2009.

[1] DEFRA/Environment Agency, 2002. Contaminants in Soil: Collation of Toxicological Data and Intake Values for Humans. Inorganic Cyanide.

[2] Environment Agency, 2009. A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA).

- Science Report SC050021/SR3. Updated Technical Background to the CLEA Model. Environment Agency. January 2009.
- Science Report SC050021/SR4. CLEA Software (Version 1.05) Handbook, Environment Agency. September 2009. NB this document was not re-published for CLEA V1.06.
- Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values. Environment Agency, November 2008.
- SC050021/Final Technical review 1. A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA). Environment Agency. January 2009.
- Science report: SC050021. Using Soil Guideline Values. / SGV Introduction. Environment Agency, March 2009.
- The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd Edition). Land Quality Press, Nottingham. Nathanail, C.P., McCaffrey, C., Ashmore, M.H., Cheng, Y.Y., Gillett, A., R. & Scott, D. 2009.
- The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. Nathanail, C.P., McCaffrey, C., Gillet, A.G., Ogden, R.C. and Nathanail, J.F. 2015.
- CL:AIRE in association with AGS and EIC. The Soil Generic Assessment Criteria for Human Health Risk Assessment. January 2010.
- CL:AIRE. SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Final Project Report. September 2014.
- DEFRA. SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document. December 2014.
- The Water Supply (Water Quality) Regulations. 2016.
- World Health Organisation. Guidelines for Drinking Water Quality. Fourth Edition. 2011.
- The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.
- Annex G Environmental Quality Standards (EQS) List. October 2004.

Glossary

- SGV - Soil Guideline Value published by DEFRA in accordance with the CLEA framework published in August 2009 for an SOM of 6% based on minimal level of risk.
- Sweco GAC - Assessment criteria generated by Sweco for contaminants with SGV at 1% and 2.5% SOM.
- LQM GAC - 2009 assessment criteria developed by LQM.
- EIC/AGS/CL:AIRE GAC - 2010 assessment criteria.
- C4SL - 2014 assessment criteria based on a low level of harm at 6% SOM.
- SC4SL - Sweco assessment criteria for contaminants with a C4SL at 1% and 2.5% SOM.

- S4UL - LQM 2015 updates in line with C4SL but still minimal risk levels.
- SS4UL - Sweco assessment criteria based on S4UL methodology using other readily available contaminant toxicological data such as that from EIC 2010 work.
- Free product – An organic contaminant such as PAHs present in concentrations above the saturation point of the soil or solubility concentration in water resulting in a visible product in situ.

Appendix F. Generic Screening Sheets

Parameter	Units	Criterion	Standard	BH28_0.10	BH13_0.10	TP16_0.10
Acenaphthene	mg/kg	84000	1% SOM S4UL Commercial	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	83000	1% SOM S4UL Commercial	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	520000	1% SOM S4UL Commercial	0.23	< 0.1	< 0.1
Arsenic	mg/kg	640	1% SOM SC4SL Commercial	7	10	22
Barium	mg/kg	22000	1% SOM EIC Commercial	20	32	51
Benzene	mg/kg	27.2	1% SOM SC4SL Commercial	< 0.000000	< 0.000000	< 0.000000
Benzo(a)anthracene	mg/kg	170	1% SOM S4UL Commercial	0.95	0.57	0.50
Benzo(a)pyrene	mg/kg	35	1% SOM S4UL Commercial	0.74	0.25	0.29
Benzo(b)fluoranthene	mg/kg	44	1% SOM S4UL Commercial	0.80	0.50	0.26
Benzo(ghi)perylene	mg/kg	3900	1% SOM S4UL Commercial	0.45	< 0.1	0.20
Benzo(k)fluoranthene	mg/kg	1200	1% SOM S4UL Commercial	0.45	0.13	0.16
Beryllium	mg/kg	12	1% SOM S4UL Commercial	< 0.5	0.7	1.2
Cadmium	mg/kg	410	1% SOM SC4SL Commercial	< 0.2	0.3	0.3
Chrysene	mg/kg	350	1% SOM S4UL Commercial	0.73	< 0.1	< 0.1
Copper	mg/kg	68000	1% SOM S4UL Commercial	10	14	16
Di-benzo(a,h)anthracene	mg/kg	3.5	1% SOM S4UL Commercial	0.26	< 0.1	< 0.1
Ethylbenzene	mg/kg	5700	1% SOM S4UL Commercial	< 0.000000	< 0.000000	< 0.000000
Fluoranthene	mg/kg	23000	1% SOM S4UL Commercial	1.62	0.28	0.36
Fluorene	mg/kg	63000	1% SOM S4UL Commercial	< 0.1	< 0.1	< 0.1
Free Cyanide	mg/kg	30	Sweco Acute Criteria	< 2	< 2	< 2
Hexavalent Chromium	mg/kg	49	1% SOM SC4SL Commercial	< 2	< 2	< 2
Indeno(1,2,3-cd)pyrene	mg/kg	500	1% SOM S4UL Commercial	0.56	< 0.1	0.36
Lead	mg/kg	2300	1% SOM SC4SL Commercial	11	22	23
MTBE	mg/kg	7900	1% SOM EIC Commercial	< 0.010000	< 0.010000	< 0.010000
Mercury	mg/kg	1100	1% SOM S4UL Commercial	< 1	< 1	< 1
Naphthalene	mg/kg	190	1% SOM S4UL Commercial	< 0.1	< 0.1	< 0.1
Nickel	mg/kg	980	1% SOM S4UL Commercial	7	10	25
Phenanthrene	mg/kg	22000	1% SOM S4UL Commercial	0.71	0.18	0.11
Pyrene	mg/kg	54000	1% SOM S4UL Commercial	1.35	0.27	0.31
Selenium	mg/kg	12000	1% SOM S4UL Commercial	< 3	< 3	< 3
TPH CWG - Aliphatic >C10 - C12	mg/kg	9700	1% SOM S4UL Commercial	< 2	< 2	< 2
TPH CWG - Aliphatic >C12 - C16	mg/kg	59000	1% SOM S4UL Commercial	< 3	< 3	< 3
TPH CWG - Aliphatic >C16 - C21	mg/kg	1600000	1% SOM S4UL Commercial	< 3	< 3	< 3
TPH CWG - Aliphatic >C21 - C34	mg/kg	1600000	1% SOM S4UL Commercial	< 10	< 10	< 10
TPH CWG - Aliphatic >C5 - C6	mg/kg	3200	1% SOM S4UL Commercial	< 0.01	< 0.01	< 0.01
TPH CWG - Aliphatic >C6 - C8	mg/kg	7800	1% SOM S4UL Commercial	< 0.05	< 0.05	< 0.05
TPH CWG - Aliphatic >C8 - C10	mg/kg	2000	1% SOM S4UL Commercial	< 2	< 2	< 2
TPH CWG - Aromatic >C10 - C12	mg/kg	16000	1% SOM S4UL Commercial	< 2	< 2	< 2
TPH CWG - Aromatic >C12 - C16	mg/kg	36000	1% SOM S4UL Commercial	< 2	< 2	< 2
TPH CWG - Aromatic >C16 - C21	mg/kg	28000	1% SOM S4UL Commercial	< 3	< 3	< 3
TPH CWG - Aromatic >C21 - C35	mg/kg	28000	1% SOM S4UL Commercial	16	< 10	< 10
TPH CWG - Aromatic >C5 - C7	mg/kg	26000	1% SOM S4UL Commercial	< 0.01	< 0.01	< 0.01
TPH CWG - Aromatic >C7 - C8	mg/kg	56000	1% SOM S4UL Commercial	< 0.05	< 0.05	< 0.05
TPH CWG - Aromatic >C8 - C10	mg/kg	3500	1% SOM S4UL Commercial	< 2	< 2	< 2
Toluene	mg/kg	56000	1% SOM S4UL Commercial	< 0.010000	< 0.010000	< 0.010000
Vanadium	mg/kg	9000	1% SOM S4UL Commercial	25	25	58
Water Soluble Boron	mg/kg	240000	1% SOM S4UL Commercial	< 1	< 1	< 1
Zinc	mg/kg	730000	1% SOM S4UL Commercial	35	49	69
m & p-xylene	mg/kg	5900	1% SOM S4UL Commercial	< 0.000000	< 0.000000	< 0.000000
o-Xylene	mg/kg	6600	1% SOM S4UL Commercial	< 0.000000	< 0.000000	< 0.000000

BH22_0.10	TP18_0.10	BH08_0.10	BH26_0.10	TP06-IP_0.10	BH03A_0.10	BH19_0.10	TP23_0.10	BH30_0.10
0.27	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.86	< 0.1	< 0.1	0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
9	19	6	14	7	11	9	17	13
33	61	19	33	8	49	22	61	43
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
3.86	0.52	0.61	0.54	< 0.1	0.46	0.59	0.52	0.46
4.83	0.30	0.36	0.31	0.12	0.16	0.28	0.26	0.21
5.88	0.26	0.62	0.48	0.24	0.32	0.53	0.55	0.47
2.97	0.21	0.32	0.31	< 0.1	0.18	< 0.1	0.23	0.19
1.93	0.16	0.16	0.13	< 0.1	< 0.1	0.14	0.11	< 0.1
0.7	1.2	< 0.5	0.7	< 0.5	0.9	0.6	1.2	0.7
< 0.2	0.2	< 0.2	< 0.2	< 0.2	0.3	0.2	< 0.2	< 0.2
3.67	< 0.1	< 0.1	0.21	< 0.1	< 0.1	< 0.1	0.13	< 0.1
14	19	6	13	7	13	10	16	11
0.70	< 0.1	< 0.1	0.23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
6.99	0.37	0.28	0.57	0.20	0.25	0.33	0.42	0.29
0.29	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	4
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
3.75	0.36	0.48	0.44	< 0.1	0.35	< 0.1	0.39	0.37
18	23	14	25	5	26	12	19	18
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
10	26	5	15	7	16	9	24	13
2.90	0.11	0.13	0.20	< 0.1	< 0.1	0.20	0.18	0.15
6.20	0.32	0.25	0.49	0.19	0.24	0.31	0.37	0.25
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
17	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
117	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
27	52	14	38	15	32	21	46	35
1.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
52	67	20	51	10	60	33	68	51
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

TP17_0.10	BH17-IP_0.10	TP12_0.10	BH04_0.10	TP29_0.10	TP10-IP_0.10	BH25_0.10	BH01A_0.10	BH15_0.10
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.20	< 0.1
20	5	< 2	10	15	8	16	11	10
50	11	100	50	56	30	45	40	34
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.51	< 0.1	< 0.1	0.44	< 0.1	0.53	0.49	0.78	0.30
0.30	0.12	< 0.1	0.13	< 0.1	0.20	0.21	0.49	< 0.1
0.27	0.24	< 0.1	0.28	< 0.1	0.34	0.37	0.81	0.11
0.20	0.17	< 0.1	< 0.1	< 0.1	0.23	0.20	0.41	< 0.1
0.16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.23	< 0.1
1.1	< 0.5	2.1	0.9	0.8	0.6	0.9	0.7	0.7
0.3	< 0.2	< 0.2	0.3	< 0.2	< 0.2	0.2	0.3	0.2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.13	< 0.1	0.21	< 0.1
17	7	26	12	12	13	15	13	13
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.38	0.22	0.23	0.21	< 0.1	0.36	0.29	0.54	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
0.36	< 0.1	< 0.1	< 0.1	< 0.1	0.37	0.37	0.59	< 0.1
23	6	6	24	12	20	20	24	23
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
22	9	31	16	17	10	19	13	11
0.11	< 0.1	< 0.1	< 0.1	< 0.1	0.21	0.11	0.22	< 0.1
0.32	0.20	0.20	0.21	< 0.1	0.32	0.28	0.49	< 0.1
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
52	15	75	33	38	23	40	28	27
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
70	16	119	57	50	49	54	57	48
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

TP07_0.10	TP28_0.10	TP22_0.10	BH21A_0.10	TP24_0.10	BH39_0.10	BH40_0.10	TP01_0.10	TP02_0.10
< 0.1	< 0.1	< 0.1	0.14	< 0.1	0.12	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	0.14	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	0.56	0.16	0.26	< 0.1	< 0.1	0.33
3	4	13	6	9	19	4	< 2	9
28	29	57	39	35	55	59	48	25
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.42	0.47	< 0.1	2.78	1.14	0.66	< 0.1	0.24	1.03
0.14	0.21	0.18	2.14	1.28	0.34	< 0.1	0.12	0.88
0.25	0.36	0.36	3.51	1.67	0.63	0.26	0.16	1.35
< 0.1	< 0.1	< 0.1	1.42	0.88	0.26	< 0.1	< 0.1	0.69
< 0.1	< 0.1	< 0.1	1.21	0.50	0.18	< 0.1	< 0.1	0.44
0.8	0.7	0.9	0.6	< 0.5	0.9	1.0	0.9	0.6
0.3	0.3	< 0.2	0.3	< 0.2	0.3	< 0.2	0.3	< 0.2
< 0.1	< 0.1	< 0.1	2.20	1.10	0.18	< 0.1	< 0.1	0.52
15	15	14	25	19	15	15	15	14
< 0.1	< 0.1	< 0.1	0.58	0.29	0.43	< 0.1	< 0.1	0.76
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.26	0.37	< 0.1	4.74	2.04	0.47	0.23	< 0.1	1.14
< 0.1	< 0.1	< 0.1	0.23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	0.31	< 0.1	1.69	0.96	0.45	< 0.1	< 0.1	0.85
18	30	19	36	23	23	20	18	11
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	0.20	< 0.1	< 0.1	< 0.1	< 0.1	0.17
13	9	18	8	10	20	20	15	8
< 0.1	< 0.1	< 0.1	1.80	0.45	0.26	0.17	< 0.1	0.55
0.23	0.32	< 0.1	4.02	2.04	0.43	0.22	< 0.1	1.02
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	24	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	74	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
36	25	37	21	19	42	43	33	21
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
52	42	61	298	88	77	64	57	33
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	0.014000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

TP19_0.10	TP14A_0.10	BH16_0.10	BH33_0.10	BH27_0.10	BH06_0.10	TP04_0.10	BH24A_0.10	TP15_0.10
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.12	< 0.1	< 0.1	< 0.1
0.26	< 0.1	< 0.1	< 0.1	< 0.1	0.17	< 0.1	< 0.1	< 0.1
18	17	9	10	12	10	< 2	16	17
56	54	25	35	44	38	33	46	41
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.59	0.21	0.57	< 0.1	0.45	0.48	< 0.1	0.49	0.60
0.37	0.15	0.25	< 0.1	0.20	0.18	< 0.1	0.13	0.39
0.38	0.26	0.50	< 0.1	0.32	0.32	< 0.1	0.26	0.39
0.25	0.19	< 0.1	< 0.1	0.21	0.19	< 0.1	< 0.1	0.26
0.20	< 0.1	0.13	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.22
1.1	0.9	0.6	0.6	0.8	0.8	0.9	0.9	1.1
0.3	< 0.2	0.3	< 0.2	< 0.2	0.3	0.3	< 0.2	0.3
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
17	16	11	13	12	14	15	12	20
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.55	0.26	0.27	0.16	0.33	0.28	0.18	0.22	0.52
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
0.42	0.33	< 0.1	< 0.1	0.36	0.36	< 0.1	< 0.1	0.43
22	19	16	21	19	25	16	16	46
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
22	16	8	13	15	14	13	16	19
0.19	< 0.1	0.17	< 0.1	0.12	0.12	< 0.1	< 0.1	0.16
0.47	0.22	0.27	< 0.1	0.30	0.26	0.17	0.21	0.45
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
48	40	21	32	38	28	30	44	53
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.6
69	64	39	45	51	51	49	55	82
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

TP30_0.10	BH37_0.10	TP13-IP_0.20	TP05_0.20	BH34_0.20	BH05_0.20	BH03A_0.20	BH35_0.20	BH18-IP_0.20
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
19	24	10	< 2	10	5	11	27	9
62	54	54	27	29	20	49	47	26
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.20	0.61	< 0.1	< 0.1	0.34	0.42	0.46	< 0.1	0.50
< 0.1	0.37	0.12	< 0.1	0.11	0.19	0.16	< 0.1	0.13
0.22	0.61	0.25	< 0.1	0.18	0.30	0.32	< 0.1	0.27
0.18	< 0.1	< 0.1	< 0.1	0.14	0.22	0.18	< 0.1	0.17
< 0.1	0.17	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1.0	1.0	0.9	0.8	0.7	< 0.5	0.9	1.4	0.8
< 0.2	0.2	< 0.2	0.3	< 0.2	< 0.2	0.3	< 0.2	< 0.2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
17	15	17	16	12	11	13	18	12
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.22	0.29	0.22	0.20	0.15	0.28	0.25	< 0.1	0.24
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.33	0.35	< 0.1	< 0.1
21	22	24	20	18	17	26	14	17
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	0.12	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
20	25	20	13	15	6	16	32	13
< 0.1	0.12	0.17	< 0.1	< 0.1	0.12	< 0.1	< 0.1	0.17
0.18	0.26	0.21	0.18	0.14	0.26	0.24	< 0.1	0.23
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	53
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
44	53	25	27	30	14	32	66	30
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
70	66	61	43	35	62	60	61	36
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH14_0.20	TP08_0.20	TP27_0.20	TP20_0.20	TP25_0.20	TP03_0.20	BH36_0.20	BH29_0.20	TP11_0.20
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
8	9	9	24	14	3	21	12	6
27	25	36	49	37	34	54	43	40
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	< 0.1	< 0.1	0.26	< 0.1	0.40	0.59	0.56	0.46
< 0.1	< 0.1	< 0.1	0.20	< 0.1	0.15	0.35	0.33	0.18
< 0.1	0.35	0.20	0.35	0.13	0.26	0.59	0.61	0.33
< 0.1	< 0.1	< 0.1	0.25	< 0.1	< 0.1	< 0.1	0.20	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.17	0.14	< 0.1
0.5	0.6	0.8	1.0	0.6	0.7	0.9	0.7	1.0
< 0.2	< 0.2	0.3	< 0.2	< 0.2	0.3	< 0.2	< 0.2	0.3
< 0.1	< 0.1	< 0.1	0.14	0.15	< 0.1	< 0.1	0.16	< 0.1
10	10	14	15	20	18	12	12	18
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	0.16	0.29	0.36	0.16	0.27	0.29	0.51	0.32
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	0.38	< 0.1	0.24	< 0.1	0.55	0.27
7	11	23	21	14	21	19	21	14
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
8	9	12	21	14	10	20	14	18
< 0.1	< 0.1	< 0.1	0.12	< 0.1	< 0.1	0.15	< 0.1	< 0.1
< 0.1	0.14	0.26	0.31	0.17	0.23	0.25	0.42	0.27
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	16	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	418	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	9	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	498	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
22	23	29	49	51	26	48	37	42
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
32	31	53	70	166	57	58	62	73
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH21A_0.20	TP21_0.20	BH24A_0.30	TP26_0.50	BH19_0.50	BH03A_0.50	TP07_0.50	TP18_0.50	TP23_0.50
0.13	< 0.1	< 0.1	5.20	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.14	< 0.1	< 0.1	0.19	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.63	< 0.1	< 0.1	13.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
7	14	9	5	6	7	< 2	18	29
33	52	18	10	12	31	26	41	42
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
4.46	< 0.1	< 0.1	33.9	0.56	< 0.1	< 0.1	< 0.1	< 0.1
3.77	< 0.1	< 0.1	34.8	0.26	< 0.1	< 0.1	< 0.1	< 0.1
4.88	< 0.1	0.23	43.8	0.51	< 0.1	< 0.1	< 0.1	< 0.1
2.17	< 0.1	< 0.1	18.9	0.22	< 0.1	< 0.1	< 0.1	< 0.1
1.78	< 0.1	< 0.1	14.4	0.14	< 0.1	< 0.1	< 0.1	< 0.1
0.6	0.9	0.5	< 0.5	< 0.5	0.6	0.8	1.0	1.2
0.3	< 0.2	< 0.2	< 0.2	< 0.2	0.2	0.2	< 0.2	< 0.2
3.42	< 0.1	< 0.1	38.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
21	12	9	10	7	9	14	13	13
0.69	< 0.1	< 0.1	2.67	0.39	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
5.47	< 0.1	0.18	97.9	0.30	0.18	0.17	< 0.1	< 0.1
0.21	< 0.1	< 0.1	2.28	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2.91	< 0.1	< 0.1	22.9	0.39	< 0.1	< 0.1	< 0.1	< 0.1
30	11	6	5	5	11	10	11	10
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0.12	< 0.1	< 0.1	0.16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
8	20	9	4	5	13	15	24	29
1.41	< 0.1	< 0.1	55.6	0.18	< 0.1	< 0.1	< 0.1	< 0.1
5.11	< 0.1	0.18	85.1	0.29	0.18	0.15	< 0.1	< 0.1
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
9	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
16	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
7	< 2	< 2	29	< 2	< 2	< 2	< 2	< 2
11	< 3	< 3	277	< 3	< 3	< 3	< 3	< 3
96	< 10	< 10	622	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
22	41	19	12	14	23	30	47	61
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
257	55	20	14	14	37	36	46	61
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH38_0.50	BH27_0.50	BH40_0.50	BH12_0.50	TP01_0.50	BH35_0.50	BH30_0.50	TP03_0.50	BH15_0.50
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.26	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
18	12	17	7	< 2	3	13	< 2	8
51	45	73	16	29	26	53	20	15
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.64	0.33	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.30	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.59	0.16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1.0	0.8	1.4	< 0.5	0.6	< 0.5	0.8	0.5	< 0.5
< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
0.15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
14	10	17	8	12	11	11	12	7
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
0.43	0.12	< 0.1	< 0.1	< 0.1	< 0.1	< 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	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
19	13	14	6	< 3	7	11	6	5
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
21	16	32	7	9	8	16	8	7
0.24	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.39	0.11	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
42	36	52	16	19	21	35	19	18
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
64	45	63	17	20	12	44	24	18
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH07_0.50	BH16_0.50	BH20_0.50	TP12_0.50	TP15_0.50	TP14A_0.50	TP20_0.50	BH11_0.50	TP11_0.50
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
9	7	8	< 2	26	14	29	7	< 2
17	23	24	97	26	67	27	22	76
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	0.54	0.55	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	0.23	0.26	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	0.47	0.50	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	0.12	0.14	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.5	0.5	0.6	2.0	1.6	0.9	0.8	< 0.5	1.5
0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
7	10	8	21	10	9	9	10	21
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	0.26	0.30	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	0.18	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
6	10	12	5	14	10	9	12	9
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
7	8	10	30	22	14	18	8	26
< 0.1	0.17	0.18	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	0.26	0.29	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
19	19	20	78	69	43	46	19	57
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.1
16	29	31	105	74	57	51	26	84
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH33_0.50	TP02_0.50	TP30_1.00	BH25_1.00	TP19_1.00	TP29_1.00	TP05_1.00	BH37_1.00	BH28_1.00
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
5	8	27	29	19	16	< 2	36	8
26	16	22	16	49	37	5	51	25
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	0.61	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.60	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.34	< 0.1
< 0.1	0.72	< 0.1	< 0.1	0.22	< 0.1	< 0.1	0.56	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.15	< 0.1
< 0.5	< 0.5	0.8	0.7	1.2	0.6	0.5	1.3	< 0.5
< 0.2	< 0.2	< 0.2	0.3	0.3	< 0.2	< 0.2	< 0.2	< 0.2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
9	8	11	8	16	10	11	13	7
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	0.29	< 0.1	< 0.1	0.30	< 0.1	< 0.1	0.24	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
11	5	8	9	18	9	3	15	6
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
8	8	18	16	23	16	7	30	12
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.12	< 0.1
< 0.1	0.29	< 0.1	< 0.1	0.26	< 0.1	< 0.1	0.22	< 0.1
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
28	15	44	42	50	32	13	72	20
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
20	15	47	44	62	41	8	78	26
< 0.000000	0.004000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH20_1.00	BH08_1.00	BH02_1.00	TP04_1.00	TP25_1.00	BH39_1.00	BH22_1.00	TP28_1.00	BH09_1.00
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.42	< 0.1	0.19
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.22	< 0.1	0.13
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.41	< 0.1	0.53
4	6	5	2	7	32	8	2	6
11	10	24	7	18	60	21	11	18
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	5.98	0.38	1.62
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	8.97	0.12	1.34
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	10.2	0.22	1.70
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	5.24	< 0.1	0.80
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	3.38	< 0.1	0.59
< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.2	0.6	< 0.5	< 0.5
< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2	< 0.2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	5.55	< 0.1	1.09
< 4	5	7	10	23	18	12	10	6
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.00	< 0.1	0.44
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	9.97	0.22	3.11
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.45	< 0.1	0.21
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	6.81	0.22	1.04
4	3	6	< 3	8	17	7	9	17
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
8	3	9	3	8	31	8	4	5
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	4.10	< 0.1	1.45
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	9.15	0.19	2.76
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	< 3	38	< 3	8
< 10	< 10	< 10	< 10	< 10	< 10	279	< 10	15
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
12	11	15	14	16	57	34	12	13
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
15	12	23	9	88	80	35	15	19
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000

BH01A_1.00	BH38_1.00	BH32_1.00	BH36_1.00	TP22_1.00	BH21A_1.80	TP19_2.00	BH05_2.50	BH09_3.00
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	41.6	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.86	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	53.9	< 0.1	< 0.1	< 0.1
10	14	7	26	23	6	24	2	7
43	37	16	24	33	135	51	6	23
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	48.9	< 0.1	0.37	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**53.3**	< 0.1	0.14	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**63.0**	< 0.1	0.21	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	27.7	< 0.1	0.15	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	27.2	< 0.1	< 0.1	< 0.1
0.7	0.7	< 0.5	0.7	1.1	2.3	1.3	< 0.5	< 0.5
< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	64.9	< 0.1	< 0.1	< 0.1
9	10	9	7	14	24	17	10	7
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**5.19**	< 0.1	< 0.1	< 0.1
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	0.012000	< 0.000000	< 0.000000	< 0.000000
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	222	< 0.1	0.17	0.19
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	35.7	< 0.1	< 0.1	< 0.1
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	34.4	< 0.1	0.29	< 0.1
13	8	3	9	12	8	15	< 3	7
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	40.7	< 0.1	< 0.1	< 0.1
11	17	8	19	30	6	27	< 3	7
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	249	< 0.1	< 0.1	< 0.1
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	173	< 0.1	0.15	0.19
< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
< 2	< 2	< 2	< 2	< 2	16	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	57	< 3	< 3	< 3
< 3	< 3	< 3	< 3	< 3	85	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	321	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	8	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	54	< 2	< 2	< 2
< 2	< 2	< 2	< 2	< 2	423	< 2	< 2	< 2
< 3	< 3	< 3	< 3	< 3	1750	< 3	< 3	< 3
< 10	< 10	< 10	< 10	< 10	3413	< 10	< 10	< 10
< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	0.006000	< 0.010000	< 0.010000	< 0.010000
28	32	17	50	54	56	59	7	21
1.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
32	40	14	54	72	48	65	7	18
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	0.040000	< 0.000000	< 0.000000	< 0.000000
< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	0.037000	< 0.000000	< 0.000000	< 0.000000

Parameter	Units	Criterion	Standard	BH11_0.10	BH20_0.10	BH38_0.20	BH03A_0.20	BH19_0.20	TP07_0.20	TP16_0.20	TP02_0.20	TP11_0.20	BH13_0.20	TP04_0.20
Ammoniacal Nitrogen as NH4 2:1	mg/L	0.5	UK DWS	**0.526000**	< 0.050000	0.086000	< 0.050000	< 0.050000	0.280000	0.276000	< 0.050000	0.431000	< 0.050000	0.312000
Chloride (2:1)	mg/l	250	UK DWS	2	5	7	6	2	8	5	2	3	6	11
Chromium	mg/L	0.05	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Copper (2:1)	mg/L	2	UK DWS	0.008000	0.006000	< 0.010000	0.008000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	0.010000	< 0.010000	0.006000
Iron 2:1	mg/L	0.2	UK DWS	**0.482000**	0.006000	< 0.010000	0.054000	< 0.010000	< 0.010000	0.049000	< 0.010000	0.138000	< 0.010000	0.022000
Lead	mg/L	0.01	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Mercury	mg/L	0.001	UK DWS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Nickel (2:1)	mg/L	0.02	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Total Cyanide (2:1)	mg/L	0.05	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
pH (2:1)	pH Units	6.5-9.5	UK DWS	**8.2**	**7.8**	**7.6**	**7.7**	**7.8**	**7.9**	**7.9**	6.1	**7.8**	**7.7**	**8.1**

TP14A_0.20	TP30_0.20	BH17-IP_0.20	BH16_0.20	BH30_0.20	TP18_0.20	TP22_0.20	TP10-IP_0.20	BH40_0.20	BH12_0.20	TP29_0.20	TP28_0.20	BH07_0.20	TP23_0.20	BH08_0.50
0.103000	0.252000	0.220000	< 0.050000	0.126000	0.246000	0.172000	< 0.050000	0.193000	0.099000	0.149000	0.343000	0.102000	0.172000	0.054000
1	3	21	13	2	3	1	4	2	2	2	6	3	3	3
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
0.007000	0.010000	0.005000	0.006000	0.014000	< 0.010000	0.014000	< 0.010000	0.005000	0.008000	< 0.010000	0.006000	< 0.010000	0.008000	< 0.010000
0.149000	0.034000	< 0.010000	0.006000	**0.621000**	0.005000	**0.311000**	< 0.010000	**0.270000**	0.050000	0.120000	0.024000	0.037000	**0.363000**	0.011000
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
< 0.010000	< 0.010000	< 0.010000	< 0.010000	0.005000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
7.8	**7.8**	**7.8**	**7.7**	**7.8**	**8.0**	**7.9**	**7.8**	**7.6**	**8.0**	**7.9**	**7.9**	**8.0**	**7.7**	**7.9**

BH04_0.50	BH39_0.50	BH28_0.50	BH36_0.50	BH32_0.50	BH25_0.50	BH14_0.50	BH37_0.50	BH01A_0.50	BH02_0.50	BH29_0.50	TP25_0.50	BH21A_1.50	BH05_1.50	TP19_1.50	BH09_2.00
< 0.050000	< 0.050000	0.345000	< 0.050000	0.138000	0.099000	0.162000	< 0.050000	< 0.050000	0.202000	0.141000	0.260000	0.055000	**0.505000**	0.230000	< 0.050000
1	1	2	2	2	< 1	3	5	43	72	6	34	5	96	< 1	3
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 0.010000	< 0.010000	0.005000	< 0.010000	0.007000	0.010000	< 0.010000	< 0.010000	0.007000	< 0.010000	0.008000	0.011000	< 0.010000	< 0.010000	< 0.010000	0.009000
0.083000	< 0.010000	**1.020000**	0.033000	0.196000	0.148000	0.031000	< 0.010000	**0.214000**	0.105000	**4.070000**	**0.949000**	< 0.010000	0.023000	0.044000	0.070000
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	**0.001170**	< 0.000100	0.000050	< 0.000100	< 0.000100
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
8.0	**7.8**	**8.2**	**7.8**	**7.9**	**8.0**	**8.2**	**7.7**	**8.1**	**8.6**	**8.1**	**8.0**	**8.9**	**7.9**	**8.0**	**7.9**

Parameter	Units	Criterion	Standard	BH11_0.10	BH20_0.10	TP18_0.20	BH03A_0.20	BH07_0.20	TP07_0.20	BH17-IP_0.20	TP16_0.20	TP02_0.20	BH40_0.20	TP04_0.20	TP23_0.20	TP29_0.20
Ammoniacal Nitrogen as NH4 2:1	mg/L	0.26	WFD Inland Class 1-2	**0.526000**	< 0.050000	0.246000	< 0.050000	0.102000	**0.280000**	0.220000	**0.276000**	< 0.050000	0.193000	**0.312000**	0.172000	0.149000
Chloride (2:1)	mg/l	250	UK EQS	2	5	3	6	3	8	21	5	2	2	11	3	2
Copper (2:1)	mg/L	0.001	WFD Inland Class 1-2	**0.008000**	**0.006000**	**< 0.010000**	**0.008000**	**< 0.010000**	**< 0.010000**	**0.005000**	**< 0.010000**	**< 0.010000**	**0.005000**	**0.006000**	**0.008000**	**< 0.010000**
Hexavalent Chromium 2:1	mg/L	0.0034	WFD Inland Class 1-2	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**
Iron 2:1	mg/L	1	WFD Inland Class 1-2	0.482000	0.006000	0.005000	0.054000	0.037000	< 0.010000	< 0.010000	0.049000	< 0.010000	0.270000	0.022000	0.363000	0.120000
Lead	mg/L	0.0012	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
Mercury	mg/L	7e-5	WFD Inland Class 1-2	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**
Nickel (2:1)	mg/L	0.004	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
pH (2:1)	pH Units	6-9	WFD Inland Class 1-2	**8.2**	**7.8**	**8.0**	**7.7**	**8.0**	**7.9**	**7.8**	**7.9**	**6.1**	**7.6**	**8.1**	**7.7**	**7.9**

TP22_0.20	BH12_0.20	BH38_0.20	BH30_0.20	BH13_0.20	TP11_0.20	TP14A_0.20	TP10-IP_0.20	TP30_0.20	TP28_0.20	BH19_0.20	BH16_0.20	BH25_0.50	BH01A_0.50
0.172000	0.099000	0.086000	0.126000	< 0.050000	**0.431000**	0.103000	< 0.050000	0.252000	**0.343000**	< 0.050000	< 0.050000	0.099000	< 0.050000
1	2	7	2	6	3	1	4	3	6	2	13	< 1	43
0.014000	**0.008000**	**< 0.010000**	**0.014000**	**< 0.010000**	**0.010000**	**0.007000**	**< 0.010000**	**0.010000**	**0.006000**	**< 0.010000**	**0.006000**	**0.010000**	**0.007000**
< 0.020000	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**
0.311000	0.050000	< 0.010000	0.621000	< 0.010000	0.138000	0.149000	< 0.010000	0.034000	0.024000	< 0.010000	0.006000	0.148000	0.214000
< 0.010000	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
< 0.000100	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**
< 0.010000	**< 0.010000**	**< 0.010000**	**0.005000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
7.9	**8.0**	**7.6**	**7.8**	**7.7**	**7.8**	**7.8**	**7.8**	**7.8**	**7.9**	**7.8**	**7.7**	**8.0**	**8.1**

BH04_0.50	BH39_0.50	BH36_0.50	BH28_0.50	TP25_0.50	BH37_0.50	BH02_0.50	BH29_0.50	BH14_0.50	BH32_0.50	BH08_0.50	BH05_1.50	TP19_1.50	BH21A_1.50	BH09_2.00
< 0.050000	< 0.050000	< 0.050000	**0.345000**	0.260000	< 0.050000	0.202000	0.141000	0.162000	0.138000	0.054000	**0.505000**	0.230000	0.055000	< 0.050000
1	1	2	2	34	5	72	6	3	2	3	96	< 1	5	3
< 0.010000	**< 0.010000**	**< 0.010000**	**0.005000**	**0.011000**	**< 0.010000**	**< 0.010000**	**0.008000**	**< 0.010000**	**0.007000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**0.009000**
< 0.020000	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**
0.083000	< 0.010000	0.033000	**1.020000**	0.949000	< 0.010000	0.105000	**4.070000**	0.031000	0.196000	0.011000	0.023000	0.044000	< 0.010000	0.070000
< 0.010000	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
< 0.000100	**< 0.000100**	**< 0.000100**	**< 0.000100**	**0.001170**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	0.000050	**< 0.000100**	**< 0.000100**	**< 0.000100**
< 0.010000	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
8.0	**7.8**	**7.8**	**8.2**	**8.0**	**7.7**	**8.6**	**8.1**	**8.2**	**7.9**	**7.9**	**7.9**	**8.0**	**8.9**	**7.9**

Parameter	Units	Criterion	Standard	BH01A_0.65	BH29_1.69	BH11_2.82	BH24_3.16	BH26_3.93	BH20_4.55	BH27_4.66	BH09_5.15	BH18_6.34	BH07_6.40	BH03A_7.86	BH34_7.90	BH33_7.94	BH16_8.36
Ammoniacal Nitrogen as NH4	mg/L	0.5	UK DWS	0.072000	< 0.050000	< 0.050000	**1.060000**	**1.100000**	0.157000	0.201000	< 0.050000	0.143000	< 0.050000	< 0.050000	0.386000	< 0.050000	< 0.050000
Ammonium as NH4	mg/L	0.5	UK DWS	0.072000	< 0.050000	< 0.050000	**1.060000**	**1.100000**	0.157000	0.201000	< 0.050000	0.143000	< 0.050000	< 0.050000	0.386000	< 0.050000	< 0.050000
Arsenic (dissolved)	mg/L	0.01	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Benzene	mg/L	0.001	UK DWS	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Benzo(a)pyrene	mg/L	1e-5	UK DWS	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Boron (dissolved)	mg/L	1	UK DWS	0.168000	0.058000	0.033000	**3.370000**	**1.680000**	0.036000	**1.240000**	0.058000	0.095000	0.036000	0.045000	**1.020000**	0.115000	0.132000
Cadmium (dissolved)	mg/L	0.005	UK DWS	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Chromium (dissolved)	mg/L	0.05	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Copper (dissolved)	mg/L	2	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Ethylbenzene	mg/L	0.3	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Lead (dissolved)	mg/L	0.01	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Mercury (dissolved)	mg/L	0.001	UK DWS	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100	< 0.000100
Nickel (dissolved)	mg/L	0.02	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Selenium (dissolved)	mg/L	0.01	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	0.008000	< 0.010000
TPH CWG - Aliphatic >C10 - C12	mg/L	0.3	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aliphatic >C12 - C16	mg/L	0.3	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aliphatic >C5 - C6	mg/L	15	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aliphatic >C6 - C8	mg/L	15	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aliphatic >C8 - C10	mg/L	0.3	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aromatic >C10 - C12	mg/L	0.1	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aromatic >C12 - C16	mg/L	0.1	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aromatic >C16 - C21	mg/L	0.09	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
TPH CWG - Aromatic >C21 - C35	mg/L	0.09	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Toluene	mg/L	0.7	WHO DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Total Cyanide	mg/L	0.05	UK DWS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	0.039000	< 0.010000

Parameter	Units	Criterion	Standard	BH01A_0.65	BH29_1.69	BH11_2.82	BH24_3.16	BH26_3.93	BH20_4.55	BH27_4.66	BH09_5.15	BH18_6.34	BH07_6.40	BH03A_7.86	BH34_7.90	BH33_7.94	BH16_8.36
Ammoniacal Nitrogen as NH4	mg/L	0.26	WFD Inland Class 1-2	0.072000	< 0.050000	< 0.050000	**1.060000**	**1.100000**	0.157000	0.201000	< 0.050000	0.143000	< 0.050000	< 0.050000	**0.386000**	< 0.050000	< 0.050000
Ammonium as NH4	mg/L	0.26	WFD Inland Class 1-2	0.072000	< 0.050000	< 0.050000	**1.060000**	**1.100000**	0.157000	0.201000	< 0.050000	0.143000	< 0.050000	< 0.050000	**0.386000**	< 0.050000	< 0.050000
Anthracene	mg/L	0.0001	WFD Inland Class 1-2	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Arsenic (dissolved)	mg/L	0.05	WFD Inland Class 1-2	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Benzene	mg/L	0.01	WFD Inland Class 1-2	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Benzo(a)pyrene	mg/L	1.7e-7	WFD Inland Class 1-2	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Boron (dissolved)	mg/L	2	EQS_Class1	0.168000	0.058000	0.033000	**3.370000**	1.680000	0.036000	1.240000	0.058000	0.095000	0.036000	0.045000	1.020000	0.115000	0.132000
Cadmium (dissolved)	mg/L	8e-5	WFD Inland Class 1-2	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Copper (dissolved)	mg/L	0.001	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
Ethylbenzene	mg/L	0.02	UK EQS	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000
Fluoranthene	mg/L	6.3e-6	WFD Inland Class 1-2	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Free Cyanide	mg/L	0.001	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
Hexavalent Chromium	mg/L	0.0034	WFD Inland Class 1-2	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**	**< 0.020000**
Lead (dissolved)	mg/L	0.0012	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
Mercury (dissolved)	mg/L	7e-5	WFD Inland Class 1-2	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**	**< 0.000100**
Monohydric Phenols	mg/L	0.0077	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
Naphthalene	mg/L	0.002	WFD Inland Class 1-2	0.000010	< 0.000000	< 0.000000	0.000020	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000	< 0.000000
Nickel (dissolved)	mg/L	0.004	WFD Inland Class 1-2	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**	**< 0.010000**
Toluene	mg/L	0.074	WFD Inland Class 1-2	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000	< 0.010000

Appendix G. Materials Management

Waste Classification Report

FYGUQ-LX8JJ-98ES3

Job name

A47 Wansford: Soil Analysis

Description/Comments

Waste Assessment of data collected during a ground investigation undertaken by Soils Ltd in 2018.
Data presented in Soils Ltd Factual Ground Investigation Report dated February 2019.
Soils Ltd document ref: 17076/FGIR

Project

65201442-004

Site

A47- Wansford to Sutton Stage 3

Related Documents

#	Name	Description
None		

Waste Stream Template

Sweco May 2020 Soils Template

Classified by

Name:
Joe Waterhouse
Date:
12 Jun 2020 14:27 GMT
Telephone:
0113 262 0000

Company:
SWECO
Grove House
Mansion Gate Drive
Leeds
LS7 4DN

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	20 Sep 2016
Advanced Hazardous Waste Classification	21 Sep 2016

Report

Created by: Joe Waterhouse
Created date: 12 Jun 2020 14:27 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	BH13	0.1	Non Hazardous		4
2	BH16	0.1	Non Hazardous		7
3	BH16[2]	0.5	Non Hazardous		10
4	BH19	0.1	Non Hazardous		13
5	BH19[2]	0.5	Non Hazardous		16
6	BH20	0.5	Non Hazardous		19
7	BH20[2]	1	Non Hazardous		22
8	BH38	0.5	Non Hazardous		25
9	BH38[2]	1	Non Hazardous		28
10	BH39	0.1	Non Hazardous		31

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
11	BH39[2]	1	Non Hazardous		34
12	BH1	0.1	Non Hazardous		37
13	BH1[2]	1	Non Hazardous		38
14	BH07	0.5	Non Hazardous		39
15	BH8	0.1	Non Hazardous		40
16	BH8[2]	1	Non Hazardous		41
17	BH36	0.2	Non Hazardous		42
18	BH36[2]	1	Non Hazardous		43
19	BH37	0.1	Non Hazardous		44
20	BH37[2]	1	Non Hazardous		45
21	BH09	1.00 - 1.20	Non Hazardous		46
22	BH09[2]	3	Non Hazardous		49
23	BH12	0.5	Non Hazardous		52
24	BH25	0.1	Non Hazardous		55
25	BH25[2]	1	Non Hazardous		58
26	BH03A	0.1	Non Hazardous		61
27	BH03A[2]	0.5	Non Hazardous		64
28	BH04	0.1	Non Hazardous		67
29	BH06	0.1	Non Hazardous		70
30	BH2	1	Non Hazardous		73
31	BH11	0.5	Non Hazardous		76
32	BH15	0.1	Non Hazardous		79
33	BH15[2]	0.5	Non Hazardous		82
34	BH14	0.2	Non Hazardous		85
35	BH28	0.1	Non Hazardous		88
36	BH28[2]	1	Non Hazardous		91
37	BH29	0.2	Non Hazardous		94
38	TP1	0.1	Non Hazardous		97
39	TP1[2]	0.5	Non Hazardous		100
40	TP28	0.1	Non Hazardous		103
41	TP28[2]	1	Non Hazardous		106
42	TP03	0.2	Non Hazardous		109
43	TP03[2]	0.5	Non Hazardous		112
44	TP11	0.2	Non Hazardous		115
45	TP11[2]	0.5	Non Hazardous		118
46	TP12	0.1	Non Hazardous		121
47	TP12[2]	0.5	Non Hazardous		124
48	TP7	0.1	Non Hazardous		127
49	TP7[2]	0.5	Non Hazardous		130
50	TP4	0.1	Non Hazardous		133
51	TP4[2]	1	Non Hazardous		136
52	TP5	0.2	Non Hazardous		139
53	TP5[2]	1	Non Hazardous		142
54	TP15	0.1	Non Hazardous		145
55	TP15[2]	0.5	Non Hazardous		148
56	TP16	0.1	Non Hazardous		151
57	TP17	0.1	Non Hazardous		154
58	TP18	0.1	Non Hazardous		157
59	TP18[2]	0.5	Non Hazardous		160
60	TP19	0.1	Non Hazardous		163
61	TP19[2]	1	Non Hazardous		166
62	TP19[3]	2	Non Hazardous		169
63	TP27	0.2	Non Hazardous		172
64	TP20	0.2	Non Hazardous		175
65	TP20[2]	0.5	Non Hazardous		178
66	TP30	0.1	Non Hazardous		181
67	TP30[2]	1	Non Hazardous		184
68	TP23	0.1	Non Hazardous		187
69	TP23[2]	0.5	Non Hazardous		190
70	BH30	0.1	Non Hazardous		193
71	BH30[2]	0.5	Non Hazardous		196
72	BH32	1	Non Hazardous		199
73	TP14A	0.1	Non Hazardous		202
74	TP14A[2]	0.5	Non Hazardous		205
75	TP08	0.2	Non Hazardous		208

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
76	TP22	0.1	Non Hazardous		211
77	TP22[2]	1	Non Hazardous		214
78	TP29	0.1	Non Hazardous		217
79	TP29[2]	1	Non Hazardous		220
80	TP21	0.2	Non Hazardous		223
81	BH22	0.1	Non Hazardous		226
82	BH22[2]	1	Non Hazardous		229
83	BH35	0.2	Non Hazardous		232
84	BH35[2]	0.5	Non Hazardous		235
85	BH18- IP	0.2	Non Hazardous		238
86	BH17- IP	0.1	Non Hazardous		241
87	TP06- IP	0.1	Non Hazardous		244
88	TP13- IP	0.2	Non Hazardous		247
89	TP10- IP	0.1	Non Hazardous		250
90	BH21A	0.1	Non Hazardous		253
91	BH21A[2]	0.2	Non Hazardous		256
92	BH24A	0.1	Non Hazardous		259
93	BH40	0.1	Non Hazardous		262
94	BH40[2]	0.5	Non Hazardous		265
95	BH24A[2]	0.3	Non Hazardous		268
96	TP24	0.1	Non Hazardous		271
97	TP25	0.2	Non Hazardous		274
98	TP25[2]	1	Non Hazardous		277
99	TP26	0.5	Non Hazardous		280
100	BH05	0.2	Non Hazardous		283
101	BH05[2]	2.5	Non Hazardous		286
102	BH27	0.1	Non Hazardous		289
103	BH27[2]	0.5	Non Hazardous		292
104	BH34	0.2	Non Hazardous		295
105	BH26	0.1	Non Hazardous		298
106	BH33	0.1	Non Hazardous		301
107	BH33[2]	0.5	Non Hazardous		304
108	TP02	0.1	Non Hazardous		307
109	TP02[2]	0.5	Non Hazardous		310

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	313
Appendix B: Rationale for selection of metal species	314
Appendix C: Version	315

Classification of sample: BH13

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH13
Sample Depth:
0.1 m
Moisture content:
9.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.5 mg/kg	1.197	2.993 mg/kg	0.000299 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	22 mg/kg	1.56	34.316 mg/kg	0.0022 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		491 mg/kg	2.749	1349.545 mg/kg	0.135 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				49	mg/kg	2.774	135.933	mg/kg	0.0136 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.28	mg/kg		0.28	mg/kg	0.000028 %		
			205-912-4	206-44-0									
32		pyrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.57	mg/kg		0.57	mg/kg	0.000057 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				32	mg/kg	1.7	54.385	mg/kg	0.00544 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				28910	mg/kg	1.43	41333.923	mg/kg	4.133 %		
			215-168-2	1309-37-1									
										Total:	4.309 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH16

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH16
Sample Depth:
0.1 m
Moisture content:
8.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.1 mg/kg	1.197	2.514 mg/kg	0.000251 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	16 mg/kg	1.56	24.957 mg/kg	0.0016 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		545 mg/kg	2.749	1497.967 mg/kg	0.15 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				39	mg/kg	2.774	108.192	mg/kg	0.0108 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			205-912-4	206-44-0									
32		pyrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.57	mg/kg		0.57	mg/kg	0.000057 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				25	mg/kg	1.7	42.488	mg/kg	0.00425 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				23490	mg/kg	1.43	33584.706	mg/kg	3.358 %		
			215-168-2	1309-37-1									
										Total:	3.542 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH16[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH16[2]
Sample Depth:
0.5 m
Moisture content:
6.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.8 mg/kg	1.197	2.155 mg/kg	0.000215 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		8 mg/kg	1.462	11.692 mg/kg	0.00117 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	15.598 mg/kg	0.001 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		416 mg/kg	2.749	1143.403 mg/kg	0.114 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				29	mg/kg	2.774	80.45	mg/kg	0.00805 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			205-912-4	206-44-0									
32		pyrene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.54	mg/kg		0.54	mg/kg	0.000054 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.47	mg/kg		0.47	mg/kg	0.000047 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				23 mg/kg	1.7	39.089 mg/kg	0.00391 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				17780 mg/kg	1.43	25420.863 mg/kg	2.542 %		
			215-168-2	1309-37-1							
								Total:	2.686 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH19

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH19
Sample Depth:
0.1 m
Moisture content:
7.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		327 mg/kg	2.749	898.78 mg/kg	0.0899 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		zinc { zinc chromate }	024-007-00-3				33	mg/kg	2.774	91.547	mg/kg	0.00915 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
17		TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH			PH		8	pH		8	pH	8pH		
25		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene		201-581-5	85-01-8		0.2	mg/kg		0.2	mg/kg	0.00002 %		
30		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene		205-912-4	206-44-0		0.33	mg/kg		0.33	mg/kg	0.000033 %		
32		pyrene		204-927-3	129-00-0		0.31	mg/kg		0.31	mg/kg	0.000031 %		
33		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.59	mg/kg		0.59	mg/kg	0.000059 %		
34		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.53	mg/kg		0.53	mg/kg	0.000053 %		
36		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.14	mg/kg		0.14	mg/kg	0.000014 %		
37		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.28	mg/kg		0.28	mg/kg	0.000028 %		
38		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				22	mg/kg	1.7	37.389	mg/kg	0.00374 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				20430	mg/kg	1.43	29209.687	mg/kg	2.921 %		
			215-168-2	1309-37-1									
										Total:	3.042 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH19[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH19[2]
Sample Depth:
0.5 m
Moisture content:
4.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.6 mg/kg	1.197	1.915 mg/kg	0.000192 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6 mg/kg	1.32	7.922 mg/kg	0.000792 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		6 mg/kg	1.462	8.769 mg/kg	0.000877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5 mg/kg	1.56	7.799 mg/kg	0.0005 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		223 mg/kg	2.749	612.93 mg/kg	0.0613 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		5 mg/kg	2.976	14.881 mg/kg	0.00149 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				14	mg/kg	2.774	38.838	mg/kg	0.00388 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				14	mg/kg	1.785	24.993	mg/kg	0.0025 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			205-912-4	206-44-0									
32		pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.56	mg/kg		0.56	mg/kg	0.000056 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.51	mg/kg		0.51	mg/kg	0.000051 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.39	mg/kg		0.39	mg/kg	0.000039 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.39	mg/kg		0.39	mg/kg	0.000039 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				12	mg/kg	1.7	20.394	mg/kg	0.00204 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				14830	mg/kg	1.43	21203.116	mg/kg	2.12 %		
			215-168-2	1309-37-1									
										Total:	2.202 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH20
Sample Depth:
0.5 m
Moisture content:
8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8 mg/kg	1.126	9.007 mg/kg	0.000901 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		349 mg/kg	2.749	959.249 mg/kg	0.0959 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				31	mg/kg	2.774	85.999	mg/kg	0.0086 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				20	mg/kg	1.785	35.704	mg/kg	0.00357 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			201-695-5	86-73-7									
29		phenanthrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			205-912-4	206-44-0									
32		pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }	231-784-4	7727-43-7		24	mg/kg	1.7	40.788	mg/kg	0.00408 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		21690	mg/kg	1.43	31011.165	mg/kg	3.101 %		
										Total:	3.228 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH20[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH20[2]
Sample Depth:
1 m
Moisture content:
8.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.5 mg/kg	1.197	1.796 mg/kg	0.00018 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4 mg/kg	1.32	5.281 mg/kg	0.000528 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		5 mg/kg	1.462	7.308 mg/kg	0.000731 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		<4 mg/kg	1.126	<4.504 mg/kg	<0.00045 %		<LOD
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	4 mg/kg	1.56	6.239 mg/kg	0.0004 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		67.3 mg/kg	2.749	184.978 mg/kg	0.0185 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.3 mg/kg	1.5	1.95 mg/kg	0.000195 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				15	mg/kg	2.774	41.612	mg/kg	0.00416 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				12	mg/kg	1.785	21.422	mg/kg	0.00214 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				11	mg/kg	1.7	18.695	mg/kg	0.00187 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				10680	mg/kg	1.43	15269.675	mg/kg	1.527 %		
			215-168-2	1309-37-1									
										Total:	1.565 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH38

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH38
Sample Depth:
0.5 m
Moisture content:
7.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		3.9 mg/kg	1.197	4.669 mg/kg	0.000467 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19 mg/kg	1.56	29.636 mg/kg	0.0019 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		761 mg/kg	2.749	2091.657 mg/kg	0.209 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21 mg/kg	2.976	62.502 mg/kg	0.00625 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		64	mg/kg	2.774	177.545	mg/kg	0.0178 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		42	mg/kg	1.785	74.978	mg/kg	0.0075 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		7.7	pH		7.7	pH	7.7 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		0.24	mg/kg		0.24	mg/kg	0.000024 %		
30		anthracene 204-371-1 / 120-12-7		0.26	mg/kg		0.26	mg/kg	0.000026 %		
31		fluoranthene 205-912-4 / 206-44-0		0.43	mg/kg		0.43	mg/kg	0.000043 %		
32		pyrene 204-927-3 / 129-00-0		0.39	mg/kg		0.39	mg/kg	0.000039 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.64	mg/kg		0.64	mg/kg	0.000064 %		
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		0.15	mg/kg		0.15	mg/kg	0.000015 %		
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.59	mg/kg		0.59	mg/kg	0.000059 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.16	mg/kg		0.16	mg/kg	0.000016 %		
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.3	mg/kg		0.3	mg/kg	0.00003 %		
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				51	mg/kg	1.7	86.675	mg/kg	0.00867 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				54580	mg/kg	1.43	78035.473	mg/kg	7.804 %		
			215-168-2	1309-37-1									
										Total:	8.069 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH38[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH38[2]
Sample Depth:
1 m
Moisture content:
8.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		3.2 mg/kg	1.197	3.831 mg/kg	0.000383 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17 mg/kg	1.462	24.846 mg/kg	0.00248 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8 mg/kg	1.56	12.479 mg/kg	0.0008 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		673 mg/kg	2.749	1849.783 mg/kg	0.185 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		17 mg/kg	2.976	50.597 mg/kg	0.00506 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				40	mg/kg	2.774	110.966	mg/kg	0.0111 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				32	mg/kg	1.785	57.126	mg/kg	0.00571 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				37 mg/kg	1.7	62.882 mg/kg	0.00629 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				53490 mg/kg	1.43	76477.051 mg/kg	7.648 %		
			215-168-2	1309-37-1							
								Total:	7.874 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH39

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH39
Sample Depth:
0.1 m
Moisture content:
7.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		4.1 mg/kg	1.197	4.908 mg/kg	0.000491 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	25.086 mg/kg	0.00251 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		833 mg/kg	2.749	2289.554 mg/kg	0.229 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20 mg/kg	2.976	59.525 mg/kg	0.00595 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate }		77	mg/kg	2.774	213.609	mg/kg	0.0214 %		
		024-007-00-3									
16		vanadium { divanadium pentaoxide; vanadium pentoxide }		42	mg/kg	1.785	74.978	mg/kg	0.0075 %		
		023-001-00-8 / 215-239-8 / 1314-62-1									
17		TPH (C6 to C40) petroleum group		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
		TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X / 216-653-1 / 1634-04-4									
19		benzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8 / 200-753-7 / 71-43-2									
20		toluene		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3 / 203-625-9 / 108-88-3									
21		ethylbenzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4 / 202-849-4 / 100-41-4									
22		xylene		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5									
24		pH		7.4	pH		7.4	pH	7.4 pH		
		PH									
25		naphthalene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2 / 202-049-5 / 91-20-3									
26		acenaphthylene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1 / 208-96-8									
27		acenaphthene		0.12	mg/kg		0.12	mg/kg	0.000012 %		
		201-469-6 / 83-32-9									
28		fluorene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5 / 86-73-7									
29		phenanthrene		0.26	mg/kg		0.26	mg/kg	0.000026 %		
		201-581-5 / 85-01-8									
30		anthracene		0.26	mg/kg		0.26	mg/kg	0.000026 %		
		204-371-1 / 120-12-7									
31		fluoranthene		0.47	mg/kg		0.47	mg/kg	0.000047 %		
		205-912-4 / 206-44-0									
32		pyrene		0.43	mg/kg		0.43	mg/kg	0.000043 %		
		204-927-3 / 129-00-0									
33		benzo[a]anthracene		0.66	mg/kg		0.66	mg/kg	0.000066 %		
		601-033-00-9 / 200-280-6 / 56-55-3									
34		chrysene		0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-048-00-0 / 205-923-4 / 218-01-9									
35		benzo[b]fluoranthene		0.63	mg/kg		0.63	mg/kg	0.000063 %		
		601-034-00-4 / 205-911-9 / 205-99-2									
36		benzo[k]fluoranthene		0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-036-00-5 / 205-916-6 / 207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene		0.34	mg/kg		0.34	mg/kg	0.000034 %		
		601-032-00-3 / 200-028-5 / 50-32-8									
38		indeno[123-cd]pyrene		0.45	mg/kg		0.45	mg/kg	0.000045 %		
		205-893-2 / 193-39-5									
39		dibenz[a,h]anthracene		0.43	mg/kg		0.43	mg/kg	0.000043 %		
		601-041-00-2 / 200-181-8 / 53-70-3									
40		benzo[ghi]perylene		0.26	mg/kg		0.26	mg/kg	0.000026 %		
		205-883-8 / 191-24-2									
41		phenol		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				55	mg/kg	1.7	93.473	mg/kg	0.00935 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				46850	mg/kg	1.43	66983.545	mg/kg	6.698 %		
			215-168-2	1309-37-1									
										Total:	6.989 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH39[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH39[2]
Sample Depth:
1 m
Moisture content:
7.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		5.3 mg/kg	1.197	6.345 mg/kg	0.000634 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		32 mg/kg	1.32	42.25 mg/kg	0.00423 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	20.266 mg/kg	0.00203 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	17 mg/kg	1.56	26.517 mg/kg	0.0017 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		907 mg/kg	2.749	2492.947 mg/kg	0.249 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1 mg/kg	1.5	1.5 mg/kg	0.00015 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		31 mg/kg	2.976	92.264 mg/kg	0.00923 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				80	mg/kg	2.774	221.932	mg/kg	0.0222 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				57	mg/kg	1.785	101.756	mg/kg	0.0102 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				60 mg/kg	1.7	101.971 mg/kg	0.0102 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				81200 mg/kg	1.43	116095.28 mg/kg	11.61 %		
			215-168-2	1309-37-1							
								Total:	11.93 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH1

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH1
Sample Depth:
0.1 m
Moisture content:
18.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18.8% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
3		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
4		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		340	mg/kg	2.749	934.512	mg/kg	0.0935 %		
5		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<LOD
6		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
7		barium { barium sulfate }		231-784-4	7727-43-7		40	mg/kg	1.7	67.981	mg/kg	0.0068 %		
8		iron { iron (III) oxide }		215-168-2	1309-37-1		24640	mg/kg	1.43	35228.913	mg/kg	3.523 %		
											Total:	3.624 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH1[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH1[2]
Sample Depth:
1 m
Moisture content:
26.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 26.8% No Moisture Correction applied (MC)

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		beryllium { beryllium oxide }		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
		004-003-00-8 / 215-133-1 / 1304-56-9							
2		boron { diboron trioxide; boric oxide }		1 mg/kg	3.22	3.22 mg/kg	0.000322 %		
		005-008-00-8 / 215-125-8 / 1303-86-2							
3		chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
		024-001-00-0 / 215-607-8 / 1333-82-0							
4		manganese { manganese sulphate }		238 mg/kg	2.749	654.158 mg/kg	0.0654 %		
		025-003-00-4 / 232-089-9 / 7785-87-7							
5		molybdenum { molybdenum(VI) oxide }		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
		042-001-00-9 / 215-204-7 / 1313-27-5							
6		phenol		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2							
7		barium { barium sulfate }		43 mg/kg	1.7	73.079 mg/kg	0.00731 %		
		/ 231-784-4 / 7727-43-7							
8		iron { iron (III) oxide }		29320 mg/kg	1.43	41920.118 mg/kg	4.192 %		
		/ 215-168-2 / 1309-37-1							
						Total:	4.266 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH07

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH07
Sample Depth:
0.5 m
Moisture content:
7.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.1% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
3		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
4		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		261 mg/kg	2.749	717.375 mg/kg	0.0717 %		
5		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
6		phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
7		barium { barium sulfate }		231-784-4	7727-43-7		17 mg/kg	1.7	28.892 mg/kg	0.00289 %		
8		iron { iron (III) oxide }		215-168-2	1309-37-1		15640 mg/kg	1.43	22361.209 mg/kg	2.236 %		
									Total:	2.312 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH8

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH8
Sample Depth:
0.1 m
Moisture content:
7.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.5% No Moisture Correction applied (MC)

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		beryllium { beryllium oxide }		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
		004-003-00-8 / 215-133-1 / 1304-56-9							
2		boron { diboron trioxide; boric oxide }		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
		005-008-00-8 / 215-125-8 / 1303-86-2							
3		chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
		024-001-00-0 / 215-607-8 / 1333-82-0							
4		manganese { manganese sulphate }		240 mg/kg	2.749	659.655 mg/kg	0.066 %		
		025-003-00-4 / 232-089-9 / 7785-87-7							
5		molybdenum { molybdenum(VI) oxide }		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
		042-001-00-9 / 215-204-7 / 1313-27-5							
6		phenol		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2							
7		barium { barium sulfate }		19 mg/kg	1.7	32.291 mg/kg	0.00323 %		
		/ 231-784-4 / 7727-43-7							
8		iron { iron (III) oxide }		11790 mg/kg	1.43	16856.692 mg/kg	1.686 %		
		/ 215-168-2 / 1309-37-1							
						Total:	1.756 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH8[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH8[2]
Sample Depth:
1 m
Moisture content:
8.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.6% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5	mg/kg	2.775	<1.388	mg/kg	<0.000139 %		<**LOD**
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
3		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<**LOD**
4		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		149	mg/kg	2.749	409.536	mg/kg	0.041 %		
5		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<**LOD**
6		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
7		barium { barium sulfate }		231-784-4	7727-43-7		10	mg/kg	1.7	16.995	mg/kg	0.0017 %		
8		iron { iron (III) oxide }		215-168-2	1309-37-1		8483	mg/kg	1.43	12128.525	mg/kg	1.213 %		
											Total:	1.257 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH36

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH36
Sample Depth:
0.2 m
Moisture content:
6.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9	mg/kg	2.775	2.498	mg/kg	0.00025 %		
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
3		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
4		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		886	mg/kg	2.749	2435.228	mg/kg	0.244 %		
5		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<LOD
6		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
7		barium { barium sulfate }		231-784-4	7727-43-7		54	mg/kg	1.7	91.774	mg/kg	0.00918 %		
8		iron { iron (III) oxide }		215-168-2	1309-37-1		63040	mg/kg	1.43	90131.114	mg/kg	9.013 %		
											Total:	9.267 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH36[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH36[2]
Sample Depth:
1 m
Moisture content:
4.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.7% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
3		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
4		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		484	mg/kg	2.749	1330.305	mg/kg	0.133 %		
5		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<LOD
6		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
7		barium { barium sulfate }		231-784-4	7727-43-7		24	mg/kg	1.7	40.788	mg/kg	0.00408 %		
8		iron { iron (III) oxide }		215-168-2	1309-37-1		79810	mg/kg	1.43	114107.935	mg/kg	11.411 %		
											Total:	11.549 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH37

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH37
Sample Depth:
0.1 m
Moisture content:
9.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.9% No Moisture Correction applied (MC)

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		beryllium { beryllium oxide }		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
		004-003-00-8 / 215-133-1 / 1304-56-9							
2		boron { diboron trioxide; boric oxide }		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
		005-008-00-8 / 215-125-8 / 1303-86-2							
3		chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
		024-001-00-0 / 215-607-8 / 1333-82-0							
4		manganese { manganese sulphate }		824 mg/kg	2.749	2264.817 mg/kg	0.226 %		
		025-003-00-4 / 232-089-9 / 7785-87-7							
5		molybdenum { molybdenum(VI) oxide }		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
		042-001-00-9 / 215-204-7 / 1313-27-5							
6		phenol		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2							
7		barium { barium sulfate }		54 mg/kg	1.7	91.774 mg/kg	0.00918 %		
		/ 231-784-4 / 7727-43-7							
8		iron { iron (III) oxide }		69690 mg/kg	1.43	99638.917 mg/kg	9.964 %		
		/ 215-168-2 / 1309-37-1							
						Total:	10.201 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH37[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH37[2]
Sample Depth:
1 m
Moisture content:
9.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3	mg/kg	2.775	3.608	mg/kg	0.000361 %		
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
3		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<**LOD**
4		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1200	mg/kg	2.749	3298.277	mg/kg	0.33 %		
5		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1	mg/kg	1.5	1.65	mg/kg	0.000165 %		
6		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
7		barium { barium sulfate }		231-784-4	7727-43-7		51	mg/kg	1.7	86.675	mg/kg	0.00867 %		
8		iron { iron (III) oxide }		215-168-2	1309-37-1		118000	mg/kg	1.43	168709.89	mg/kg	16.871 %		
											Total:	17.211 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected

Classification of sample: BH09

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH09
Sample Depth:
1.00 - 1.20 m
Moisture content:
6.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6 mg/kg	1.32	7.922 mg/kg	0.000792 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		6 mg/kg	1.462	8.769 mg/kg	0.000877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6 mg/kg	1.126	6.755 mg/kg	0.000676 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	17 mg/kg	1.56	26.517 mg/kg	0.0017 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		182 mg/kg	2.749	500.239 mg/kg	0.05 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		5 mg/kg	2.976	14.881 mg/kg	0.00149 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				19	mg/kg	2.774	52.709	mg/kg	0.00527 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				13	mg/kg	1.785	23.207	mg/kg	0.00232 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			205-917-1	208-96-8									
27		acenaphthene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			201-469-6	83-32-9									
28		fluorene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			201-695-5	86-73-7									
29		phenanthrene				1.45	mg/kg		1.45	mg/kg	0.000145 %		
			201-581-5	85-01-8									
30		anthracene				0.53	mg/kg		0.53	mg/kg	0.000053 %		
			204-371-1	120-12-7									
31		fluoranthene				3.11	mg/kg		3.11	mg/kg	0.000311 %		
			205-912-4	206-44-0									
32		pyrene				2.76	mg/kg		2.76	mg/kg	0.000276 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				1.62	mg/kg		1.62	mg/kg	0.000162 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				1.09	mg/kg		1.09	mg/kg	0.000109 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.59	mg/kg		0.59	mg/kg	0.000059 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				1.34	mg/kg		1.34	mg/kg	0.000134 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				1.04	mg/kg		1.04	mg/kg	0.000104 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.44	mg/kg		0.44	mg/kg	0.000044 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.8	mg/kg		0.8	mg/kg	0.00008 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				18	mg/kg	1.7	30.591	mg/kg	0.00306 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				14250	mg/kg	1.43	20373.864	mg/kg	2.037 %		
			215-168-2	1309-37-1									
										Total:	2.112 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH09[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH09[2]
Sample Depth:
3 m
Moisture content:
9.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	7 mg/kg	1.56	10.919 mg/kg	0.0007 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		374 mg/kg	2.749	1027.963 mg/kg	0.103 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		7 mg/kg	2.976	20.834 mg/kg	0.00208 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		18	mg/kg	2.774	49.935	mg/kg	0.00499 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		8	pH		8	pH	8pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		0.19	mg/kg		0.19	mg/kg	0.000019 %		
32		pyrene 204-927-3 / 129-00-0		0.19	mg/kg		0.19	mg/kg	0.000019 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				23	mg/kg	1.7	39.089	mg/kg	0.00391 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				20130	mg/kg	1.43	28780.763	mg/kg	2.878 %		
			215-168-2	1309-37-1									
										Total:	3.007 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH12

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH12
Sample Depth:
0.5 m
Moisture content:
6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7	mg/kg	1.32	9.242	mg/kg	0.000924 %		
3		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5	mg/kg	2.775	<1.388	mg/kg	<0.000139 %		<LOD
4		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
5		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
6		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		8	mg/kg	1.462	11.692	mg/kg	0.00117 %		
7		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
8		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8	mg/kg	1.126	9.007	mg/kg	0.000901 %		
9		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6	mg/kg	1.56	9.359	mg/kg	0.0006 %		
10		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		286	mg/kg	2.749	786.089	mg/kg	0.0786 %		
11		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<LOD
12		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<LOD
13		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		7	mg/kg	2.976	20.834	mg/kg	0.00208 %		
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				17	mg/kg	2.774	47.16	mg/kg	0.00472 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				16	mg/kg	1.785	28.563	mg/kg	0.00286 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				16 mg/kg	1.7	27.192 mg/kg	0.00272 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				18470 mg/kg	1.43	26407.387 mg/kg	2.641 %		
			215-168-2	1309-37-1							
								Total:	2.742 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH25

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH25
Sample Depth:
0.1 m
Moisture content:
7.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16 mg/kg	1.32	21.125 mg/kg	0.00211 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	20 mg/kg	1.56	31.196 mg/kg	0.002 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		808 mg/kg	2.749	2220.84 mg/kg	0.222 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		19 mg/kg	2.976	56.549 mg/kg	0.00565 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				54	mg/kg	2.774	149.804	mg/kg	0.015 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				40	mg/kg	1.785	71.407	mg/kg	0.00714 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
		006-007-00-5											
24		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
29		phenanthrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
31		fluoranthene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			205-912-4	206-44-0									
32		pyrene				0.28	mg/kg		0.28	mg/kg	0.000028 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.49	mg/kg		0.49	mg/kg	0.000049 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				45	mg/kg	1.7	76.478	mg/kg	0.00765 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				48230	mg/kg	1.43	68956.593	mg/kg	6.896 %		
			215-168-2	1309-37-1									
										Total:	7.169 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH25[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH25[2]
Sample Depth:
1 m
Moisture content:
5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5% No Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	antimony { antimony trioxide }		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
	051-005-00-X / 215-175-0 / 1309-64-4							
2	arsenic { arsenic trioxide }		29 mg/kg	1.32	38.289 mg/kg	0.00383 %		
	033-003-00-0 / 215-481-4 / 1327-53-3							
3	beryllium { beryllium oxide }		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
	004-003-00-8 / 215-133-1 / 1304-56-9							
4	boron { diboron trioxide; boric oxide }		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
	005-008-00-8 / 215-125-8 / 1303-86-2							
5	cadmium { cadmium oxide }		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
	048-002-00-0 / 215-146-2 / 1306-19-0							
6	chromium in chromium(III) compounds { chromium(III) oxide }		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
	/ 215-160-9 / 1308-38-9							
7	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
	024-001-00-0 / 215-607-8 / 1333-82-0							
8	copper { dicopper oxide; copper (I) oxide }		8 mg/kg	1.126	9.007 mg/kg	0.000901 %		
	029-002-00-X / 215-270-7 / 1317-39-1							
9	lead { lead chromate }	1	9 mg/kg	1.56	14.038 mg/kg	0.0009 %		
	082-004-00-2 / 231-846-0 / 7758-97-6							
10	manganese { manganese sulphate }		430 mg/kg	2.749	1181.882 mg/kg	0.118 %		
	025-003-00-4 / 232-089-9 / 7785-87-7							
11	mercury { mercury dichloride }		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
	080-010-00-X / 231-299-8 / 7487-94-7							
12	molybdenum { molybdenum(VI) oxide }		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
	042-001-00-9 / 215-204-7 / 1313-27-5							
13	nickel { nickel chromate }		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
	028-035-00-7 / 238-766-5 / 14721-18-7							
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD
	034-002-00-8 / /							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				44	mg/kg	2.774	122.062	mg/kg	0.0122 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				42	mg/kg	1.785	74.978	mg/kg	0.0075 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				16 mg/kg	1.7	27.192 mg/kg	0.00272 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				67720 mg/kg	1.43	96822.32 mg/kg	9.682 %		
			215-168-2	1309-37-1							
								Total:	9.843 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH03A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH03A
Sample Depth:
0.1 m
Moisture content:
7.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	14.524 mg/kg	0.00145 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	29.231 mg/kg	0.00292 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	26 mg/kg	1.56	40.555 mg/kg	0.0026 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		872 mg/kg	2.749	2396.748 mg/kg	0.24 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				60	mg/kg	2.774	166.449	mg/kg	0.0166 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				32	mg/kg	1.785	57.126	mg/kg	0.00571 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			205-912-4	206-44-0									
32		pyrene				0.24	mg/kg		0.24	mg/kg	0.000024 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				49	mg/kg	1.7	83.276	mg/kg	0.00833 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				39860	mg/kg	1.43	56989.629	mg/kg	5.699 %		
			215-168-2	1309-37-1									
										Total:	5.99 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH03A[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH03A[2]
Sample Depth:
0.5 m
Moisture content:
4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	10.133 mg/kg	0.00101 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		668 mg/kg	2.749	1836.041 mg/kg	0.184 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				37	mg/kg	2.774	102.643	mg/kg	0.0103 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				23	mg/kg	1.785	41.059	mg/kg	0.00411 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			205-912-4	206-44-0									
32		pyrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				31 mg/kg	1.7	52.685 mg/kg	0.00527 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				29050 mg/kg	1.43	41534.087 mg/kg	4.153 %		
			215-168-2	1309-37-1							
								Total:	4.373 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH04

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH04
Sample Depth:
0.1 m
Moisture content:
5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	29.231 mg/kg	0.00292 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24 mg/kg	1.56	37.436 mg/kg	0.0024 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		851 mg/kg	2.749	2339.028 mg/kg	0.234 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				33	mg/kg	1.785	58.911	mg/kg	0.00589 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			205-912-4	206-44-0									
32		pyrene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.44	mg/kg		0.44	mg/kg	0.000044 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.28	mg/kg		0.28	mg/kg	0.000028 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				50	mg/kg	1.7	84.976	mg/kg	0.0085 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				40600	mg/kg	1.43	58047.64	mg/kg	5.805 %		
			215-168-2	1309-37-1									
										Total:	6.089 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH06

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH06
Sample Depth:
0.1 m
Moisture content:
6.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	25 mg/kg	1.56	38.995 mg/kg	0.0025 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		719 mg/kg	2.749	1976.217 mg/kg	0.198 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1 mg/kg	1.5	1.5 mg/kg	0.00015 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14 mg/kg	2.976	41.668 mg/kg	0.00417 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				51	mg/kg	2.774	141.481	mg/kg	0.0141 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				28	mg/kg	1.785	49.985	mg/kg	0.005 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			201-581-5	85-01-8									
30		anthracene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			204-371-1	120-12-7									
31		fluoranthene				0.28	mg/kg		0.28	mg/kg	0.000028 %		
			205-912-4	206-44-0									
32		pyrene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.48	mg/kg		0.48	mg/kg	0.000048 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				38 mg/kg	1.7	64.582 mg/kg	0.00646 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				34820 mg/kg	1.43	49783.715 mg/kg	4.978 %		
			215-168-2	1309-37-1							
								Total:	5.221 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH2

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH2
Sample Depth:
1 m
Moisture content:
29.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 29.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	6.602 mg/kg	0.00066 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6 mg/kg	1.56	9.359 mg/kg	0.0006 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		124 mg/kg	2.749	340.822 mg/kg	0.0341 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		23	mg/kg	2.774	63.805	mg/kg	0.00638 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		15	mg/kg	1.785	26.778	mg/kg	0.00268 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		7.4	pH		7.4	pH	7.4 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		pyrene 204-927-3 / 129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				24	mg/kg	1.7	40.788	mg/kg	0.00408 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				12050	mg/kg	1.43	17228.425	mg/kg	1.723 %		
			215-168-2	1309-37-1									
										Total:	1.783 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH11

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH11
Sample Depth:
0.5 m
Moisture content:
7.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		9 mg/kg	1.462	13.154 mg/kg	0.00132 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		359 mg/kg	2.749	986.734 mg/kg	0.0987 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				26	mg/kg	2.774	72.128	mg/kg	0.00721 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				22 mg/kg	1.7	37.389 mg/kg	0.00374 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				22860 mg/kg	1.43	32683.967 mg/kg	3.268 %		
			215-168-2	1309-37-1							
								Total:	3.395 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH15

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH15
Sample Depth:
0.1 m
Moisture content:
11.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		13 mg/kg	1.462	19 mg/kg	0.0019 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		701 mg/kg	2.749	1926.743 mg/kg	0.193 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		11 mg/kg	2.976	32.739 mg/kg	0.00327 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				48	mg/kg	2.774	133.159	mg/kg	0.0133 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				27	mg/kg	1.785	48.2	mg/kg	0.00482 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				34	mg/kg	1.7	57.784	mg/kg	0.00578 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				33640	mg/kg	1.43	48096.616	mg/kg	4.81 %		
			215-168-2	1309-37-1									
										Total:	5.044 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH15[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH15[2]
Sample Depth:
0.5 m
Moisture content:
8.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.8% No Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	antimony { antimony trioxide }		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
	051-005-00-X / 215-175-0 / 1309-64-4							
2	arsenic { arsenic trioxide }		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
	033-003-00-0 / 215-481-4 / 1327-53-3							
3	beryllium { beryllium oxide }		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
	004-003-00-8 / 215-133-1 / 1304-56-9							
4	boron { diboron trioxide; boric oxide }		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
	005-008-00-8 / 215-125-8 / 1303-86-2							
5	cadmium { cadmium oxide }		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
	048-002-00-0 / 215-146-2 / 1306-19-0							
6	chromium in chromium(III) compounds { chromium(III) oxide }		8 mg/kg	1.462	11.692 mg/kg	0.00117 %		
	/ 215-160-9 / 1308-38-9							
7	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
	024-001-00-0 / 215-607-8 / 1333-82-0							
8	copper { dicopper oxide; copper (I) oxide }		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
	029-002-00-X / 215-270-7 / 1317-39-1							
9	lead { lead chromate }	1	5 mg/kg	1.56	7.799 mg/kg	0.0005 %		
	082-004-00-2 / 231-846-0 / 7758-97-6							
10	manganese { manganese sulphate }		414 mg/kg	2.749	1137.905 mg/kg	0.114 %		
	025-003-00-4 / 232-089-9 / 7785-87-7							
11	mercury { mercury dichloride }		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
	080-010-00-X / 231-299-8 / 7487-94-7							
12	molybdenum { molybdenum(VI) oxide }		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
	042-001-00-9 / 215-204-7 / 1313-27-5							
13	nickel { nickel chromate }		7 mg/kg	2.976	20.834 mg/kg	0.00208 %		
	028-035-00-7 / 238-766-5 / 14721-18-7							
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD
	034-002-00-8 / /							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				18	mg/kg	2.774	49.935	mg/kg	0.00499 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	32.133	mg/kg	0.00321 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				15 mg/kg	1.7	25.493 mg/kg	0.00255 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				23170 mg/kg	1.43	33127.188 mg/kg	3.313 %		
			215-168-2	1309-37-1							
								Total:	3.45 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH14

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH14
Sample Depth:
0.2 m
Moisture content:
6.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	7 mg/kg	1.56	10.919 mg/kg	0.0007 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		506 mg/kg	2.749	1390.773 mg/kg	0.139 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
15		zinc { zinc chromate } 024-007-00-3		32 mg/kg	2.774	88.773 mg/kg	0.00888 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		22 mg/kg	1.785	39.274 mg/kg	0.00393 %		
17		TPH (C6 to C40) petroleum group TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
24		pH PH		7.9 pH		7.9 pH	7.9 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		pyrene 204-927-3 / 129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				27	mg/kg	1.7	45.887	mg/kg	0.00459 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				29790	mg/kg	1.43	42592.098	mg/kg	4.259 %		
			215-168-2	1309-37-1									
										Total:	4.429 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH28

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH28
Sample Depth:
0.1 m
Moisture content:
5.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		385 mg/kg	2.749	1058.197 mg/kg	0.106 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		7 mg/kg	2.976	20.834 mg/kg	0.00208 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15	zinc { zinc chromate }	024-007-00-3				35	mg/kg	2.774	97.095	mg/kg	0.00971 %		
16	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
17	TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24	pH			PH		7.8	pH		7.8	pH	7.8 pH		
25	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	phenanthrene		201-581-5	85-01-8		0.71	mg/kg		0.71	mg/kg	0.000071 %		
30	anthracene		204-371-1	120-12-7		0.23	mg/kg		0.23	mg/kg	0.000023 %		
31	fluoranthene		205-912-4	206-44-0		1.62	mg/kg		1.62	mg/kg	0.000162 %		
32	pyrene		204-927-3	129-00-0		1.35	mg/kg		1.35	mg/kg	0.000135 %		
33	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.95	mg/kg		0.95	mg/kg	0.000095 %		
34	chrysene	601-048-00-0	205-923-4	218-01-9		0.73	mg/kg		0.73	mg/kg	0.000073 %		
35	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.8	mg/kg		0.8	mg/kg	0.00008 %		
36	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.45	mg/kg		0.45	mg/kg	0.000045 %		
37	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.74	mg/kg		0.74	mg/kg	0.000074 %		
38	indeno[123-cd]pyrene		205-893-2	193-39-5		0.56	mg/kg		0.56	mg/kg	0.000056 %		
39	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.26	mg/kg		0.26	mg/kg	0.000026 %		
40	benzo[ghi]perylene		205-883-8	191-24-2		0.45	mg/kg		0.45	mg/kg	0.000045 %		
41	phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				20 mg/kg	1.7	33.99 mg/kg	0.0034 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				32170 mg/kg	1.43	45994.891 mg/kg	4.599 %		
			215-168-2	1309-37-1							
								Total:	4.737 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH28[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH28[2]
Sample Depth:
1 m
Moisture content:
6.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6 mg/kg	1.56	9.359 mg/kg	0.0006 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		362 mg/kg	2.749	994.98 mg/kg	0.0995 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		12 mg/kg	2.976	35.715 mg/kg	0.00357 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				26	mg/kg	2.774	72.128	mg/kg	0.00721 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				20	mg/kg	1.785	35.704	mg/kg	0.00357 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				25	mg/kg	1.7	42.488	mg/kg	0.00425 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				27410	mg/kg	1.43	39189.306	mg/kg	3.919 %		
			215-168-2	1309-37-1									
										Total:	4.048 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH29

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH29
Sample Depth:
0.2 m
Moisture content:
11.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11.5% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.943	mg/kg	0.000194 %		
4		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
5		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
6		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
7		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
8		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12	mg/kg	1.126	13.511	mg/kg	0.00135 %		
9		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21	mg/kg	1.56	32.756	mg/kg	0.0021 %		
10		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		680	mg/kg	2.749	1869.023	mg/kg	0.187 %		
11		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<LOD
12		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<LOD
13		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14	mg/kg	2.976	41.668	mg/kg	0.00417 %		
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				62	mg/kg	2.774	171.997	mg/kg	0.0172 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				37	mg/kg	1.785	66.052	mg/kg	0.00661 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.51	mg/kg		0.51	mg/kg	0.000051 %		
			205-912-4	206-44-0									
32		pyrene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.56	mg/kg		0.56	mg/kg	0.000056 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.61	mg/kg		0.61	mg/kg	0.000061 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				43 mg/kg	1.7	73.079 mg/kg	0.00731 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				46980 mg/kg	1.43	67169.412 mg/kg	6.717 %		
			215-168-2	1309-37-1							
								Total:	6.954 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP1

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP1
Sample Depth:
0.1 m
Moisture content:
7.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	29.231 mg/kg	0.00292 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18 mg/kg	1.56	28.077 mg/kg	0.0018 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		794 mg/kg	2.749	2182.36 mg/kg	0.218 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate }		57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
		024-007-00-3									
16		vanadium { divanadium pentaoxide; vanadium pentoxide }		33	mg/kg	1.785	58.911	mg/kg	0.00589 %		
		023-001-00-8 / 215-239-8 / 1314-62-1									
17		TPH (C6 to C40) petroleum group		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
		TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X / 216-653-1 / 1634-04-4									
19		benzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8 / 200-753-7 / 71-43-2									
20		toluene		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3 / 203-625-9 / 108-88-3									
21		ethylbenzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4 / 202-849-4 / 100-41-4									
22		xylene		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9 / 202-422-2 [1] / 203-396-5 [2] / 203-576-3 [3] / 215-535-7 [4] / 95-47-6 [1] / 106-42-3 [2] / 108-38-3 [3] / 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5									
24		naphthalene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2 / 202-049-5 / 91-20-3									
25		acenaphthylene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1 / 208-96-8									
26		acenaphthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6 / 83-32-9									
27		fluorene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5 / 86-73-7									
28		phenanthrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5 / 85-01-8									
29		anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1 / 120-12-7									
30		fluoranthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-912-4 / 206-44-0									
31		pyrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3 / 129-00-0									
32		benzo[a]anthracene		0.24	mg/kg		0.24	mg/kg	0.000024 %		
		601-033-00-9 / 200-280-6 / 56-55-3									
33		chrysene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0 / 205-923-4 / 218-01-9									
34		benzo[b]fluoranthene		0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-034-00-4 / 205-911-9 / 205-99-2									
35		benzo[k]fluoranthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5 / 205-916-6 / 207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene		0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-032-00-3 / 200-028-5 / 50-32-8									
37		indeno[123-cd]pyrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-893-2 / 193-39-5									
38		dibenz[a,h]anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2 / 200-181-8 / 53-70-3									
39		benzo[ghi]perylene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-883-8 / 191-24-2									
40		phenol		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2									
41		barium { barium sulfate }		48	mg/kg	1.7	81.577	mg/kg	0.00816 %		
		231-784-4 / 7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				39840 mg/kg	1.43	56961.034 mg/kg	5.696 %		
			215-168-2	1309-37-1							
								Total:	5.962 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP1[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP1[2]
Sample Depth:
0.5 m
Moisture content:
6.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	<3 mg/kg	1.56	<4.679 mg/kg	<0.0003 %		<LOD
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		293 mg/kg	2.749	805.329 mg/kg	0.0805 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				20	mg/kg	2.774	55.483	mg/kg	0.00555 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
31		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				29	mg/kg	1.7	49.286	mg/kg	0.00493 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				24110 mg/kg	1.43	34471.148 mg/kg	3.447 %		
			215-168-2	1309-37-1							
								Total:	3.555 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP28

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP28
Sample Depth:
0.1 m
Moisture content:
8.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4 mg/kg	1.32	5.281 mg/kg	0.000528 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	30 mg/kg	1.56	46.794 mg/kg	0.003 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		462 mg/kg	2.749	1269.836 mg/kg	0.127 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				42	mg/kg	2.774	116.514	mg/kg	0.0117 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			205-912-4	206-44-0									
31		pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				0.47	mg/kg		0.47	mg/kg	0.000047 %		
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				29	mg/kg	1.7	49.286	mg/kg	0.00493 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				27120 mg/kg	1.43	38774.68 mg/kg	3.877 %		
			215-168-2	1309-37-1							
								Total:	4.042 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP28[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP28[2]
Sample Depth:
1 m
Moisture content:
4.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2 mg/kg	1.32	2.641 mg/kg	0.000264 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		6 mg/kg	1.462	8.769 mg/kg	0.000877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9 mg/kg	1.56	14.038 mg/kg	0.0009 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		272 mg/kg	2.749	747.609 mg/kg	0.0748 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		4 mg/kg	2.976	11.905 mg/kg	0.00119 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				15	mg/kg	2.774	41.612	mg/kg	0.00416 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				12	mg/kg	1.785	21.422	mg/kg	0.00214 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			205-912-4	206-44-0									
31		pyrene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				11	mg/kg	1.7	18.695	mg/kg	0.00187 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				15930 mg/kg	1.43	22775.835 mg/kg	2.278 %		
			215-168-2	1309-37-1							
								Total:	2.372 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP03
Sample Depth:
0.2 m
Moisture content:
6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3 mg/kg	1.32	3.961 mg/kg	0.000396 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	20.266 mg/kg	0.00203 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21 mg/kg	1.56	32.756 mg/kg	0.0021 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		646 mg/kg	2.749	1775.572 mg/kg	0.178 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				26	mg/kg	1.785	46.415	mg/kg	0.00464 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			205-912-4	206-44-0									
31		pyrene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				0.4	mg/kg		0.4	mg/kg	0.00004 %		
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				0.24	mg/kg		0.24	mg/kg	0.000024 %		
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				34	mg/kg	1.7	57.784	mg/kg	0.00578 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				30480 mg/kg	1.43	43578.622 mg/kg	4.358 %		
			215-168-2	1309-37-1							
								Total:	4.578 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP03[2]
Sample Depth:
0.5 m
Moisture content:
4.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6 mg/kg	1.56	9.359 mg/kg	0.0006 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		327 mg/kg	2.749	898.78 mg/kg	0.0899 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				24	mg/kg	2.774	66.58	mg/kg	0.00666 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
31		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				20	mg/kg	1.7	33.99	mg/kg	0.0034 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				23690 mg/kg	1.43	33870.655 mg/kg	3.387 %		
			215-168-2	1309-37-1							
								Total:	3.503 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP11

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP11
Sample Depth:
0.2 m
Moisture content:
15.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6 mg/kg	1.32	7.922 mg/kg	0.000792 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		35 mg/kg	1.462	51.154 mg/kg	0.00512 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	20.266 mg/kg	0.00203 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		623 mg/kg	2.749	1712.355 mg/kg	0.171 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18 mg/kg	2.976	53.573 mg/kg	0.00536 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				73	mg/kg	2.774	202.513	mg/kg	0.0203 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				42	mg/kg	1.785	74.978	mg/kg	0.0075 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			205-912-4	206-44-0									
31		pyrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				40	mg/kg	1.7	67.981	mg/kg	0.0068 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				64900 mg/kg	1.43	92790.439 mg/kg	9.279 %		
			215-168-2	1309-37-1							
								Total:	9.507 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP11[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP11[2]
Sample Depth:
0.5 m
Moisture content:
20.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 20.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.5 mg/kg	2.775	4.163 mg/kg	0.000416 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1 mg/kg	3.22	3.542 mg/kg	0.000354 %		
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		39 mg/kg	1.462	57.001 mg/kg	0.0057 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9 mg/kg	1.56	14.038 mg/kg	0.0009 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		992 mg/kg	2.749	2726.575 mg/kg	0.273 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		26 mg/kg	2.976	77.383 mg/kg	0.00774 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				84	mg/kg	2.774	233.028	mg/kg	0.0233 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				57	mg/kg	1.785	101.756	mg/kg	0.0102 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
31		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				76	mg/kg	1.7	129.163	mg/kg	0.0129 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				71090 mg/kg	1.43	101640.56 mg/kg	10.164 %		
			215-168-2	1309-37-1							
								Total:	10.507 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP12

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP12
Sample Depth:
0.1 m
Moisture content:
25.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 25.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.2 mg/kg	1.197	1.437 mg/kg	0.000144 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2.1 mg/kg	2.775	5.828 mg/kg	0.000583 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		48 mg/kg	1.462	70.155 mg/kg	0.00702 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26 mg/kg	1.126	29.273 mg/kg	0.00293 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6 mg/kg	1.56	9.359 mg/kg	0.0006 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		559 mg/kg	2.749	1536.447 mg/kg	0.154 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		31 mg/kg	2.976	92.264 mg/kg	0.00923 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				119	mg/kg	2.774	330.123	mg/kg	0.033 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				75	mg/kg	1.785	133.889	mg/kg	0.0134 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			205-912-4	206-44-0									
31		pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				100	mg/kg	1.7	169.952	mg/kg	0.017 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				70790 mg/kg	1.43	101211.636 mg/kg	10.121 %		
			215-168-2	1309-37-1							
								Total:	10.366 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP12[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP12[2]
Sample Depth:
0.5 m
Moisture content:
27%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 27% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.4 mg/kg	1.197	1.676 mg/kg	0.000168 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2 mg/kg	2.775	5.551 mg/kg	0.000555 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		50 mg/kg	1.462	73.078 mg/kg	0.00731 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5 mg/kg	1.56	7.799 mg/kg	0.0005 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		361 mg/kg	2.749	992.232 mg/kg	0.0992 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30 mg/kg	2.976	89.288 mg/kg	0.00893 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				105	mg/kg	2.774	291.285	mg/kg	0.0291 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				78	mg/kg	1.785	139.244	mg/kg	0.0139 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
31		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				97	mg/kg	1.7	164.853	mg/kg	0.0165 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				64250 mg/kg	1.43	91861.105 mg/kg	9.186 %		
			215-168-2	1309-37-1							
								Total:	9.372 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP7

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP7
Sample Depth:
0.1 m
Moisture content:
11.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11.8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3 mg/kg	1.32	3.961 mg/kg	0.000396 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18 mg/kg	1.56	28.077 mg/kg	0.0018 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		491 mg/kg	2.749	1349.545 mg/kg	0.135 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				52	mg/kg	2.774	144.256	mg/kg	0.0144 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				36	mg/kg	1.785	64.267	mg/kg	0.00643 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			205-912-4	206-44-0									
31		pyrene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				28	mg/kg	1.7	47.586	mg/kg	0.00476 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				34350 mg/kg	1.43	49111.735 mg/kg	4.911 %		
			215-168-2	1309-37-1							
								Total:	5.089 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP7[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP7[2]
Sample Depth:
0.5 m
Moisture content:
8.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	15.598 mg/kg	0.001 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		581 mg/kg	2.749	1596.916 mg/kg	0.16 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				36	mg/kg	2.774	99.869	mg/kg	0.00999 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				30	mg/kg	1.785	53.556	mg/kg	0.00536 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			205-912-4	206-44-0									
31		pyrene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				26	mg/kg	1.7	44.187	mg/kg	0.00442 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				36780 mg/kg	1.43	52586.015 mg/kg	5.259 %		
			215-168-2	1309-37-1							
								Total:	5.455 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP4

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP4
Sample Depth:
0.1 m
Moisture content:
10.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	16 mg/kg	1.56	24.957 mg/kg	0.0016 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		686 mg/kg	2.749	1885.515 mg/kg	0.189 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
15		zinc { zinc chromate }		49 mg/kg	2.774	135.933 mg/kg	0.0136 %		
		024-007-00-3							
16		vanadium { divanadium pentaoxide; vanadium pentoxide }		30 mg/kg	1.785	53.556 mg/kg	0.00536 %		
		023-001-00-8 / 215-239-8 / 1314-62-1							
17		TPH (C6 to C40) petroleum group		<42 mg/kg		<42 mg/kg	<0.0042 %		<LOD
		TPH							
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		603-181-00-X / 216-653-1 / 1634-04-4							
19		benzene		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		601-020-00-8 / 200-753-7 / 71-43-2							
20		toluene		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		601-021-00-3 / 203-625-9 / 108-88-3							
21		ethylbenzene		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		601-023-00-4 / 202-849-4 / 100-41-4							
22		xylene		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
		601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
		006-007-00-5							
24		naphthalene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-052-00-2 / 202-049-5 / 91-20-3							
25		acenaphthylene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1 / 208-96-8							
26		acenaphthene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6 / 83-32-9							
27		fluorene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-695-5 / 86-73-7							
28		phenanthrene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-581-5 / 85-01-8							
29		anthracene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		204-371-1 / 120-12-7							
30		fluoranthene		0.18 mg/kg		0.18 mg/kg	0.000018 %		
		205-912-4 / 206-44-0							
31		pyrene		0.17 mg/kg		0.17 mg/kg	0.000017 %		
		204-927-3 / 129-00-0							
32		benzo[a]anthracene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-033-00-9 / 200-280-6 / 56-55-3							
33		chrysene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-048-00-0 / 205-923-4 / 218-01-9							
34		benzo[b]fluoranthene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-034-00-4 / 205-911-9 / 205-99-2							
35		benzo[k]fluoranthene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-036-00-5 / 205-916-6 / 207-08-9							
36		benzo[a]pyrene; benzo[def]chrysene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-032-00-3 / 200-028-5 / 50-32-8							
37		indeno[123-cd]pyrene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-893-2 / 193-39-5							
38		dibenz[a,h]anthracene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-041-00-2 / 200-181-8 / 53-70-3							
39		benzo[ghi]perylene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-883-8 / 191-24-2							
40		phenol		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2							
41		barium { barium sulfate }		33 mg/kg	1.7	56.084 mg/kg	0.00561 %		
		231-784-4 / 7727-43-7							

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				33980 mg/kg	1.43	48582.729 mg/kg	4.858 %		
			215-168-2	1309-37-1							
								Total:	5.088 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP4[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP4[2]
Sample Depth:
1 m
Moisture content:
7.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2 mg/kg	1.32	2.641 mg/kg	0.000264 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		6 mg/kg	1.462	8.769 mg/kg	0.000877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	<3 mg/kg	1.56	<4.679 mg/kg	<0.0003 %		<LOD
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		224 mg/kg	2.749	615.678 mg/kg	0.0616 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		3 mg/kg	2.976	8.929 mg/kg	0.000893 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				9	mg/kg	2.774	24.967	mg/kg	0.0025 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				14	mg/kg	1.785	24.993	mg/kg	0.0025 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
26		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
27		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
28		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
29		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
30		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
31		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
32		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
33		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
34		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
35		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
37		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
38		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
39		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
40		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
41		barium { barium sulfate }				7	mg/kg	1.7	11.897	mg/kg	0.00119 %		
			231-784-4	7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				16650 mg/kg	1.43	23805.251 mg/kg	2.381 %		
			215-168-2	1309-37-1							
								Total:	2.459 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP5

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP5
Sample Depth:
0.2 m
Moisture content:
10.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<**LOD**
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	20 mg/kg	1.56	31.196 mg/kg	0.002 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		571 mg/kg	2.749	1569.43 mg/kg	0.157 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate }		43	mg/kg	2.774	119.288	mg/kg	0.0119 %		
		024-007-00-3									
16		vanadium { divanadium pentaoxide; vanadium pentoxide }		27	mg/kg	1.785	48.2	mg/kg	0.00482 %		
		023-001-00-8 / 215-239-8 / 1314-62-1									
17		TPH (C6 to C40) petroleum group		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
		TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X / 216-653-1 / 1634-04-4									
19		benzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8 / 200-753-7 / 71-43-2									
20		toluene		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3 / 203-625-9 / 108-88-3									
21		ethylbenzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4 / 202-849-4 / 100-41-4									
22		xylene		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5									
24		naphthalene		0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-052-00-2 / 202-049-5 / 91-20-3									
25		acenaphthylene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1 / 208-96-8									
26		acenaphthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6 / 83-32-9									
27		fluorene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5 / 86-73-7									
28		phenanthrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5 / 85-01-8									
29		anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1 / 120-12-7									
30		fluoranthene		0.2	mg/kg		0.2	mg/kg	0.00002 %		
		205-912-4 / 206-44-0									
31		pyrene		0.18	mg/kg		0.18	mg/kg	0.000018 %		
		204-927-3 / 129-00-0									
32		benzo[a]anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9 / 200-280-6 / 56-55-3									
33		chrysene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0 / 205-923-4 / 218-01-9									
34		benzo[b]fluoranthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4 / 205-911-9 / 205-99-2									
35		benzo[k]fluoranthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5 / 205-916-6 / 207-08-9									
36		benzo[a]pyrene; benzo[def]chrysene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3 / 200-028-5 / 50-32-8									
37		indeno[123-cd]pyrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-893-2 / 193-39-5									
38		dibenz[a,h]anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2 / 200-181-8 / 53-70-3									
39		benzo[ghi]perylene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-883-8 / 191-24-2									
40		phenol		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2									
41		barium { barium sulfate }		27	mg/kg	1.7	45.887	mg/kg	0.00459 %		
		231-784-4 / 7727-43-7									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				30950 mg/kg	1.43	44250.602 mg/kg	4.425 %		
			215-168-2	1309-37-1							
								Total:	4.62 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP5[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP5[2]
Sample Depth:
1 m
Moisture content:
9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2 mg/kg	1.32	<2.641 mg/kg	<0.000264 %		<LOD
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		6 mg/kg	1.462	8.769 mg/kg	0.000877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	3 mg/kg	1.56	4.679 mg/kg	0.0003 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		170 mg/kg	2.749	467.256 mg/kg	0.0467 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.5 mg/kg	1.5	2.25 mg/kg	0.000225 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		7 mg/kg	2.976	20.834 mg/kg	0.00208 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15	zinc { zinc chromate }	024-007-00-3				8 mg/kg	2.774	22.193 mg/kg	0.00222 %		
16	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		13 mg/kg	1.785	23.207 mg/kg	0.00232 %		
17	TPH (C6 to C40) petroleum group			TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<LOD
18	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
22	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
23	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
24	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
41	barium { barium sulfate }		231-784-4	7727-43-7		5 mg/kg	1.7	8.498 mg/kg	0.00085 %		

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		iron { iron (III) oxide }				16090 mg/kg	1.43	23004.594 mg/kg	2.3 %		
			215-168-2	1309-37-1							
								Total:	2.364 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP15
Sample Depth:
0.1 m
Moisture content:
12%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.3 mg/kg	1.197	1.556 mg/kg	0.000156 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.6 mg/kg	3.22	5.152 mg/kg	0.000515 %		
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		**<LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		20 mg/kg	1.126	22.518 mg/kg	0.00225 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	46 mg/kg	1.56	71.751 mg/kg	0.0046 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		411 mg/kg	2.749	1129.66 mg/kg	0.113 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		**<LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		**<LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		19 mg/kg	2.976	56.549 mg/kg	0.00565 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		**<LOD**

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		82	mg/kg	2.774	227.48	mg/kg	0.0227 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		53	mg/kg	1.785	94.615	mg/kg	0.00946 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		7.5	pH		7.5	pH	7.5 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		0.16	mg/kg		0.16	mg/kg	0.000016 %		
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		0.52	mg/kg		0.52	mg/kg	0.000052 %		
32		pyrene 204-927-3 / 129-00-0		0.45	mg/kg		0.45	mg/kg	0.000045 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.6	mg/kg		0.6	mg/kg	0.00006 %		
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.39	mg/kg		0.39	mg/kg	0.000039 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.22	mg/kg		0.22	mg/kg	0.000022 %		
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.39	mg/kg		0.39	mg/kg	0.000039 %		
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		0.43	mg/kg		0.43	mg/kg	0.000043 %		
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		0.26	mg/kg		0.26	mg/kg	0.000026 %		
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }	231-784-4	7727-43-7		41 mg/kg	1.7	69.68 mg/kg	0.00697 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		35380 mg/kg	1.43	50584.372 mg/kg	5.058 %		
								Total:	5.237 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP15[2]
Sample Depth:
0.5 m
Moisture content:
12.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		26 mg/kg	1.32	34.328 mg/kg	0.00343 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.6 mg/kg	2.775	4.441 mg/kg	0.000444 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32 mg/kg	1.462	46.77 mg/kg	0.00468 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1420 mg/kg	2.749	3902.961 mg/kg	0.39 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		22 mg/kg	2.976	65.478 mg/kg	0.00655 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				74	mg/kg	2.774	205.287	mg/kg	0.0205 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				69	mg/kg	1.785	123.178	mg/kg	0.0123 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				26 mg/kg	1.7	44.187 mg/kg	0.00442 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				94610 mg/kg	1.43	135268.158 mg/kg	13.527 %		
			215-168-2	1309-37-1							
								Total:	13.979 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP16
Sample Depth:
0.1 m
Moisture content:
6.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.4 mg/kg	1.197	1.676 mg/kg	0.000168 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22 mg/kg	1.32	29.047 mg/kg	0.0029 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		28 mg/kg	1.462	40.924 mg/kg	0.00409 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1050 mg/kg	2.749	2885.992 mg/kg	0.289 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		25 mg/kg	2.976	74.407 mg/kg	0.00744 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
15		zinc { zinc chromate } 024-007-00-3		69 mg/kg	2.774	191.416 mg/kg	0.0191 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		58 mg/kg	1.785	103.541 mg/kg	0.0104 %		
17		TPH (C6 to C40) petroleum group TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<**LOD**
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<**LOD**
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<**LOD**
24		pH PH		7.8 pH		7.8 pH	7.8 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
26		acenaphthylene 205-917-1 / 208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
27		acenaphthene 201-469-6 / 83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
28		fluorene 201-695-5 / 86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
29		phenanthrene 201-581-5 / 85-01-8		0.11 mg/kg		0.11 mg/kg	0.000011 %		
30		anthracene 204-371-1 / 120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
31		fluoranthene 205-912-4 / 206-44-0		0.36 mg/kg		0.36 mg/kg	0.000036 %		
32		pyrene 204-927-3 / 129-00-0		0.31 mg/kg		0.31 mg/kg	0.000031 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.5 mg/kg		0.5 mg/kg	0.00005 %		
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.26 mg/kg		0.26 mg/kg	0.000026 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.16 mg/kg		0.16 mg/kg	0.000016 %		
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.29 mg/kg		0.29 mg/kg	0.000029 %		
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		0.36 mg/kg		0.36 mg/kg	0.000036 %		
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
40		benzo[ghi]perylene 205-883-8 / 191-24-2		0.2 mg/kg		0.2 mg/kg	0.00002 %		
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				51	mg/kg	1.7	86.675	mg/kg	0.00867 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				71520	mg/kg	1.43	102255.35	mg/kg	10.226 %		
			215-168-2	1309-37-1									
										Total:	10.578 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP17

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP17
Sample Depth:
0.1 m
Moisture content:
6.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20 mg/kg	1.32	26.407 mg/kg	0.00264 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		936 mg/kg	2.749	2572.656 mg/kg	0.257 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		22 mg/kg	2.976	65.478 mg/kg	0.00655 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				70	mg/kg	2.774	194.19	mg/kg	0.0194 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				52	mg/kg	1.785	92.83	mg/kg	0.00928 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			205-912-4	206-44-0									
32		pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.51	mg/kg		0.51	mg/kg	0.000051 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				50 mg/kg	1.7	84.976 mg/kg	0.0085 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				61350 mg/kg	1.43	87714.845 mg/kg	8.771 %		
			215-168-2	1309-37-1							
								Total:	9.09 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP18

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP18
Sample Depth:
0.1 m
Moisture content:
8.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.3 mg/kg	1.197	1.556 mg/kg	0.000156 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	25.086 mg/kg	0.00251 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/kg	1.126	21.392 mg/kg	0.00214 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1050 mg/kg	2.749	2885.992 mg/kg	0.289 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		26 mg/kg	2.976	77.383 mg/kg	0.00774 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				67	mg/kg	2.774	185.868	mg/kg	0.0186 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				52	mg/kg	1.785	92.83	mg/kg	0.00928 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.4	pH		7.4	pH	7.4 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			205-912-4	206-44-0									
32		pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.52	mg/kg		0.52	mg/kg	0.000052 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				61	mg/kg	1.7	103.671	mg/kg	0.0104 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				66100	mg/kg	1.43	94506.133	mg/kg	9.451 %		
			215-168-2	1309-37-1									
										Total:	9.803 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP18[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP18[2]
Sample Depth:
0.5 m
Moisture content:
5.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		806 mg/kg	2.749	2215.342 mg/kg	0.222 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		24 mg/kg	2.976	71.43 mg/kg	0.00714 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				46	mg/kg	2.774	127.611	mg/kg	0.0128 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				47	mg/kg	1.785	83.904	mg/kg	0.00839 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				41	mg/kg	1.7	69.68	mg/kg	0.00697 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				59990	mg/kg	1.43	85770.392	mg/kg	8.577 %		
			215-168-2	1309-37-1									
										Total:	8.849 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP19

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP19
Sample Depth:
0.1 m
Moisture content:
10.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.2 mg/kg	1.197	1.437 mg/kg	0.000144 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	22 mg/kg	1.56	34.316 mg/kg	0.0022 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1030 mg/kg	2.749	2831.021 mg/kg	0.283 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		22 mg/kg	2.976	65.478 mg/kg	0.00655 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				69	mg/kg	2.774	191.416	mg/kg	0.0191 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				48	mg/kg	1.785	85.689	mg/kg	0.00857 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			201-581-5	85-01-8									
30		anthracene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			204-371-1	120-12-7									
31		fluoranthene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			205-912-4	206-44-0									
32		pyrene				0.47	mg/kg		0.47	mg/kg	0.000047 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.59	mg/kg		0.59	mg/kg	0.000059 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }	231-784-4	7727-43-7		56	mg/kg	1.7	95.173	mg/kg	0.00952 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		62480	mg/kg	1.43	89330.457	mg/kg	8.933 %		
										Total:	9.278 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP19[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP19[2]
Sample Depth:
1 m
Moisture content:
8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19	mg/kg	1.32	25.086	mg/kg	0.00251 %		
3		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2	mg/kg	2.775	3.33	mg/kg	0.000333 %		
4		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
5		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.343	mg/kg	0.0000343 %		
6		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26	mg/kg	1.462	38	mg/kg	0.0038 %		
7		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
8		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.126	18.014	mg/kg	0.0018 %		
9		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18	mg/kg	1.56	28.077	mg/kg	0.0018 %		
10		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		887	mg/kg	2.749	2437.976	mg/kg	0.244 %		
11		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<LOD
12		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1	mg/kg	1.5	<1.5	mg/kg	<0.00015 %		<LOD
13		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		23	mg/kg	2.976	68.454	mg/kg	0.00685 %		
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3	mg/kg	2.554	<7.661	mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				62	mg/kg	2.774	171.997	mg/kg	0.0172 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				50	mg/kg	1.785	89.259	mg/kg	0.00893 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			205-912-4	206-44-0									
32		pyrene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				49 mg/kg	1.7	83.276 mg/kg	0.00833 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				57570 mg/kg	1.43	82310.41 mg/kg	8.231 %		
			215-168-2	1309-37-1							
								Total:	8.533 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP19[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP19[3]
Sample Depth:
2 m
Moisture content:
12.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.4 mg/kg	1.197	1.676 mg/kg	0.000168 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24 mg/kg	1.32	31.688 mg/kg	0.00317 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3 mg/kg	2.775	3.608 mg/kg	0.000361 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29 mg/kg	1.462	42.385 mg/kg	0.00424 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	15 mg/kg	1.56	23.397 mg/kg	0.0015 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		768 mg/kg	2.749	2110.897 mg/kg	0.211 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1 mg/kg	1.5	1.5 mg/kg	0.00015 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		27 mg/kg	2.976	80.359 mg/kg	0.00804 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				65	mg/kg	2.774	180.32	mg/kg	0.018 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				59	mg/kg	1.785	105.326	mg/kg	0.0105 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }	231-784-4	7727-43-7		51 mg/kg	1.7	86.675 mg/kg	0.00867 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		71260 mg/kg	1.43	101883.617 mg/kg	10.188 %		
								Total:	10.463 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP27

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP27
Sample Depth:
0.2 m
Moisture content:
5.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		604 mg/kg	2.749	1660.133 mg/kg	0.166 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		12 mg/kg	2.976	35.715 mg/kg	0.00357 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				53	mg/kg	2.774	147.03	mg/kg	0.0147 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				29	mg/kg	1.785	51.77	mg/kg	0.00518 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			205-912-4	206-44-0									
32		pyrene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				36	mg/kg	1.7	61.183	mg/kg	0.00612 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				30840	mg/kg	1.43	44093.331	mg/kg	4.409 %		
			215-168-2	1309-37-1									
										Total:	4.619 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP20
Sample Depth:
0.2 m
Moisture content:
10.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.4 mg/kg	1.197	2.873 mg/kg	0.000287 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24 mg/kg	1.32	31.688 mg/kg	0.00317 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21 mg/kg	1.56	32.756 mg/kg	0.0021 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		883 mg/kg	2.749	2426.982 mg/kg	0.243 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1 mg/kg	1.5	1.5 mg/kg	0.00015 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21 mg/kg	2.976	62.502 mg/kg	0.00625 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				70	mg/kg	2.774	194.19	mg/kg	0.0194 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				49	mg/kg	1.785	87.474	mg/kg	0.00875 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			205-912-4	206-44-0									
32		pyrene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				49	mg/kg	1.7	83.276	mg/kg	0.00833 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				59400	mg/kg	1.43	84926.843	mg/kg	8.493 %		
			215-168-2	1309-37-1									
										Total:	8.796 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP20[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP20[2]
Sample Depth:
0.5 m
Moisture content:
4.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.4 mg/kg	1.197	2.873 mg/kg	0.000287 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		29 mg/kg	1.32	38.289 mg/kg	0.00383 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	10.133 mg/kg	0.00101 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9 mg/kg	1.56	14.038 mg/kg	0.0009 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		818 mg/kg	2.749	2248.325 mg/kg	0.225 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18 mg/kg	2.976	53.573 mg/kg	0.00536 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				51	mg/kg	2.774	141.481	mg/kg	0.0141 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				46	mg/kg	1.785	82.119	mg/kg	0.00821 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				27 mg/kg	1.7	45.887 mg/kg	0.00459 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				83350 mg/kg	1.43	119169.232 mg/kg	11.917 %		
			215-168-2	1309-37-1							
								Total:	12.19 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP30
Sample Depth:
0.1 m
Moisture content:
7.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.2 mg/kg	1.197	2.634 mg/kg	0.000263 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	25.086 mg/kg	0.00251 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21 mg/kg	1.56	32.756 mg/kg	0.0021 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		962 mg/kg	2.749	2644.118 mg/kg	0.264 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20 mg/kg	2.976	59.525 mg/kg	0.00595 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		70	mg/kg	2.774	194.19	mg/kg	0.0194 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		44	mg/kg	1.785	78.548	mg/kg	0.00785 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		7.8	pH		7.8	pH	7.8 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		0.22	mg/kg		0.22	mg/kg	0.000022 %		
32		pyrene 204-927-3 / 129-00-0		0.18	mg/kg		0.18	mg/kg	0.000018 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.2	mg/kg		0.2	mg/kg	0.00002 %		
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.22	mg/kg		0.22	mg/kg	0.000022 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		0.18	mg/kg		0.18	mg/kg	0.000018 %		
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				62	mg/kg	1.7	105.37	mg/kg	0.0105 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				50900	mg/kg	1.43	72774.012	mg/kg	7.277 %		
			215-168-2	1309-37-1									
										Total:	7.603 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP30[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP30[2]
Sample Depth:
1 m
Moisture content:
3.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.4 mg/kg	1.197	2.873 mg/kg	0.000287 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		27 mg/kg	1.32	35.649 mg/kg	0.00356 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8 mg/kg	1.56	12.479 mg/kg	0.0008 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		873 mg/kg	2.749	2399.496 mg/kg	0.24 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18 mg/kg	2.976	53.573 mg/kg	0.00536 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				47	mg/kg	2.774	130.385	mg/kg	0.013 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				44	mg/kg	1.785	78.548	mg/kg	0.00785 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				22	mg/kg	1.7	37.389	mg/kg	0.00374 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				88350	mg/kg	1.43	126317.956	mg/kg	12.632 %		
			215-168-2	1309-37-1									
										Total:	12.917 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP23

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP23
Sample Depth:
0.1 m
Moisture content:
12.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.2 mg/kg	1.197	2.634 mg/kg	0.000263 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19 mg/kg	1.56	29.636 mg/kg	0.0019 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1120 mg/kg	2.749	3078.391 mg/kg	0.308 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		24 mg/kg	2.976	71.43 mg/kg	0.00714 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				68	mg/kg	2.774	188.642	mg/kg	0.0189 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				46	mg/kg	1.785	82.119	mg/kg	0.00821 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			205-912-4	206-44-0									
32		pyrene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.52	mg/kg		0.52	mg/kg	0.000052 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.39	mg/kg		0.39	mg/kg	0.000039 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }	231-784-4	7727-43-7		61 mg/kg	1.7	103.671 mg/kg	0.0104 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		52800 mg/kg	1.43	75490.527 mg/kg	7.549 %		
								Total:	7.919 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP23[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP23[2]
Sample Depth:
0.5 m
Moisture content:
5.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.6 mg/kg	1.197	3.112 mg/kg	0.000311 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		29 mg/kg	1.32	38.289 mg/kg	0.00383 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	15.598 mg/kg	0.001 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1080 mg/kg	2.749	2968.449 mg/kg	0.297 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		29 mg/kg	2.976	86.312 mg/kg	0.00863 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				61	mg/kg	2.774	169.223	mg/kg	0.0169 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				61	mg/kg	1.785	108.896	mg/kg	0.0109 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				42	mg/kg	1.7	71.38	mg/kg	0.00714 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				94560	mg/kg	1.43	135196.671	mg/kg	13.52 %		
			215-168-2	1309-37-1									
										Total:	13.878 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH30
Sample Depth:
0.1 m
Moisture content:
12.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.6 mg/kg	1.197	1.915 mg/kg	0.000192 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13 mg/kg	1.32	17.164 mg/kg	0.00172 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18 mg/kg	1.56	28.077 mg/kg	0.0018 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		671 mg/kg	2.749	1844.286 mg/kg	0.184 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				51	mg/kg	2.774	141.481	mg/kg	0.0141 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				35	mg/kg	1.785	62.481	mg/kg	0.00625 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				4	mg/kg	1.884	7.536	mg/kg	0.000754 %		
		006-007-00-5											
24		pH				7	pH		7	pH	7pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			205-912-4	206-44-0									
32		pyrene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.47	mg/kg		0.47	mg/kg	0.000047 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				43	mg/kg	1.7	73.079	mg/kg	0.00731 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				39220	mg/kg	1.43	56074.592	mg/kg	5.607 %		
			215-168-2	1309-37-1									
										Total:	5.838 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH30[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH30[2]
Sample Depth:
0.5 m
Moisture content:
6.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.6 mg/kg	1.197	1.915 mg/kg	0.000192 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13 mg/kg	1.32	17.164 mg/kg	0.00172 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		846 mg/kg	2.749	2325.285 mg/kg	0.233 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				44	mg/kg	2.774	122.062	mg/kg	0.0122 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				35	mg/kg	1.785	62.481	mg/kg	0.00625 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.4	pH		7.4	pH	7.4 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				53	mg/kg	1.7	90.074	mg/kg	0.00901 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				44330	mg/kg	1.43	63380.588	mg/kg	6.338 %		
			215-168-2	1309-37-1									
										Total:	6.617 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH32

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH32
Sample Depth:
1 m
Moisture content:
7.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		9 mg/kg	1.462	13.154 mg/kg	0.00132 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	10.133 mg/kg	0.00101 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	3 mg/kg	1.56	4.679 mg/kg	0.0003 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		396 mg/kg	2.749	1088.431 mg/kg	0.109 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				14	mg/kg	2.774	38.838	mg/kg	0.00388 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	30.348	mg/kg	0.00303 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				16	mg/kg	1.7	27.192	mg/kg	0.00272 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				24220	mg/kg	1.43	34628.42	mg/kg	3.463 %		
			215-168-2	1309-37-1									
										Total:	3.594 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP14A
Sample Depth:
0.1 m
Moisture content:
6.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.1 mg/kg	1.197	2.514 mg/kg	0.000251 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		24 mg/kg	1.462	35.077 mg/kg	0.00351 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19 mg/kg	1.56	29.636 mg/kg	0.0019 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		883 mg/kg	2.749	2426.982 mg/kg	0.243 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				64	mg/kg	2.774	177.545	mg/kg	0.0178 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				40	mg/kg	1.785	71.407	mg/kg	0.00714 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
			205-912-4	206-44-0									
32		pyrene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				54 mg/kg	1.7	91.774 mg/kg	0.00918 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				54400 mg/kg	1.43	77778.119 mg/kg	7.778 %		
			215-168-2	1309-37-1							
								Total:	8.076 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14A[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP14A[2]
Sample Depth:
0.5 m
Moisture content:
6.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.1 mg/kg	1.197	2.514 mg/kg	0.000251 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	30.693 mg/kg	0.00307 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	10.133 mg/kg	0.00101 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	15.598 mg/kg	0.001 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1140 mg/kg	2.749	3133.363 mg/kg	0.313 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14 mg/kg	2.976	41.668 mg/kg	0.00417 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				43	mg/kg	1.785	76.763	mg/kg	0.00768 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				67	mg/kg	1.7	113.868	mg/kg	0.0114 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				58320	mg/kg	1.43	83382.718	mg/kg	8.338 %		
			215-168-2	1309-37-1									
										Total:	8.705 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP08

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP08
Sample Depth:
0.2 m
Moisture content:
4.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		517 mg/kg	2.749	1421.008 mg/kg	0.142 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				31	mg/kg	2.774	85.999	mg/kg	0.0086 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				23	mg/kg	1.785	41.059	mg/kg	0.00411 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			205-912-4	206-44-0									
32		pyrene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				25	mg/kg	1.7	42.488	mg/kg	0.00425 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				28010	mg/kg	1.43	40047.153	mg/kg	4.005 %		
			215-168-2	1309-37-1									
										Total:	4.179 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP22

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP22
Sample Depth:
0.1 m
Moisture content:
8.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.7 mg/kg	1.197	2.035 mg/kg	0.000204 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13 mg/kg	1.32	17.164 mg/kg	0.00172 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22 mg/kg	1.462	32.154 mg/kg	0.00322 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19 mg/kg	1.56	29.636 mg/kg	0.0019 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1090 mg/kg	2.749	2995.935 mg/kg	0.3 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18 mg/kg	2.976	53.573 mg/kg	0.00536 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				61	mg/kg	2.774	169.223	mg/kg	0.0169 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				37	mg/kg	1.785	66.052	mg/kg	0.00661 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				57	mg/kg	1.7	96.872	mg/kg	0.00969 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				42340	mg/kg	1.43	60535.396	mg/kg	6.054 %		
			215-168-2	1309-37-1									
										Total:	6.407 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP22[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP22[2]
Sample Depth:
1 m
Moisture content:
9.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.2 mg/kg	1.197	2.634 mg/kg	0.000263 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		23 mg/kg	1.32	30.367 mg/kg	0.00304 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32 mg/kg	1.462	46.77 mg/kg	0.00468 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		797 mg/kg	2.749	2190.605 mg/kg	0.219 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30 mg/kg	2.976	89.288 mg/kg	0.00893 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				72	mg/kg	2.774	199.739	mg/kg	0.02 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				54	mg/kg	1.785	96.4	mg/kg	0.00964 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				33 mg/kg	1.7	56.084 mg/kg	0.00561 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				66840 mg/kg	1.43	95564.144 mg/kg	9.556 %		
			215-168-2	1309-37-1							
								Total:	9.837 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP29

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP29
Sample Depth:
0.1 m
Moisture content:
8.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.9 mg/kg	1.197	2.274 mg/kg	0.000227 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	29.231 mg/kg	0.00292 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		956 mg/kg	2.749	2627.627 mg/kg	0.263 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		17 mg/kg	2.976	50.597 mg/kg	0.00506 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		50	mg/kg	2.774	138.707	mg/kg	0.0139 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		38	mg/kg	1.785	67.837	mg/kg	0.00678 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		7.3	pH		7.3	pH	7.3 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		pyrene 204-927-3 / 129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				56	mg/kg	1.7	95.173	mg/kg	0.00952 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				47860	mg/kg	1.43	68427.588	mg/kg	6.843 %		
			215-168-2	1309-37-1									
										Total:	7.155 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP29[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP29[2]
Sample Depth:
1 m
Moisture content:
3.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.7 mg/kg	1.197	2.035 mg/kg	0.000204 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16 mg/kg	1.32	21.125 mg/kg	0.00211 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9 mg/kg	1.56	14.038 mg/kg	0.0009 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		679 mg/kg	2.749	1866.275 mg/kg	0.187 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				41	mg/kg	2.774	113.74	mg/kg	0.0114 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				32	mg/kg	1.785	57.126	mg/kg	0.00571 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				37 mg/kg	1.7	62.882 mg/kg	0.00629 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				44530 mg/kg	1.43	63666.537 mg/kg	6.367 %		
			215-168-2	1309-37-1							
								Total:	6.595 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP21

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP21
Sample Depth:
0.2 m
Moisture content:
5.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		891 mg/kg	2.749	2448.97 mg/kg	0.245 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20 mg/kg	2.976	59.525 mg/kg	0.00595 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				55	mg/kg	2.774	152.578	mg/kg	0.0153 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				41	mg/kg	1.785	73.193	mg/kg	0.00732 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				52	mg/kg	1.7	88.375	mg/kg	0.00884 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				52850	mg/kg	1.43	75562.014	mg/kg	7.556 %		
			215-168-2	1309-37-1									
										Total:	7.854 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH22

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH22
Sample Depth:
0.1 m
Moisture content:
13.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.2 mg/kg	1.197	1.437 mg/kg	0.000144 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1 mg/kg	3.22	3.542 mg/kg	0.000354 %		
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18 mg/kg	1.56	28.077 mg/kg	0.0018 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		434 mg/kg	2.749	1192.877 mg/kg	0.119 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				52	mg/kg	2.774	144.256	mg/kg	0.0144 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				27	mg/kg	1.785	48.2	mg/kg	0.00482 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				133	mg/kg		133	mg/kg	0.0133 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			205-917-1	208-96-8									
27		acenaphthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			201-469-6	83-32-9									
28		fluorene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			201-695-5	86-73-7									
29		phenanthrene				2.9	mg/kg		2.9	mg/kg	0.00029 %		
			201-581-5	85-01-8									
30		anthracene				0.86	mg/kg		0.86	mg/kg	0.000086 %		
			204-371-1	120-12-7									
31		fluoranthene				6.99	mg/kg		6.99	mg/kg	0.000699 %		
			205-912-4	206-44-0									
32		pyrene				6.2	mg/kg		6.2	mg/kg	0.00062 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				3.86	mg/kg		3.86	mg/kg	0.000386 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				3.67	mg/kg		3.67	mg/kg	0.000367 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				5.88	mg/kg		5.88	mg/kg	0.000588 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				1.93	mg/kg		1.93	mg/kg	0.000193 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				4.83	mg/kg		4.83	mg/kg	0.000483 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				3.75	mg/kg		3.75	mg/kg	0.000375 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.7	mg/kg		0.7	mg/kg	0.00007 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				2.97	mg/kg		2.97	mg/kg	0.000297 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				33 mg/kg	1.7	56.084 mg/kg	0.00561 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				31750 mg/kg	1.43	45394.398 mg/kg	4.539 %		
			215-168-2	1309-37-1							
								Total:	4.714 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0133%)

Classification of sample: BH22[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH22[2]
Sample Depth:
1 m
Moisture content:
3.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	7 mg/kg	1.56	10.919 mg/kg	0.0007 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		402 mg/kg	2.749	1104.923 mg/kg	0.11 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				35	mg/kg	2.774	97.095	mg/kg	0.00971 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				34	mg/kg	1.785	60.696	mg/kg	0.00607 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				320	mg/kg		320	mg/kg	0.032 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
		006-007-00-5											
24		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			205-917-1	208-96-8									
27		acenaphthene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			201-469-6	83-32-9									
28		fluorene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
			201-695-5	86-73-7									
29		phenanthrene				4.1	mg/kg		4.1	mg/kg	0.00041 %		
			201-581-5	85-01-8									
30		anthracene				1.41	mg/kg		1.41	mg/kg	0.000141 %		
			204-371-1	120-12-7									
31		fluoranthene				9.97	mg/kg		9.97	mg/kg	0.000997 %		
			205-912-4	206-44-0									
32		pyrene				9.15	mg/kg		9.15	mg/kg	0.000915 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				5.98	mg/kg		5.98	mg/kg	0.000598 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				5.55	mg/kg		5.55	mg/kg	0.000555 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				10.2	mg/kg		10.2	mg/kg	0.00102 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				3.38	mg/kg		3.38	mg/kg	0.000338 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				8.97	mg/kg		8.97	mg/kg	0.000897 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				6.81	mg/kg		6.81	mg/kg	0.000681 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				1	mg/kg		1	mg/kg	0.0001 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				5.24	mg/kg		5.24	mg/kg	0.000524 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				21	mg/kg	1.7	35.69	mg/kg	0.00357 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				40840	mg/kg	1.43	58390.779	mg/kg	5.839 %		
			215-168-2	1309-37-1									
										Total:	6.018 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.032%)

Classification of sample: BH35

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH35
Sample Depth:
0.2 m
Moisture content:
8.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.2 mg/kg	1.197	2.634 mg/kg	0.000263 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		27 mg/kg	1.32	35.649 mg/kg	0.00356 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4 mg/kg	2.775	3.885 mg/kg	0.000389 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	20.266 mg/kg	0.00203 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		801 mg/kg	2.749	2201.6 mg/kg	0.22 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32 mg/kg	2.976	95.24 mg/kg	0.00952 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				61	mg/kg	2.774	169.223	mg/kg	0.0169 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				66	mg/kg	1.785	117.822	mg/kg	0.0118 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				47 mg/kg	1.7	79.877 mg/kg	0.00799 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				73090 mg/kg	1.43	104500.05 mg/kg	10.45 %		
			215-168-2	1309-37-1							
								Total:	10.735 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH35[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH35[2]
Sample Depth:
0.5 m
Moisture content:
7.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3 mg/kg	1.32	3.961 mg/kg	0.000396 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	7 mg/kg	1.56	10.919 mg/kg	0.0007 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		99.3 mg/kg	2.749	272.932 mg/kg	0.0273 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				12	mg/kg	2.774	33.29	mg/kg	0.00333 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				26	mg/kg	1.7	44.187	mg/kg	0.00442 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				7943	mg/kg	1.43	11356.463	mg/kg	1.136 %		
			215-168-2	1309-37-1									
										Total:	1.188 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH18- IP

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH18- IP
Sample Depth:
0.2 m
Moisture content:
13.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	17 mg/kg	1.56	26.517 mg/kg	0.0017 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		391 mg/kg	2.749	1074.688 mg/kg	0.107 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.5 mg/kg	1.5	2.25 mg/kg	0.000225 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				36	mg/kg	2.774	99.869	mg/kg	0.00999 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				30	mg/kg	1.785	53.556	mg/kg	0.00536 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				53	mg/kg		53	mg/kg	0.0053 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.24	mg/kg		0.24	mg/kg	0.000024 %		
			205-912-4	206-44-0									
32		pyrene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				26 mg/kg	1.7	44.187 mg/kg	0.00442 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				27570 mg/kg	1.43	39418.065 mg/kg	3.942 %		
			215-168-2	1309-37-1							
								Total:	4.088 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0053%)

Classification of sample: BH17- IP

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH17- IP
Sample Depth:
0.1 m
Moisture content:
10%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	6.602 mg/kg	0.00066 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<**LOD**
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		7 mg/kg	1.462	10.231 mg/kg	0.00102 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6 mg/kg	1.56	9.359 mg/kg	0.0006 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		246 mg/kg	2.749	676.147 mg/kg	0.0676 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		16	mg/kg	2.774	44.386	mg/kg	0.00444 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		15	mg/kg	1.785	26.778	mg/kg	0.00268 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		8.1	pH		8.1	pH	8.1 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		0.22	mg/kg		0.22	mg/kg	0.000022 %		
32		pyrene 204-927-3 / 129-00-0		0.2	mg/kg		0.2	mg/kg	0.00002 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.24	mg/kg		0.24	mg/kg	0.000024 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.12	mg/kg		0.12	mg/kg	0.000012 %		
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		0.17	mg/kg		0.17	mg/kg	0.000017 %		
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				11	mg/kg	1.7	18.695	mg/kg	0.00187 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				16850	mg/kg	1.43	24091.2	mg/kg	2.409 %		
			215-168-2	1309-37-1									
										Total:	2.499 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP06- IP

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP06- IP
Sample Depth:
0.1 m
Moisture content:
7.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		6 mg/kg	1.462	8.769 mg/kg	0.000877 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5 mg/kg	1.56	7.799 mg/kg	0.0005 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		251 mg/kg	2.749	689.89 mg/kg	0.069 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.7 mg/kg	1.5	2.55 mg/kg	0.000255 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		7 mg/kg	2.976	20.834 mg/kg	0.00208 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15	zinc { zinc chromate }	024-007-00-3				10 mg/kg	2.774	27.741 mg/kg	0.00277 %		
16	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		15 mg/kg	1.785	26.778 mg/kg	0.00268 %		
17	TPH (C6 to C40) petroleum group			TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<LOD
18	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
22	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
23	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
24	pH			PH		8.2 pH		8.2 pH	8.2 pH		
25	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	fluoranthene		205-912-4	206-44-0		0.2 mg/kg		0.2 mg/kg	0.00002 %		
32	pyrene		204-927-3	129-00-0		0.19 mg/kg		0.19 mg/kg	0.000019 %		
33	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.24 mg/kg		0.24 mg/kg	0.000024 %		
36	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.12 mg/kg		0.12 mg/kg	0.000012 %		
38	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	phenol	604-001-00-2	203-632-7	108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				8 mg/kg	1.7	13.596 mg/kg	0.00136 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				15860 mg/kg	1.43	22675.753 mg/kg	2.268 %		
			215-168-2	1309-37-1							
								Total:	2.356 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13- IP

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP13- IP
Sample Depth:
0.2 m
Moisture content:
9.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17 mg/kg	1.462	24.846 mg/kg	0.00248 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24 mg/kg	1.56	37.436 mg/kg	0.0024 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		964 mg/kg	2.749	2649.616 mg/kg	0.265 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20 mg/kg	2.976	59.525 mg/kg	0.00595 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				61	mg/kg	2.774	169.223	mg/kg	0.0169 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	44.63	mg/kg	0.00446 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			205-912-4	206-44-0									
32		pyrene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				54	mg/kg	1.7	91.774	mg/kg	0.00918 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				37720	mg/kg	1.43	53929.975	mg/kg	5.393 %		
			215-168-2	1309-37-1									
										Total:	5.71 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP10- IP

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP10- IP
Sample Depth:
0.1 m
Moisture content:
12.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.9% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
7		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	20 mg/kg	1.56	31.196 mg/kg	0.002 %		
10		manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		425 mg/kg	2.749	1168.14 mg/kg	0.117 %		
11		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %		
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				49	mg/kg	2.774	135.933	mg/kg	0.0136 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				23	mg/kg	1.785	41.059	mg/kg	0.00411 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			205-912-4	206-44-0									
32		pyrene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.53	mg/kg		0.53	mg/kg	0.000053 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				30 mg/kg	1.7	50.986 mg/kg	0.0051 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				22760 mg/kg	1.43	32540.992 mg/kg	3.254 %		
			215-168-2	1309-37-1							
								Total:	3.41 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH21A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH21A
Sample Depth:
0.1 m
Moisture content:
8.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2 mg/kg	1.197	2.394 mg/kg	0.000239 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6 mg/kg	1.32	7.922 mg/kg	0.000792 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		25 mg/kg	1.126	28.147 mg/kg	0.00281 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	36 mg/kg	1.56	56.153 mg/kg	0.0036 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		357 mg/kg	2.749	981.237 mg/kg	0.0981 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.2 mg/kg	1.5	1.8 mg/kg	0.00018 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				298	mg/kg	2.774	826.696	mg/kg	0.0827 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				98	mg/kg		98	mg/kg	0.0098 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			205-917-1	208-96-8									
27		acenaphthene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			201-469-6	83-32-9									
28		fluorene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			201-695-5	86-73-7									
29		phenanthrene				1.8	mg/kg		1.8	mg/kg	0.00018 %		
			201-581-5	85-01-8									
30		anthracene				0.56	mg/kg		0.56	mg/kg	0.000056 %		
			204-371-1	120-12-7									
31		fluoranthene				4.74	mg/kg		4.74	mg/kg	0.000474 %		
			205-912-4	206-44-0									
32		pyrene				4.02	mg/kg		4.02	mg/kg	0.000402 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				2.78	mg/kg		2.78	mg/kg	0.000278 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				3.51	mg/kg		3.51	mg/kg	0.000351 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				1.21	mg/kg		1.21	mg/kg	0.000121 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				2.14	mg/kg		2.14	mg/kg	0.000214 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				1.69	mg/kg		1.69	mg/kg	0.000169 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.58	mg/kg		0.58	mg/kg	0.000058 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				1.42	mg/kg		1.42	mg/kg	0.000142 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				39	mg/kg	1.7	66.281	mg/kg	0.00663 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				20140	mg/kg	1.43	28795.061	mg/kg	2.88 %		
			215-168-2	1309-37-1									
										Total:	3.097 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0098%)

Classification of sample: BH21A[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH21A[2]
Sample Depth:
0.2 m
Moisture content:
8.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.5 mg/kg	1.197	1.796 mg/kg	0.00018 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %		
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	30 mg/kg	1.56	46.794 mg/kg	0.003 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		411 mg/kg	2.749	1129.66 mg/kg	0.113 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1 mg/kg	1.5	1.65 mg/kg	0.000165 %		
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				257	mg/kg	2.774	712.956	mg/kg	0.0713 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				22	mg/kg	1.785	39.274	mg/kg	0.00393 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				139	mg/kg		139	mg/kg	0.0139 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
			205-917-1	208-96-8									
27		acenaphthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			201-469-6	83-32-9									
28		fluorene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			201-695-5	86-73-7									
29		phenanthrene				1.41	mg/kg		1.41	mg/kg	0.000141 %		
			201-581-5	85-01-8									
30		anthracene				0.63	mg/kg		0.63	mg/kg	0.000063 %		
			204-371-1	120-12-7									
31		fluoranthene				5.47	mg/kg		5.47	mg/kg	0.000547 %		
			205-912-4	206-44-0									
32		pyrene				5.11	mg/kg		5.11	mg/kg	0.000511 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				4.46	mg/kg		4.46	mg/kg	0.000446 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				3.42	mg/kg		3.42	mg/kg	0.000342 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				4.88	mg/kg		4.88	mg/kg	0.000488 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				1.78	mg/kg		1.78	mg/kg	0.000178 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				3.77	mg/kg		3.77	mg/kg	0.000377 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				2.91	mg/kg		2.91	mg/kg	0.000291 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.69	mg/kg		0.69	mg/kg	0.000069 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				2.17	mg/kg		2.17	mg/kg	0.000217 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }	231-784-4	7727-43-7		33	mg/kg	1.7	56.084	mg/kg	0.00561 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		23480	mg/kg	1.43	33570.409	mg/kg	3.357 %		
										Total:	3.581 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0139%)

Classification of sample: BH24A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH24A
Sample Depth:
0.1 m
Moisture content:
14%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16 mg/kg	1.32	21.125 mg/kg	0.00211 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9 mg/kg	2.775	2.498 mg/kg	0.00025 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	16 mg/kg	1.56	24.957 mg/kg	0.0016 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		406 mg/kg	2.749	1115.917 mg/kg	0.112 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
15		zinc { zinc chromate } 024-007-00-3		55 mg/kg	2.774	152.578 mg/kg	0.0153 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		44 mg/kg	1.785	78.548 mg/kg	0.00785 %		
17		TPH (C6 to C40) petroleum group TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2 mg/kg	1.884	<3.768 mg/kg	<0.000377 %		<LOD
24		pH PH		8 pH		8 pH	8pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		anthracene 204-371-1 / 120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		0.22 mg/kg		0.22 mg/kg	0.000022 %		
32		pyrene 204-927-3 / 129-00-0		0.21 mg/kg		0.21 mg/kg	0.000021 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.49 mg/kg		0.49 mg/kg	0.000049 %		
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.26 mg/kg		0.26 mg/kg	0.000026 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.13 mg/kg		0.13 mg/kg	0.000013 %		
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				46	mg/kg	1.7	78.178	mg/kg	0.00782 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				38770	mg/kg	1.43	55431.207	mg/kg	5.543 %		
			215-168-2	1309-37-1									
										Total:	5.706 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH40
Sample Depth:
0.1 m
Moisture content:
11.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4 mg/kg	1.32	5.281 mg/kg	0.000528 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.775 mg/kg	0.000278 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	20 mg/kg	1.56	31.196 mg/kg	0.002 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		925 mg/kg	2.749	2542.422 mg/kg	0.254 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20 mg/kg	2.976	59.525 mg/kg	0.00595 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				64	mg/kg	2.774	177.545	mg/kg	0.0178 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				43	mg/kg	1.785	76.763	mg/kg	0.00768 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				6.5	pH		6.5	pH	6.5 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
			205-912-4	206-44-0									
32		pyrene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.26	mg/kg		0.26	mg/kg	0.000026 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				59 mg/kg	1.7	100.272 mg/kg	0.01 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				39210 mg/kg	1.43	56060.295 mg/kg	5.606 %		
			215-168-2	1309-37-1							
								Total:	5.917 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH40[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH40[2]
Sample Depth:
0.5 m
Moisture content:
9.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4 mg/kg	2.775	3.885 mg/kg	0.000389 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		1260 mg/kg	2.749	3463.19 mg/kg	0.346 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32 mg/kg	2.976	95.24 mg/kg	0.00952 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				63	mg/kg	2.774	174.771	mg/kg	0.0175 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				52	mg/kg	1.785	92.83	mg/kg	0.00928 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.2	pH		7.2	pH	7.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				73	mg/kg	1.7	124.065	mg/kg	0.0124 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				63110	mg/kg	1.43	90231.196	mg/kg	9.023 %		
			215-168-2	1309-37-1									
										Total:	9.435 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH24A[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH24A[2]
Sample Depth:
0.3 m
Moisture content:
7.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5 mg/kg	2.775	1.388 mg/kg	0.000139 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	10.133 mg/kg	0.00101 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6 mg/kg	1.56	9.359 mg/kg	0.0006 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		257 mg/kg	2.749	706.381 mg/kg	0.0706 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		9 mg/kg	2.976	26.786 mg/kg	0.00268 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				20	mg/kg	2.774	55.483	mg/kg	0.00555 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			205-912-4	206-44-0									
32		pyrene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				18	mg/kg	1.7	30.591	mg/kg	0.00306 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				30670	mg/kg	1.43	43850.274	mg/kg	4.385 %		
			215-168-2	1309-37-1									
										Total:	4.482 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP24

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP24
Sample Depth:
0.1 m
Moisture content:
14.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.7 mg/kg	1.197	2.035 mg/kg	0.000204 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/kg	1.126	21.392 mg/kg	0.00214 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	23 mg/kg	1.56	35.876 mg/kg	0.0023 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		218 mg/kg	2.749	599.187 mg/kg	0.0599 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				88	mg/kg	2.774	244.125	mg/kg	0.0244 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				19	mg/kg	1.785	33.919	mg/kg	0.00339 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
			201-581-5	85-01-8									
30		anthracene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			204-371-1	120-12-7									
31		fluoranthene				2.04	mg/kg		2.04	mg/kg	0.000204 %		
			205-912-4	206-44-0									
32		pyrene				2.04	mg/kg		2.04	mg/kg	0.000204 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				1.14	mg/kg		1.14	mg/kg	0.000114 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				1.67	mg/kg		1.67	mg/kg	0.000167 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				1.28	mg/kg		1.28	mg/kg	0.000128 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.96	mg/kg		0.96	mg/kg	0.000096 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.88	mg/kg		0.88	mg/kg	0.000088 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }	231-784-4	7727-43-7		35	mg/kg	1.7	59.483	mg/kg	0.00595 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		28380	mg/kg	1.43	40576.158	mg/kg	4.058 %		
										Total:	4.17 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP25

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP25
Sample Depth:
0.2 m
Moisture content:
4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4% No Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	antimony { antimony trioxide }		2.7 mg/kg	1.197	3.232 mg/kg	0.000323 %		
	051-005-00-X / 215-175-0 / 1309-64-4							
2	arsenic { arsenic trioxide }		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
	033-003-00-0 / 215-481-4 / 1327-53-3							
3	beryllium { beryllium oxide }		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
	004-003-00-8 / 215-133-1 / 1304-56-9							
4	boron { diboron trioxide; boric oxide }		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
	005-008-00-8 / 215-125-8 / 1303-86-2							
5	cadmium { cadmium oxide }		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
	048-002-00-0 / 215-146-2 / 1306-19-0							
6	chromium in chromium(III) compounds { chromium(III) oxide }		24 mg/kg	1.462	35.077 mg/kg	0.00351 %		
	215-160-9 / 1308-38-9							
7	chromium in chromium(VI) compounds { chromium(VI) oxide }		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
	024-001-00-0 / 215-607-8 / 1333-82-0							
8	copper { dicopper oxide; copper (I) oxide }		20 mg/kg	1.126	22.518 mg/kg	0.00225 %		
	029-002-00-X / 215-270-7 / 1317-39-1							
9	lead { lead chromate }	1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
	082-004-00-2 / 231-846-0 / 7758-97-6							
10	manganese { manganese sulphate }		343 mg/kg	2.749	942.757 mg/kg	0.0943 %		
	025-003-00-4 / 232-089-9 / 7785-87-7							
11	mercury { mercury dichloride }		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
	080-010-00-X / 231-299-8 / 7487-94-7							
12	molybdenum { molybdenum(VI) oxide }		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
	042-001-00-9 / 215-204-7 / 1313-27-5							
13	nickel { nickel chromate }		14 mg/kg	2.976	41.668 mg/kg	0.00417 %		
	028-035-00-7 / 238-766-5 / 14721-18-7							
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD
	034-002-00-8							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				166	mg/kg	2.774	460.508	mg/kg	0.0461 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				51	mg/kg	1.785	91.044	mg/kg	0.0091 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				942	mg/kg		942	mg/kg	0.0942 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			205-912-4	206-44-0									
32		pyrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				37	mg/kg	1.7	62.882	mg/kg	0.00629 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				43820	mg/kg	1.43	62651.418	mg/kg	6.265 %		
			215-168-2	1309-37-1									
										Total:	6.531 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0942%)

Classification of sample: TP25[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP25[2]
Sample Depth:
1 m
Moisture content:
7.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.3 mg/kg	1.197	1.556 mg/kg	0.000156 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	9.242 mg/kg	0.000924 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		9 mg/kg	1.462	13.154 mg/kg	0.00132 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23 mg/kg	1.126	25.895 mg/kg	0.00259 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8 mg/kg	1.56	12.479 mg/kg	0.0008 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		278 mg/kg	2.749	764.101 mg/kg	0.0764 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				88	mg/kg	2.774	244.125	mg/kg	0.0244 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				16	mg/kg	1.785	28.563	mg/kg	0.00286 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				18	mg/kg	1.7	30.591	mg/kg	0.00306 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				20520	mg/kg	1.43	29338.364	mg/kg	2.934 %		
			215-168-2	1309-37-1									
										Total:	3.056 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP26

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP26
Sample Depth:
0.5 m
Moisture content:
6.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	6.602 mg/kg	0.00066 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		5 mg/kg	1.462	7.308 mg/kg	0.000731 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5 mg/kg	1.56	7.799 mg/kg	0.0005 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		266 mg/kg	2.749	731.118 mg/kg	0.0731 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		4 mg/kg	2.976	11.905 mg/kg	0.00119 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				14	mg/kg	2.774	38.838	mg/kg	0.00388 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				12	mg/kg	1.785	21.422	mg/kg	0.00214 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				929	mg/kg		929	mg/kg	0.0929 %		
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
25		naphthalene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			205-917-1	208-96-8									
27		acenaphthene				5.2	mg/kg		5.2	mg/kg	0.00052 %		
			201-469-6	83-32-9									
28		fluorene				2.28	mg/kg		2.28	mg/kg	0.000228 %		
			201-695-5	86-73-7									
29		phenanthrene				55.6	mg/kg		55.6	mg/kg	0.00556 %		
			201-581-5	85-01-8									
30		anthracene				13.3	mg/kg		13.3	mg/kg	0.00133 %		
			204-371-1	120-12-7									
31		fluoranthene				97.9	mg/kg		97.9	mg/kg	0.00979 %		
			205-912-4	206-44-0									
32		pyrene				85.1	mg/kg		85.1	mg/kg	0.00851 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				33.9	mg/kg		33.9	mg/kg	0.00339 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				38.1	mg/kg		38.1	mg/kg	0.00381 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				43.8	mg/kg		43.8	mg/kg	0.00438 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				14.4	mg/kg		14.4	mg/kg	0.00144 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				34.8	mg/kg		34.8	mg/kg	0.00348 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				22.9	mg/kg		22.9	mg/kg	0.00229 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				2.67	mg/kg		2.67	mg/kg	0.000267 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				18.9	mg/kg		18.9	mg/kg	0.00189 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				10	mg/kg	1.7	16.995	mg/kg	0.0017 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				16250	mg/kg	1.43	23233.353	mg/kg	2.323 %		
			215-168-2	1309-37-1									
										Total:	2.551 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0929%)

Classification of sample: BH05

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH05
Sample Depth:
0.2 m
Moisture content:
4.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	6.602 mg/kg	0.00066 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		8 mg/kg	1.462	11.692 mg/kg	0.00117 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11 mg/kg	1.126	12.385 mg/kg	0.00124 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	17 mg/kg	1.56	26.517 mg/kg	0.0017 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		236 mg/kg	2.749	648.661 mg/kg	0.0649 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		6 mg/kg	2.976	17.858 mg/kg	0.00179 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate } 024-007-00-3		62	mg/kg	2.774	171.997	mg/kg	0.0172 %		
16		vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8 / 215-239-8 / 1314-62-1		14	mg/kg	1.785	24.993	mg/kg	0.0025 %		
17		TPH (C6 to C40) petroleum group TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
22		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
24		pH PH		7.6	pH		7.6	pH	7.6 pH		
25		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		phenanthrene 201-581-5 / 85-01-8		0.12	mg/kg		0.12	mg/kg	0.000012 %		
30		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		fluoranthene 205-912-4 / 206-44-0		0.28	mg/kg		0.28	mg/kg	0.000028 %		
32		pyrene 204-927-3 / 129-00-0		0.26	mg/kg		0.26	mg/kg	0.000026 %		
33		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.42	mg/kg		0.42	mg/kg	0.000042 %		
34		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		0.3	mg/kg		0.3	mg/kg	0.00003 %		
36		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		0.19	mg/kg		0.19	mg/kg	0.000019 %		
38		indeno[123-cd]pyrene 205-893-2 / 193-39-5		0.33	mg/kg		0.33	mg/kg	0.000033 %		
39		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		benzo[ghi]perylene 205-883-8 / 191-24-2		0.22	mg/kg		0.22	mg/kg	0.000022 %		
41		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				20	mg/kg	1.7	33.99	mg/kg	0.0034 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				16680	mg/kg	1.43	23848.144	mg/kg	2.385 %		
			215-168-2	1309-37-1									
										Total:	2.486 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH05[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH05[2]
Sample Depth:
2.5 m
Moisture content:
4.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2 mg/kg	1.32	2.641 mg/kg	0.000264 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		4 mg/kg	1.462	5.846 mg/kg	0.000585 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	<3 mg/kg	1.56	<4.679 mg/kg	<0.0003 %		<LOD
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		158 mg/kg	2.749	434.273 mg/kg	0.0434 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		<3 mg/kg	2.976	<8.929 mg/kg	<0.000893 %		<LOD
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				7	mg/kg	2.774	19.419	mg/kg	0.00194 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				7	mg/kg	1.785	12.496	mg/kg	0.00125 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			205-912-4	206-44-0									
32		pyrene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.15	mg/kg		0.15	mg/kg	0.000015 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }				6 mg/kg	1.7	10.197 mg/kg	0.00102 %		
			231-784-4	7727-43-7							
43		iron { iron (III) oxide }				13140 mg/kg	1.43	18786.847 mg/kg	1.879 %		
			215-168-2	1309-37-1							
								Total:	1.937 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH27

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH27
Sample Depth:
0.1 m
Moisture content:
10.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.3 mg/kg	1.197	1.556 mg/kg	0.000156 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	29.231 mg/kg	0.00292 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19 mg/kg	1.56	29.636 mg/kg	0.0019 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		515 mg/kg	2.749	1415.51 mg/kg	0.142 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				51	mg/kg	2.774	141.481	mg/kg	0.0141 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				38	mg/kg	1.785	67.837	mg/kg	0.00678 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<**LOD**
		006-007-00-5											
24		pH				8	pH		8	pH	8pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
29		phenanthrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
31		fluoranthene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			205-912-4	206-44-0									
32		pyrene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
42		barium { barium sulfate }	231-784-4	7727-43-7		44 mg/kg	1.7	74.779 mg/kg	0.00748 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		42610 mg/kg	1.43	60921.427 mg/kg	6.092 %		
								Total:	6.282 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH27[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH27[2]
Sample Depth:
0.5 m
Moisture content:
6.7%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.7% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.3 mg/kg	1.197	1.556 mg/kg	0.000156 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8 mg/kg	2.775	2.22 mg/kg	0.000222 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	13 mg/kg	1.56	20.278 mg/kg	0.0013 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		564 mg/kg	2.749	1550.19 mg/kg	0.155 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	47.62 mg/kg	0.00476 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				45	mg/kg	2.774	124.837	mg/kg	0.0125 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				36	mg/kg	1.785	64.267	mg/kg	0.00643 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			205-912-4	206-44-0									
32		pyrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				45	mg/kg	1.7	76.478	mg/kg	0.00765 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				50760	mg/kg	1.43	72573.848	mg/kg	7.257 %		
			215-168-2	1309-37-1									
										Total:	7.458 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH34

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH34
Sample Depth:
0.2 m
Moisture content:
6.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.317 mg/kg	0.000132 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18 mg/kg	1.56	28.077 mg/kg	0.0018 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		420 mg/kg	2.749	1154.397 mg/kg	0.115 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
15		zinc { zinc chromate }		35	mg/kg	2.774	97.095	mg/kg	0.00971 %		
		024-007-00-3									
16		vanadium { divanadium pentaoxide; vanadium pentoxide }		30	mg/kg	1.785	53.556	mg/kg	0.00536 %		
		023-001-00-8 / 215-239-8 / 1314-62-1									
17		TPH (C6 to C40) petroleum group		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
		TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X / 216-653-1 / 1634-04-4									
19		benzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8 / 200-753-7 / 71-43-2									
20		toluene		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3 / 203-625-9 / 108-88-3									
21		ethylbenzene		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4 / 202-849-4 / 100-41-4									
22		xylene		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }		<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5									
24		pH		7.7	pH		7.7	pH	7.7 pH		
		PH									
25		naphthalene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2 / 202-049-5 / 91-20-3									
26		acenaphthylene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1 / 208-96-8									
27		acenaphthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6 / 83-32-9									
28		fluorene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5 / 86-73-7									
29		phenanthrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5 / 85-01-8									
30		anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1 / 120-12-7									
31		fluoranthene		0.15	mg/kg		0.15	mg/kg	0.000015 %		
		205-912-4 / 206-44-0									
32		pyrene		0.14	mg/kg		0.14	mg/kg	0.000014 %		
		204-927-3 / 129-00-0									
33		benzo[a]anthracene		0.34	mg/kg		0.34	mg/kg	0.000034 %		
		601-033-00-9 / 200-280-6 / 56-55-3									
34		chrysene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0 / 205-923-4 / 218-01-9									
35		benzo[b]fluoranthene		0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-034-00-4 / 205-911-9 / 205-99-2									
36		benzo[k]fluoranthene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5 / 205-916-6 / 207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene		0.11	mg/kg		0.11	mg/kg	0.000011 %		
		601-032-00-3 / 200-028-5 / 50-32-8									
38		indeno[123-cd]pyrene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-893-2 / 193-39-5									
39		dibenz[a,h]anthracene		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2 / 200-181-8 / 53-70-3									
40		benzo[ghi]perylene		0.14	mg/kg		0.14	mg/kg	0.000014 %		
		205-883-8 / 191-24-2									
41		phenol		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2 / 203-632-7 / 108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				29	mg/kg	1.7	49.286	mg/kg	0.00493 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				39040	mg/kg	1.43	55817.238	mg/kg	5.582 %		
			215-168-2	1309-37-1									
										Total:	5.735 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH26

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH26
Sample Depth:
0.1 m
Moisture content:
8.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.5 mg/kg	1.197	1.796 mg/kg	0.00018 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7 mg/kg	2.775	1.943 mg/kg	0.000194 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	25 mg/kg	1.56	38.995 mg/kg	0.0025 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		448 mg/kg	2.749	1231.357 mg/kg	0.123 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				51	mg/kg	2.774	141.481	mg/kg	0.0141 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				38	mg/kg	1.785	67.837	mg/kg	0.00678 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.8	pH		7.8	pH	7.8 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.2	mg/kg		0.2	mg/kg	0.00002 %		
			201-581-5	85-01-8									
30		anthracene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			204-371-1	120-12-7									
31		fluoranthene				0.57	mg/kg		0.57	mg/kg	0.000057 %		
			205-912-4	206-44-0									
32		pyrene				0.49	mg/kg		0.49	mg/kg	0.000049 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.54	mg/kg		0.54	mg/kg	0.000054 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.21	mg/kg		0.21	mg/kg	0.000021 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.48	mg/kg		0.48	mg/kg	0.000048 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.44	mg/kg		0.44	mg/kg	0.000044 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.31	mg/kg		0.31	mg/kg	0.000031 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				33	mg/kg	1.7	56.084	mg/kg	0.00561 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				43660	mg/kg	1.43	62422.659	mg/kg	6.242 %		
			215-168-2	1309-37-1									
										Total:	6.412 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH33

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH33
Sample Depth:
0.1 m
Moisture content:
12.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	14.637 mg/kg	0.00146 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21 mg/kg	1.56	32.756 mg/kg	0.0021 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		346 mg/kg	2.749	951.003 mg/kg	0.0951 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<**LOD**
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	38.691 mg/kg	0.00387 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				45	mg/kg	2.774	124.837	mg/kg	0.0125 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				32	mg/kg	1.785	57.126	mg/kg	0.00571 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.2	pH		7.2	pH	7.2 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.16	mg/kg		0.16	mg/kg	0.000016 %		
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }	231-784-4	7727-43-7		35	mg/kg	1.7	59.483	mg/kg	0.00595 %		
43		iron { iron (III) oxide }	215-168-2	1309-37-1		29280	mg/kg	1.43	41862.929	mg/kg	4.186 %		
										Total:	4.324 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH33[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH33[2]
Sample Depth:
0.5 m
Moisture content:
7.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	6.602 mg/kg	0.00066 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9 mg/kg	1.126	10.133 mg/kg	0.00101 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		117 mg/kg	2.749	321.582 mg/kg	0.0322 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				20	mg/kg	2.774	55.483	mg/kg	0.00555 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				28	mg/kg	1.785	49.985	mg/kg	0.005 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
32		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
33		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				26	mg/kg	1.7	44.187	mg/kg	0.00442 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				16380	mg/kg	1.43	23419.22	mg/kg	2.342 %		
			215-168-2	1309-37-1									
										Total:	2.403 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP02
Sample Depth:
0.1 m
Moisture content:
14%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	11.883 mg/kg	0.00119 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.665 mg/kg	0.000167 %		
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14 mg/kg	1.126	15.762 mg/kg	0.00158 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		347 mg/kg	2.749	953.752 mg/kg	0.0954 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				33	mg/kg	2.774	91.547	mg/kg	0.00915 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				21	mg/kg	1.785	37.489	mg/kg	0.00375 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
25		naphthalene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			201-581-5	85-01-8									
30		anthracene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			204-371-1	120-12-7									
31		fluoranthene				1.14	mg/kg		1.14	mg/kg	0.000114 %		
			205-912-4	206-44-0									
32		pyrene				1.02	mg/kg		1.02	mg/kg	0.000102 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				1.03	mg/kg		1.03	mg/kg	0.000103 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				0.52	mg/kg		0.52	mg/kg	0.000052 %		
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				1.35	mg/kg		1.35	mg/kg	0.000135 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				0.44	mg/kg		0.44	mg/kg	0.000044 %		
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				0.88	mg/kg		0.88	mg/kg	0.000088 %		
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				0.85	mg/kg		0.85	mg/kg	0.000085 %		
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				0.76	mg/kg		0.76	mg/kg	0.000076 %		
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				0.69	mg/kg		0.69	mg/kg	0.000069 %		
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				25	mg/kg	1.7	42.488	mg/kg	0.00425 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				20810	mg/kg	1.43	29752.99	mg/kg	2.975 %		
			215-168-2	1309-37-1									
										Total:	3.104 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP02[2]
Sample Depth:
0.5 m
Moisture content:
13.1%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	10.563 mg/kg	0.00106 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
4	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
5	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
6	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		8 mg/kg	1.462	11.692 mg/kg	0.00117 %		
7	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
8	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8 mg/kg	1.126	9.007 mg/kg	0.000901 %		
9	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5 mg/kg	1.56	7.799 mg/kg	0.0005 %		
10	manganese { manganese sulphate }	025-003-00-4	232-089-9	7785-87-7		196 mg/kg	2.749	538.719 mg/kg	0.0539 %		
11	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
12	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<1 mg/kg	1.5	<1.5 mg/kg	<0.00015 %		<LOD
13	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8 mg/kg	2.976	23.81 mg/kg	0.00238 %		
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<3 mg/kg	2.554	<7.661 mg/kg	<0.000766 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		zinc { zinc chromate }				15	mg/kg	2.774	41.612	mg/kg	0.00416 %		
		024-007-00-3											
16		vanadium { divanadium pentaoxide; vanadium pentoxide }				15	mg/kg	1.785	26.778	mg/kg	0.00268 %		
		023-001-00-8	215-239-8	1314-62-1									
17		TPH (C6 to C40) petroleum group				<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
				TPH									
18		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
19		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		xylene				4	mg/kg		4	mg/kg	0.0004 %		
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
23		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<2	mg/kg	1.884	<3.768	mg/kg	<0.000377 %		<LOD
		006-007-00-5											
24		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
25		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
26		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
27		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
28		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
29		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
30		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
31		fluoranthene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			205-912-4	206-44-0									
32		pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			204-927-3	129-00-0									
33		benzo[a]anthracene				0.61	mg/kg		0.61	mg/kg	0.000061 %		
		601-033-00-9	200-280-6	56-55-3									
34		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
35		benzo[b]fluoranthene				0.72	mg/kg		0.72	mg/kg	0.000072 %		
		601-034-00-4	205-911-9	205-99-2									
36		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
37		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
38		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
39		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
40		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
41		phenol				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
		604-001-00-2	203-632-7	108-95-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
42		barium { barium sulfate }				16	mg/kg	1.7	27.192	mg/kg	0.00272 %		
			231-784-4	7727-43-7									
43		iron { iron (III) oxide }				17920	mg/kg	1.43	25621.027	mg/kg	2.562 %		
			215-168-2	1309-37-1									
										Total:	2.639 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Reported concentrations of xylene and TPH are not considered to be flammable at the reported concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

xylene: (conc.: 0.0004%)

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: [redacted]
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: [redacted]
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

- **barium sulfate** (EC Number: 231-784-4, CAS Number: 7727-43-7)

Conversion factor: 1.7
Description/Comments: No hazard statements
Data source: [redacted]
Data source date: 02 Apr 2020
Hazard Statements: None.

- **iron (III) oxide** (EC Number: 215-168-2, CAS Number: 1309-37-1)

Conversion factor: 1.43
Description/Comments:
Data source: C&L Inventory, Registered Substances database, SDS: Sigma-Aldrich dated 19/09/2012 (REACH compliant)
Data source date: 21 May 2015
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

manganese {manganese sulphate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species.

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

barium {barium sulfate}

Unlikely to exist as barium chromate with the recorded concentration of chromium Vi.

iron {iron (III) oxide}

s

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.141.4306.8485 (20 May 2020)
HazWasteOnline Database: 2020.143.4308.8487 (22 May 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Waste Classification Report

LRDBL-DTZSF-G9WTJ

Job name

A47 Wansford: Asphalt Analysis

Description/Comments

Waste Assessment of data collected during a ground investigation undertaken by Soils Ltd in 2018.
Data presented in Soils Ltd Factual Ground Investigation Report dated February 2019.
Soils Ltd document ref: 17076/FGIR

Project

65201442-004

Site

A47- Wansford to Sutton Stage 3

Related Documents

#	Name	Description
None		

Waste Stream Template

Coal Tar Suite December 2019

Classified by

Name:
Joe Waterhouse
Date:
12 Jun 2020 14:57 GMT
Telephone:
0113 262 0000

Company:
SWECO
Grove House
Mansion Gate Drive
Leeds
LS7 4DN

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	20 Sep 2016
Advanced Hazardous Waste Classification	21 Sep 2016

Report

Created by: Joe Waterhouse
Created date: 12 Jun 2020 14:57 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	BH21A	1.8-1.9	Hazardous	HP 7	2

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	4
Appendix B: Rationale for selection of metal species	4
Appendix C: Version	5

Classification of sample: BH21A

Hazardous Waste
Classified as **17 03 01 ***
in the List of Waste

Sample details

Sample Name:
BH21A
Sample Depth:
1.8-1.9 m
Moisture content:
2.2%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 03 01 * (Bituminous mixtures containing coal tar)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1A; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

benzo[a]pyrene; benzo[def]chrysene: (conc.: 0.00522%)

Determinands

Moisture content: 2.2% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		naphthalene				40.7	mg/kg		39.824	mg/kg	0.00398 %	✓	
		601-052-00-2	202-049-5	91-20-3									
2		acenaphthylene				0.86	mg/kg		0.841	mg/kg	0.0000841 %	✓	
			205-917-1	208-96-8									
3		acenaphthene				41.6	mg/kg		40.705	mg/kg	0.00407 %	✓	
			201-469-6	83-32-9									
4		fluorene				35.7	mg/kg		34.932	mg/kg	0.00349 %	✓	
			201-695-5	86-73-7									
5		phenanthrene				249	mg/kg		243.64	mg/kg	0.0244 %	✓	
			201-581-5	85-01-8									
6		anthracene				53.9	mg/kg		52.74	mg/kg	0.00527 %	✓	
			204-371-1	120-12-7									
7		fluoranthene				222	mg/kg		217.221	mg/kg	0.0217 %	✓	
			205-912-4	206-44-0									
8		pyrene				173	mg/kg		169.276	mg/kg	0.0169 %	✓	
			204-927-3	129-00-0									
9		benzo[a]anthracene				48.9	mg/kg		47.847	mg/kg	0.00478 %	✓	
		601-033-00-9	200-280-6	56-55-3									
10		chrysene				64.9	mg/kg		63.503	mg/kg	0.00635 %	✓	
		601-048-00-0	205-923-4	218-01-9									
11		benzo[a]pyrene; benzo[def]chrysene				53.3	mg/kg		52.153	mg/kg	0.00522 %	✓	
		601-032-00-3	200-028-5	50-32-8									
12		indeno[123-cd]pyrene				34.4	mg/kg		33.659	mg/kg	0.00337 %	✓	
			205-893-2	193-39-5									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		dibenz[a,h]anthracene				5.19	mg/kg		5.078	mg/kg	0.000508 %	✓	
		601-041-00-2	200-181-8	53-70-3									
14	●	benzo[ghi]perylene				27.7	mg/kg		27.104	mg/kg	0.00271 %	✓	
			205-883-8	191-24-2									
15		benzo[b]fluoranthene				63	mg/kg		61.644	mg/kg	0.00616 %	✓	
		601-034-00-4	205-911-9	205-99-2									
16		benzo[k]fluoranthene				27.2	mg/kg		26.614	mg/kg	0.00266 %	✓	
		601-036-00-5	205-916-6	207-08-9									
										Total:	0.112 %		

Key

- User supplied data
- Hazardous result
- ● Determinand defined or amended by HazWasteOnline (see Appendix A)

Appendix A: Classifier defined and non CLP determinands

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: [redacted]
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: [redacted]
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: [redacted]
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

Appendix B: Rationale for selection of metal species

None used in this classification

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.141.4306.8485 (20 May 2020)
HazWasteOnline Database: 2020.143.4308.8487 (22 May 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010